

# Market Entry and Deterrence Strategies in the Brazilian Aviation Industry

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# Structure

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- Introduction
- The Brazilian Aviation Market
- Strategic Entrepreneurial Behavior
- The Entry of GOL into the Brazilian Aviation Market
- Developments after GOL's Entry
- Conclusions and Outlook

# Introduction I

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- Occurrence of many structural changes in the aviation industry in recent years
  - Deregulation of national aviation markets
  - Privatization of state airlines and airports
  - New competitors (mainly LCCs)
- What are the reasons for successful LCC entry and how do the incumbents react?
- Why analyze the Brazilian aviation market?
  - GOL = first Latin American LCC to enter the market
  - Possible predictions for LCC success in other Latin American countries
  - Air traffic growth rates > GDP growth rates (6.5% vs. 4%)

# Introduction II

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Questions this paper seeks to answer:

How did the entry of the LCC GOL impact the Brazilian aviation market?

- How was GOL able to enter the Brazilian market so successfully?
- Did the incumbent carriers try to deter entry?  
If yes, which strategies did they apply?
- What happened after GOL's entry?
  - Product changes by the incumbents?
  - Price changes?

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# Development and regulation of the Brazilian aviation market

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→ History of commercial air transport in Brazil

→ Legislation

→ The National Commercial Aviation Conferences (CONACs)

→ The Código Brasileiro de Aeronáutica (CBA)

→ Regulation

→ State interventions

→ Restrictions

# Structure of the market before entry

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## → Main market players

→ VARIG

→ TAM

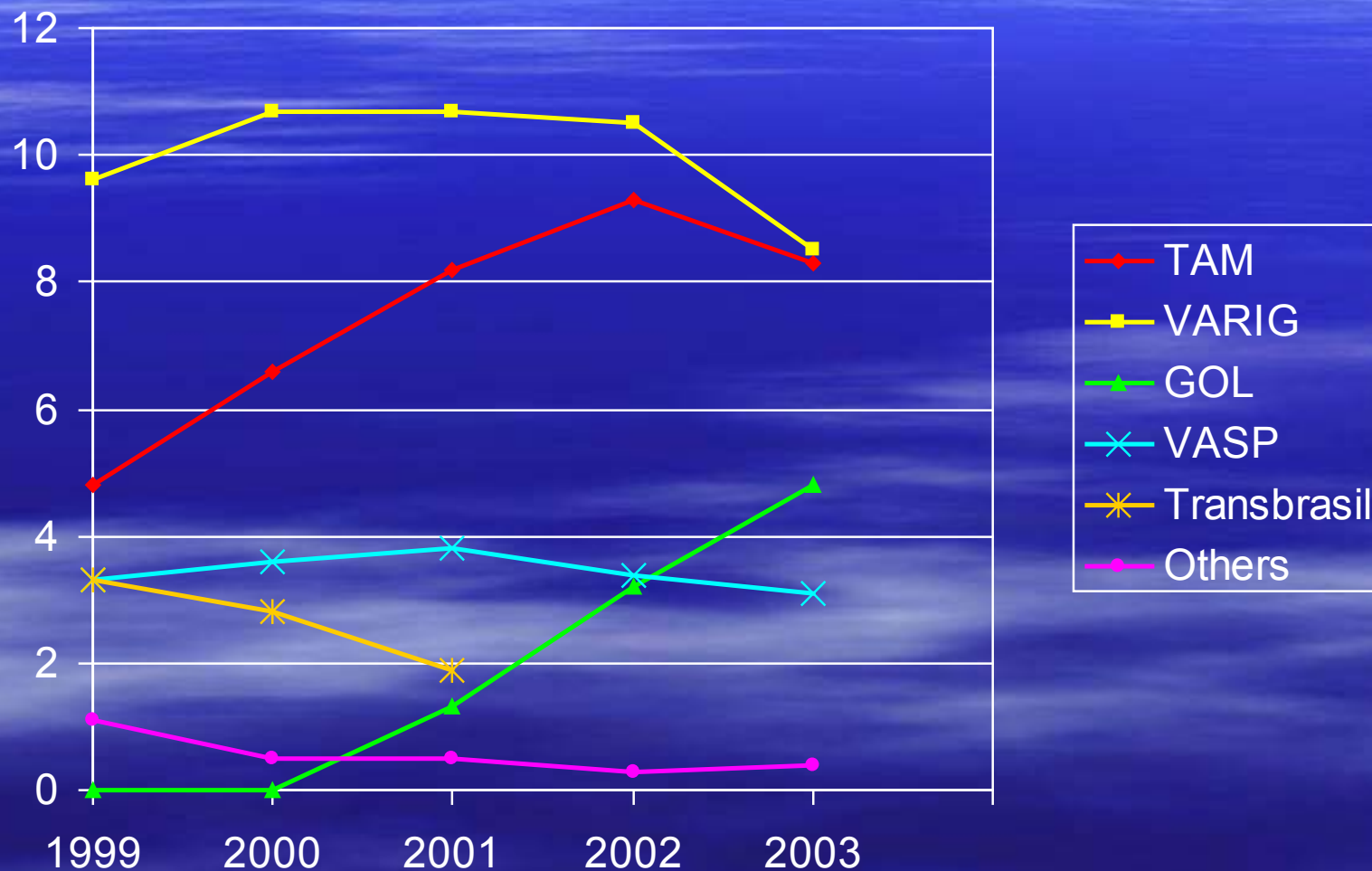
→ VASP

→ Transbrasil

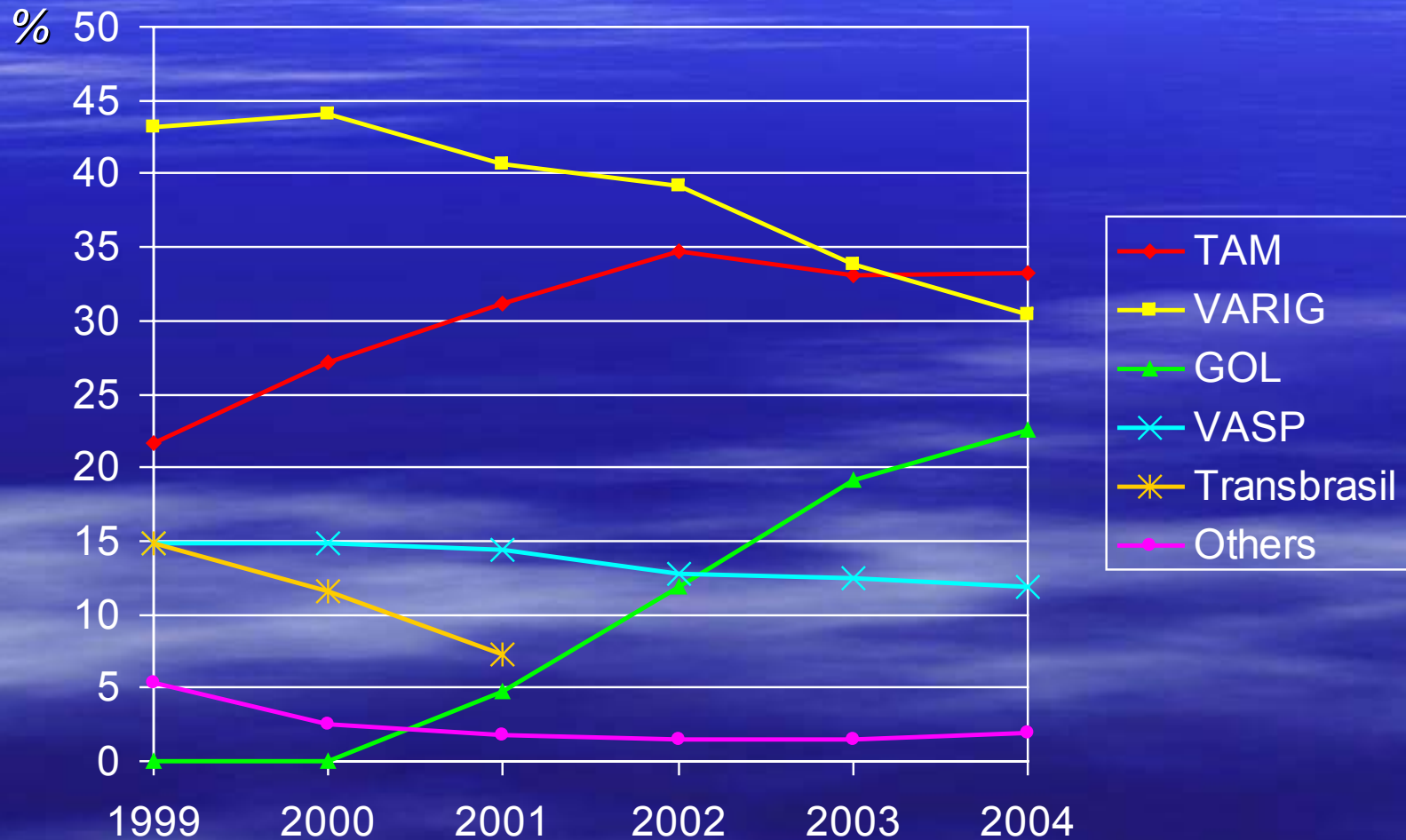
## → Variations in RPKs per airline between 1999-2004

## → Domestic market shares 1999-2004

# Variation in RPKs (in billions) between 1999 and 2004



# Domestic market shares between 1999 and 2004

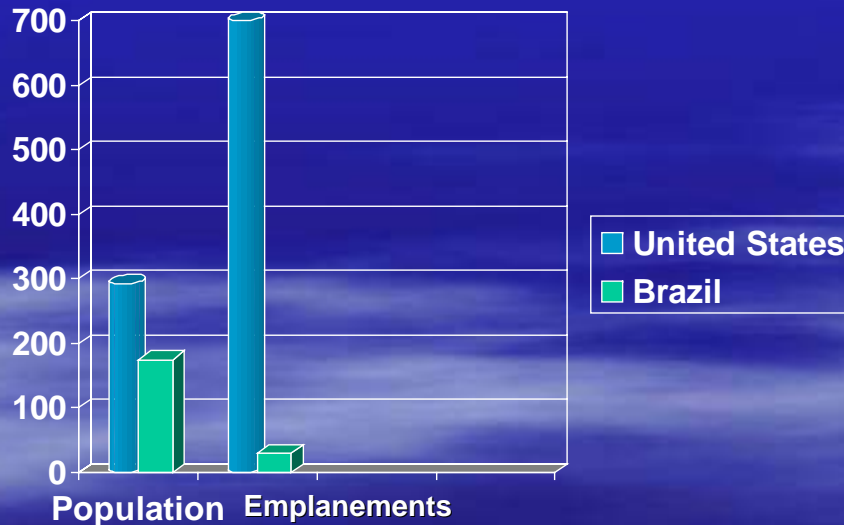


# Characteristics of the Brazilian aviation market

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→ Size and demographic composition

→ Comparison of flying population in the United States and Brazil



→ Relevance of the Brazilian business traveler

# Supply-side characteristics in 1999 and 2000

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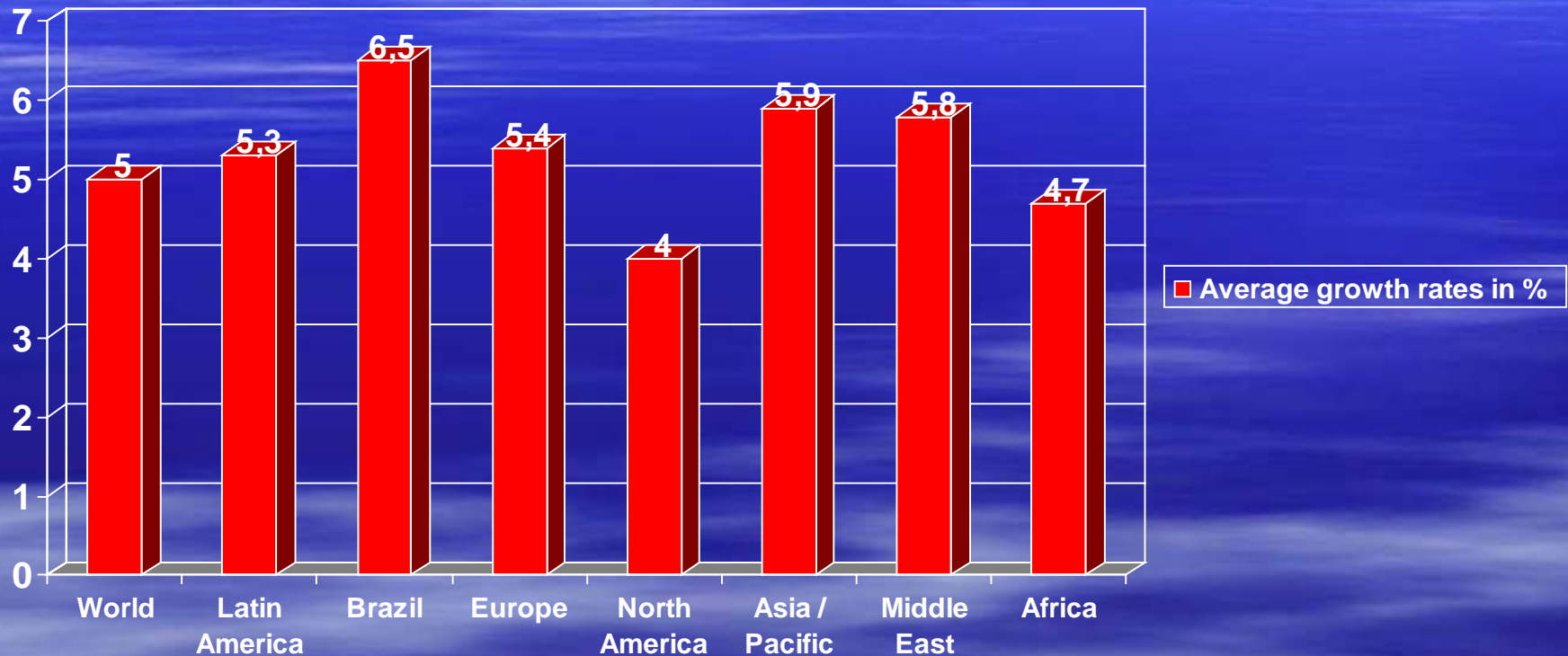
- Ten busiest airports account for over 70% of total domestic traffic
- 6 major routes
  - All located in southern Brazil
  - Account for majority of domestic traffic
  - Rio de Janeiro-Sao Paulo route = busiest route in Brazil
    - Accounts for nearly 7% of total domestic traffic
    - Growth rates in demand of around 17% per year
  - DAC predicts growth rates of over 100% on these routes over the next 15 years

# Supply-side characteristics in 1999 and 2000

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- Growth rates in domestic RPKs averaged 5.9% per year  
vs.  
growth rates in domestic ASKs of 5.0% per year between 1999 and 2000
- Load factors for all four market players averaged between 55% (Transbrasil) and 61% (VARIG) per year

# Predicted growth rates per year between 2003 and 2022



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# Strategic Entrepreneurial Behavior

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- Vertical product differentiation as a strategic variable
- Address models and non-address models
- Entry-deterrence strategies in oligopolistic markets
- Other relevant models
  - Theoretical models
  - Empirical study of price developments in the Brazilian market by Oliveira and Huse

# The Lutz model of vertical product differentiation I

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## Assumptions:

- Three-stage sequential-entry game
- Two firms A and B
- Inclusion of fixed setup costs of entry as well as quality-dependent costs of production
- Entrant has lower costs than the incumbent
- In the case of entry, the two firms will produce two distinct qualities

To find the Nash equilibrium prices the model must be solved by way of backward induction

# The Lutz model of vertical product differentiation II

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## Results:

- In the case of entry: Maximum product differentiation in equilibrium
- First-mover advantage
- Entry deterrence or allowance is dependent on level of fixed setup costs of entry as well as quality-dependent costs of production
- First mover may change product quality in the case of entry
- Profits are highest in the case of entry deterrence

# A Stackelberg pricing game with heterogeneous products I

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## Assumptions:

- Two-stage sequential price-setting game
- Two-firm game
- Marginal costs  $c$  are equal for both firms
- Products produced by both firms are not perfect substitutes but very similar to each other
- Both firms expect their competitor to only react to a cut in prices and not to price increases



# A Stackelberg pricing game with heterogeneous products III

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## Results:

- Second-mover advantage
- Follower's price is lower than the leader's price
- Follower will capture a larger share of the market and make higher profits
- Problem of who will be the first mover

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# Characteristics of an LCC

## Characteristics of an LCC

- Simple brand concept: “Low fares-no frills”
- All service extras must be paid for
- Simple ticket and pricing structure
- High rate of Internet and phone bookings
- Focus on short-haul routes
- Point-to-point network
- Use of secondary airports
- Outsourcing of core activities
- Focus on efficiency and low operation costs
- Usually standardized fleet
- No FFPs or alliances, no interlining

## Characteristics of an FSC

- Complex brand concept
- All-round service concept
- Complex ticket and pricing structure
- Travel agents = integral part of the system
- Route mix
- Hub-and-spokes network
- Mainly use of primary airports
- Outsourcing to some degree
- High operating costs due to product nature
- Mixed fleet
- Alliances and FFPs, interlining frequent

# The entry of GOL

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- Was there a market for LCCs in Brazil at the time of entry?
- Special market conditions prevailing in Brazil
- The LCC GOL at the time of entry
- Comparison of GOL to the incumbents at the time of entry

|                                  | Airline                                   | GOL  | VARIG  | TAM  |
|----------------------------------|---|--|--|--|
|                                  | Feature                                   |  |  |  |
| In-flight service                | Entertainment (Audio/Video)               | No   | Yes  | Yes  |
|                                  | Newspapers                                | No   | Yes  | Yes  |
|                                  | Catering                                  | Snacks and beverages on all flights free of charge (excluding alcoholic beverages)               | Snacks and beverages (short-haul)<br>Meal (long-haul)              | Snacks and beverages (short-haul)<br>Meal (long-haul)              |
| Aircraft                         | Type of aircraft                          | B737-xxx   | Mixed fleet  | Mixed fleet  |
|                                  | Type of seat                              | Standard   | Dependent on class   | Dependent on class   |
| Convenience and comfort features | Use of primary airports**                 | Yes  | Yes  | Yes  |
|                                  | Distribution channels                     | Internet, phone (at caller's expense) and travel agencies  | Internet, phone (at caller's expense) and travel agencies          | Internet, phone (at caller's expense) and travel agencies          |
|                                  | Pre-assigned seating                      | Yes  | Yes  | Yes  |
|                                  | FFP or other bonus programs               | No   | FFP  | FFP  |
|                                  | Onward connections or interlining         | No   | Yes  | Yes  |
|                                  | Business lounges                          | No   | Yes  | Yes  |
|                                  | Ticket change fees                        | Free<br>\$9 if within 24 hours of departure time   | Yes<br>Charges vary depending on type of ticket and departure date | Yes<br>Charges vary depending on type of ticket and departure date |
|                                  | Ticket cancellation fees in US dollars*** | 20% of ticket price<br>20% of ticket price +\$9 penalty fee if within 24 hours of departure time | Yes<br>Fees vary depending on type of ticket and departure date    | Yes<br>Fees vary depending on type of ticket and departure date    |
| Primary routes                   | Many                                      | Many   | Many   |  |
| Price                            | Fare structure                            | Very simple fare structure   | Complex fare structure   | Complex fare structure   |
|                                  | Pricing                                   | Competitive pricing (Low fares-no frills concept)  | Higher price levels  | Higher price levels  |

# Empirical relevance of the Lutz model I

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- Did VARIG and TAM try to deter entry?
- Was the merger threat credible?
- Were other entry-deterrence strategies used?
- What happened after entry occurred?

# Empirical relevance of the Lutz model II

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- Entry was accommodated
- No entry-detering measures were applied
- GOL entered the market with a low-quality product

## Contradiction 1:

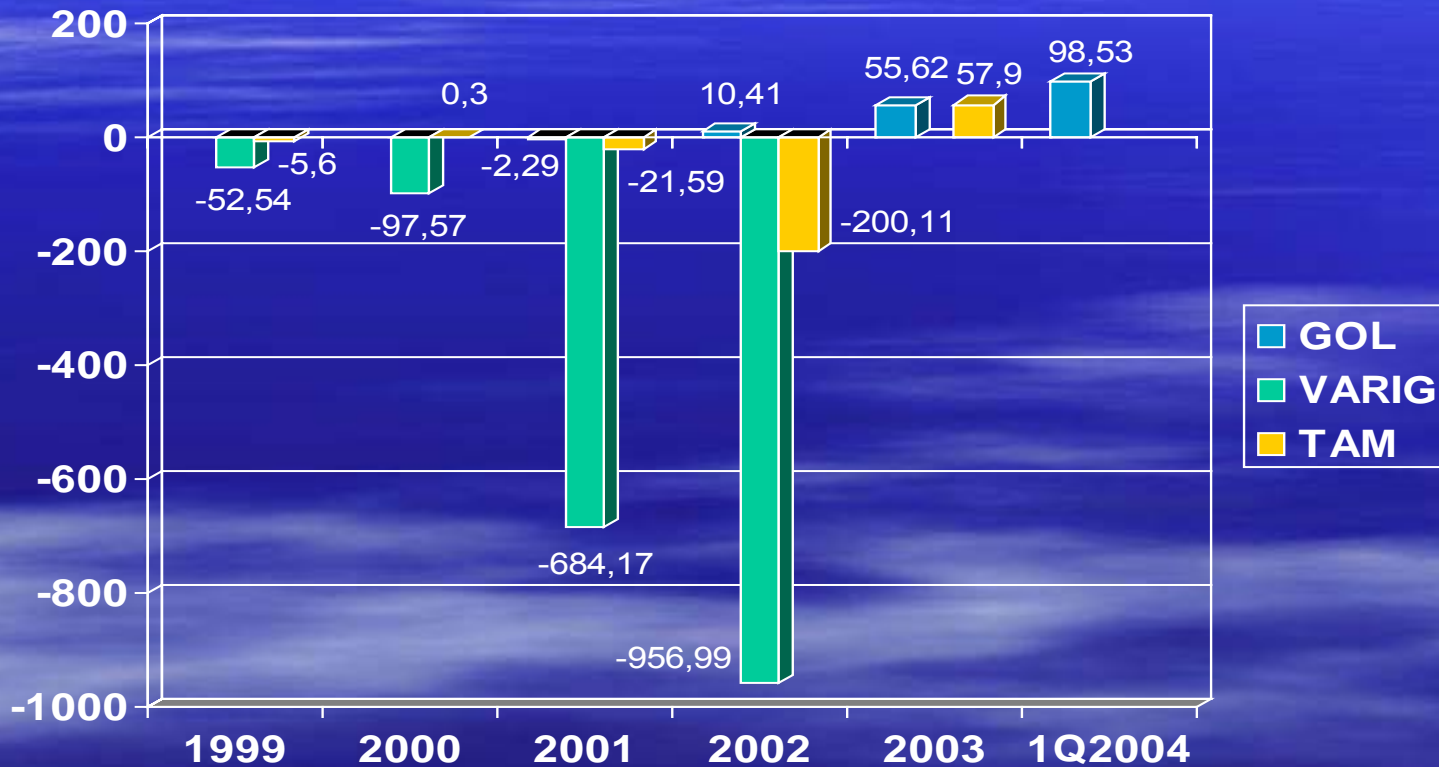
- Incumbents did not switch to becoming low-quality providers in the resulting equilibrium

## Contradiction 2:

- First-mover advantage not evident in the Brazilian market

# Financial statistics 2001-2003

## Profits and losses in millions of USD



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# Reactions of the incumbents after entry

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- Product changes by the incumbents after entry
  - Stronger product differentiation
  - Changes to First, Business and Economy Class products
- Entrant has also added extra features to its product during the last few years
- Price developments
  - Dresner/Windle study
  - Empirical relevance of the Stackelberg model

# Empirical relevance of the Stackelberg model

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- Second-mover advantage of GOL
- Model can explain relative profitability of GOL vis-à-vis the incumbents
- Applicable only when comparing the Economy Class products of both the incumbents and GOL to one another
- Model is unable to explain quality and entry decisions of a potential entrant

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# Conclusions and Outlook

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- Both models are only able to describe the Brazilian reality up to a point
- GOL has proven to be a dangerous competitor for VARIG and TAM in the Brazilian domestic market
- VARIG and TAM have had to react to the intensified level of competition
- Future consolidation of the market likely
- Airlines will focus more strongly on different segments of the market

Thank you very much  
for your attention

