AIR TRANSPORT INDICATORS

1. **Passenger transport**

- Flights
- Seats
- Passengers (pax)
- LF: Load Factor (esp: Factor de ocupación/llenado)
- SL: Stage length (great circle distance)
- ASK: Available Seat Km (esp: AKO, USA: ASM) → seats* dist
- Block time, flight time, taxi time
  - Block time = taxi out + flight time + taxi in

ıple

CN-ORY

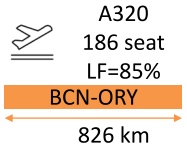
826 km

= **158**

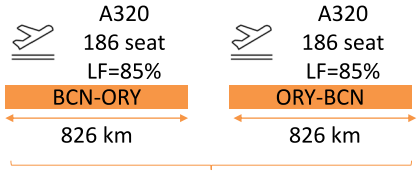
=**153.636**

130.590

AIR TRANSPORT INDICATORS - Example



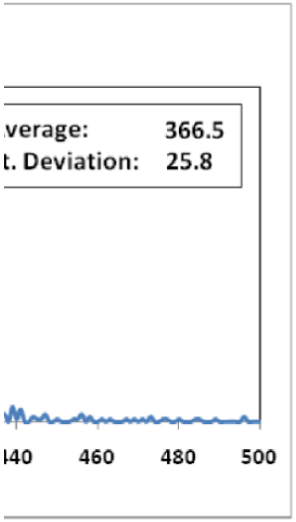
Flights: 1
Seats: **186**
Pax: 186*85%= **158**
ASK: 186*826=**153.636**
RPK:158*826=**130.590**

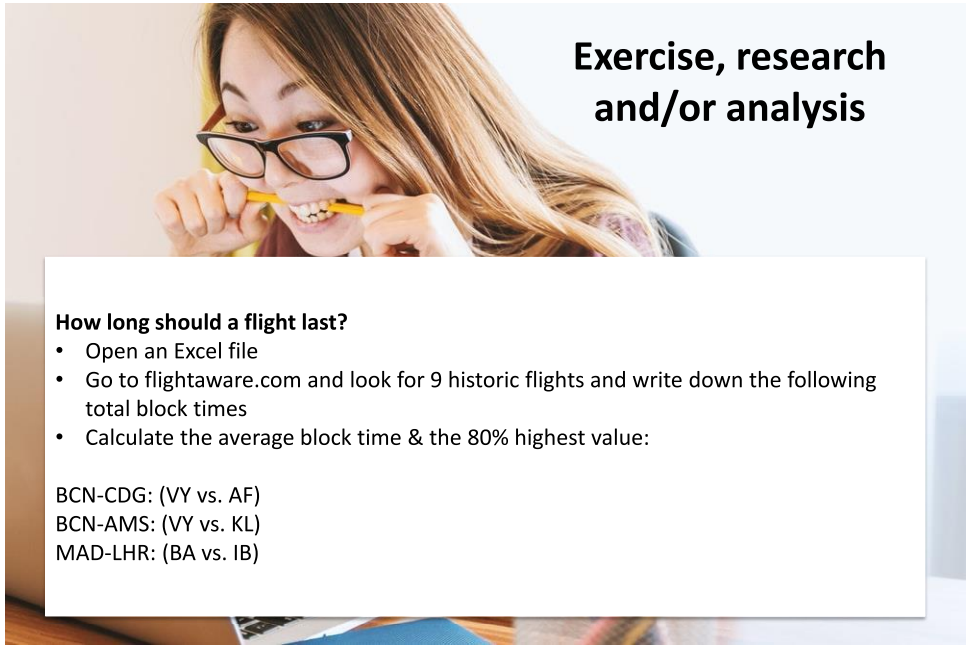


Flights: 2
Seats: 2*186=**372**
Pax: 2*186*85%= **316**
ASK= 2*186*826=**307.272**
RPK=2*158*826=**261.181**

Block times

- **Block time = from door closed to door open**
  - Can also be from brake release to brake set
- **ACTUAL block time is variable, affected by**
  - Ground crews, pushback and taxi-out times at different airports
  - Different airport runway configurations on different days
  - Airport congestion, departure queues, ground holds
  - Weather and wind speeds while airborne; specific route flown
  - Arrival queues, descent patterns, taxi-in delays
- **SCHEDULED block time involves trade-offs**
  - Longer planned schedules increase "on-time" performance
  - But, increases operating costs, reduces utilization, gate issues
  - Should buffer be applied to block time or turn-around time?





Exercise, research and/or analysis

How long should a flight last?

- Open an Excel file
- Go to flightaware.com and look for 9 historic flights and write down the following total block times
- Calculate the average block time & the 80% highest value:

BCN-CDG: (VY vs. AF)
BCN-AMS: (VY vs. KL)
MAD-LHR: (BA vs. IB)

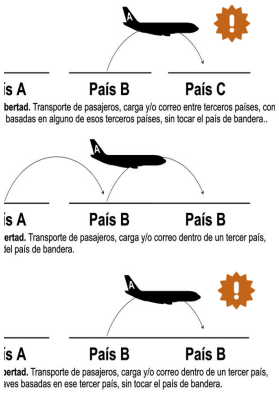
se, research or analysis

craft) → seats

Exercise, research and/or analysis

Introduction to excel:

1. Download and open the excel file “Cebu_2019.xlsx” from ATENEA
2. Add a column ASKs and calculate the ASKs based on already existing information
3. Using excel filters and the functions “SUMA” and “CONTAR”, calculate the following:
   - Number of seats departing from the airport in November
   - Number of arriving flights at the airport in February
   - Number of seats from Cebu to Shanghai Pudong airport (PVG)
   - Number of domestic flights departing from the airport in August
   - How many ASKs did Philippine Airlines fly from the airport in June?
   - Average stage length (in Km) of Air Asia from the airport in December?



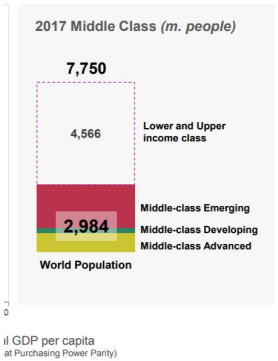
Exercise, research and/or analysis

Do some research and find out an example flight of the following cases:

- 1st freedom flight with Air France
- 3rd freedom flight with Cathay Pacific
- 4th freedom flight with Cebu Pacific from Hong Kong
- 5th freedom flight with Emirates from Athens (hint: Emirates route map)
- 6th freedom example with Qatar Airways from Cape Town
- 7th freedom example with Ryanair departing from Vilnius
- 9th freedom example with easyjet from Munich

GROWTH

Question!

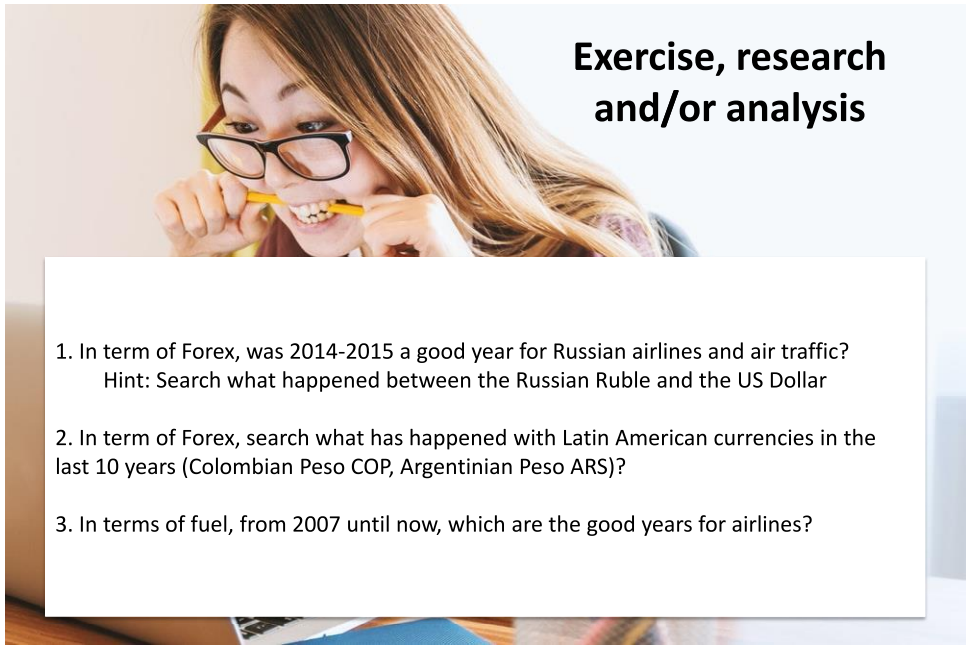


AIRBUS

AIR TRANSPORT vs. GDP

Figure 2 - Relationship of Real GDP and Air Travel

Source: IMF and SRS Analyser, 2016



Exercise, research and/or analysis

1. In term of Forex, was 2014-2015 a good year for Russian airlines and air traffic?
   Hint: Search what happened between the Russian Ruble and the US Dollar

2. In term of Forex, search what has happened with Latin American currencies in the last 10 years (Colombian Peso COP, Argentinian Peso ARS)?

3. In terms of fuel, from 2007 until now, which are the good years for airlines?

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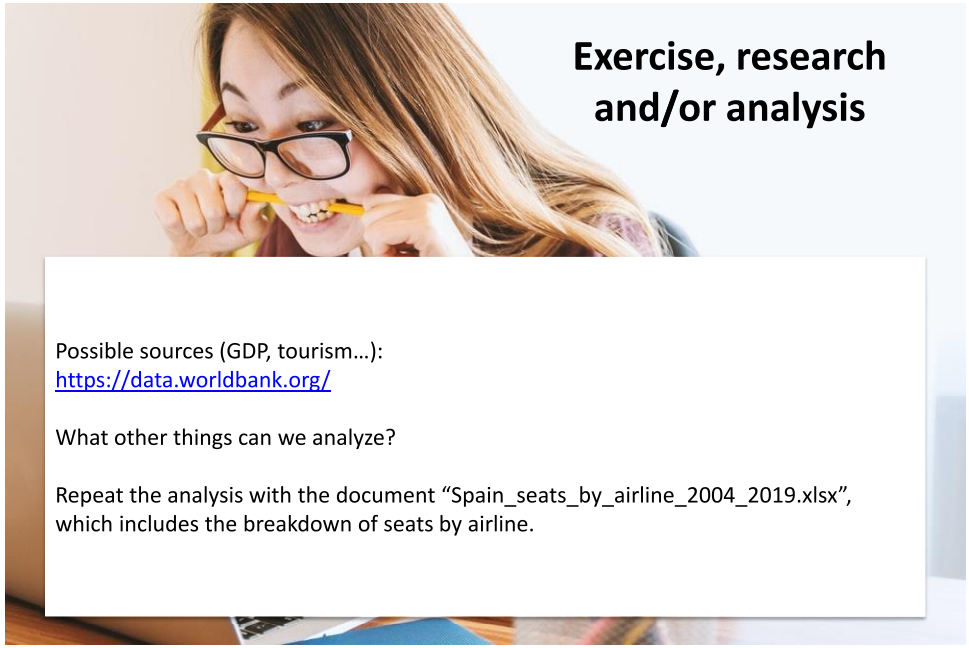


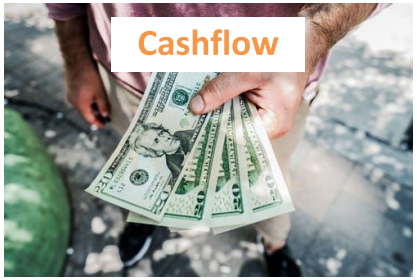
Exercise, research and/or analysis

Possible sources (GDP, tourism…):
https://data.worldbank.org/

What other things can we analyze?

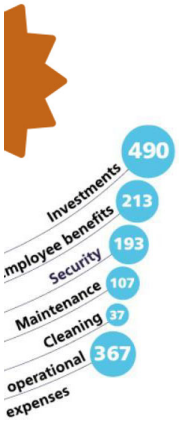
Repeat the analysis with the document "Spain_seats_by_airline_2004_2019.xlsx", which includes the breakdown of seats by airline.

Expense vs. cost



Cash out (salida de caja)

Depreciation
Useful life
Cost



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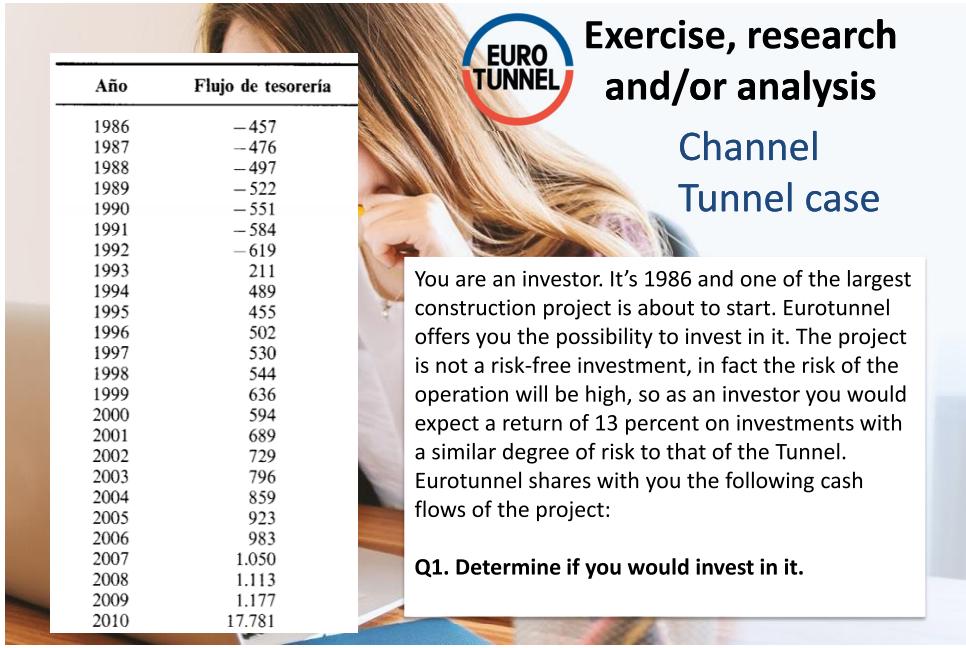

Año	Flujo de tesorería
1986	−457
1987	−476
1988	−497
1989	−522
1990	−551
1991	−584
1992	−619
1993	211
1994	489
1995	455
1996	502
1997	530
1998	544
1999	636
2000	594
2001	689
2002	729
2003	796
2004	859
2005	923
2006	983
2007	1.050
2008	1.113
2009	1.177
2010	17.781

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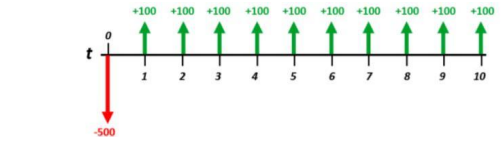
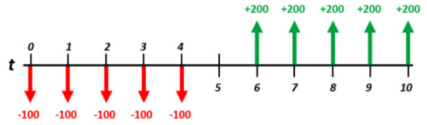
Exercise, research and/or analysis

Use an excel spreadsheet to calculate the NPV (with different r) and determine the IRR for the following 3 projects

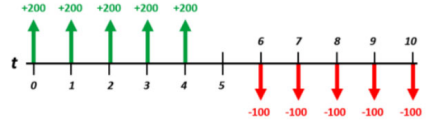
Project A

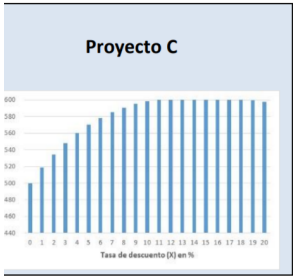


Project B



Project C



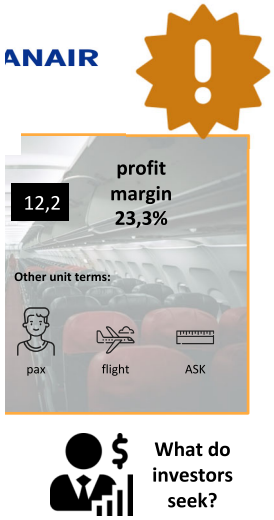


Exercise, research and/or analysis

Due to political reasons, a new airport in Brasil needs to be built. Construction is expected to be in 2020. The forecasted demand for the new airport can be found in the excel file. The discount rate is 5%. Project information:

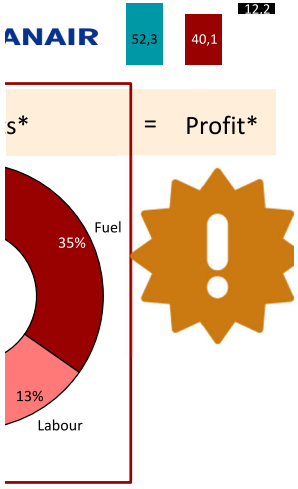
Initial investment: 250 M€
Annual maintenance costs
2021 – 2026: 3% of initial investment
2027 – 2030: 5% of initial investment
Aeronautical Revenues: 12€ per passenger
Non-aeronautical Revenues: 6€ per passenger

Q1. Determine if the project should go on (i.e. What is the NPV after a period of 10 years?)
Q2. Considering a cost overrun of 10% of the initial investment calculate the NPV for different rates of discount (0%, 5%, 10%, 15%) and determine the IRR



Thinking in unit terms

- Why thinking in unit terms?
- Unit revenues
  - Average Fare (Ingreso medio) → ing/pax
  - RASK
  - Revenue/seat
- Unit costs
  - CASK
  - Cost/seat



Thinking in unit terms

Total Revenues	-	Total Costs*	=	Profit*
Pax · average fare (€/pax)		Seats · cost/seat		
Seats · LF				

Seats ·	(LF · av fare	-	cost/seat)	=	Profit*

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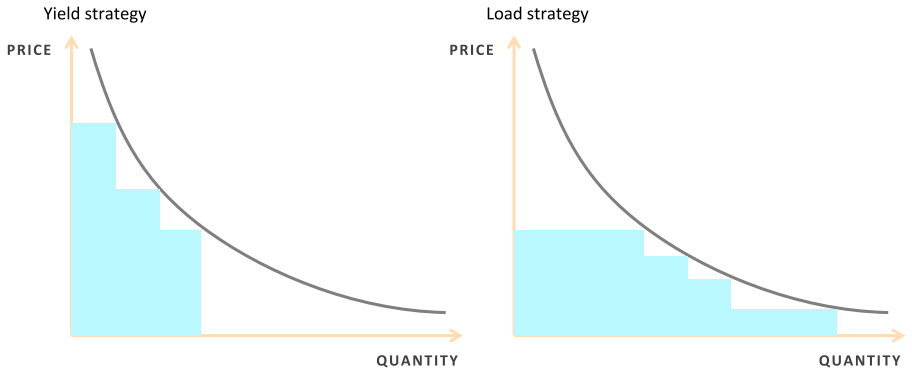
fferent market segments to adapt to
lingness to pay”

liversion

e demand

Yield vs. load strategy



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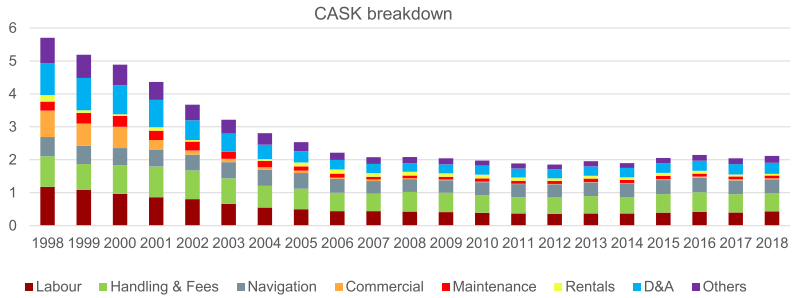
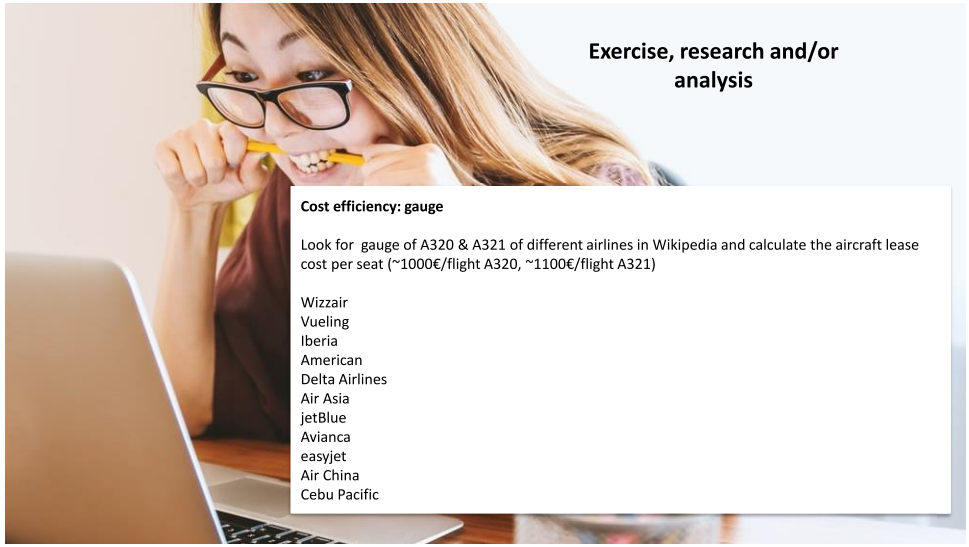
management

Cost evolution

Ryanair CASK breakdown (Fiscal year 1998 - 2018)

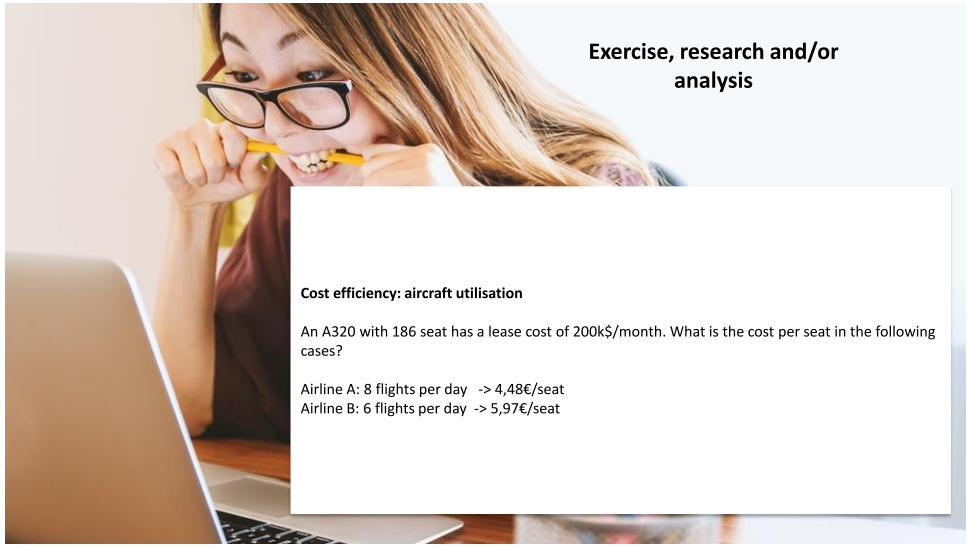


unit terms



research and/or analysis

ipedia and calculate the aircraft lease

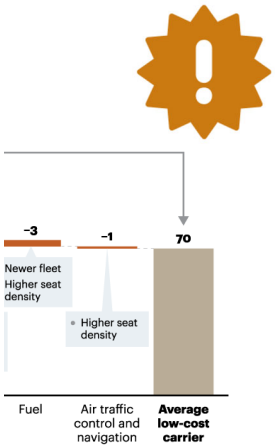


Exercise, research and/or analysis

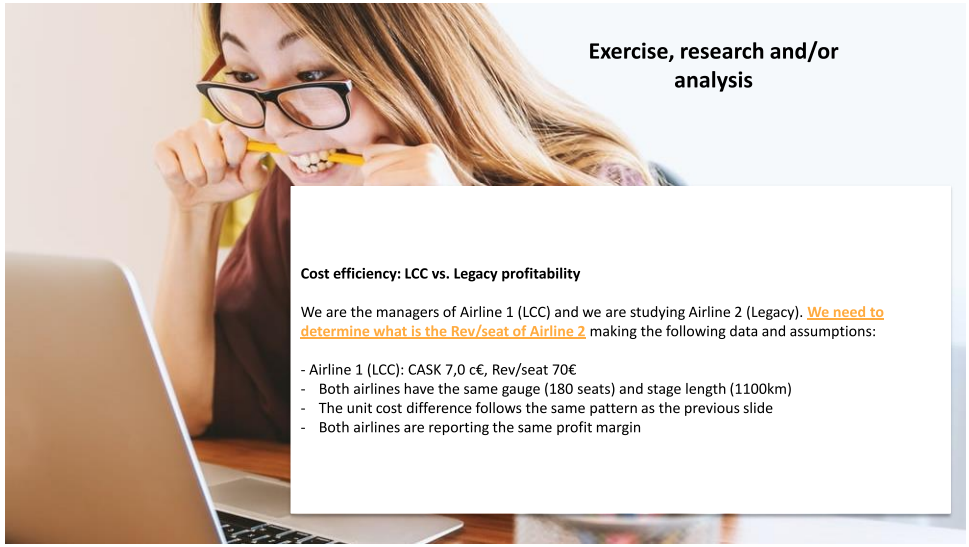
Cost efficiency: aircraft utilisation

An A320 with 186 seat has a lease cost of 200k$/month. What is the cost per seat in the following cases?

Airline A: 8 flights per day -> 4,48€/seat
Airline B: 6 flights per day -> 5,97€/seat



: density and intraday aircraft rotation,

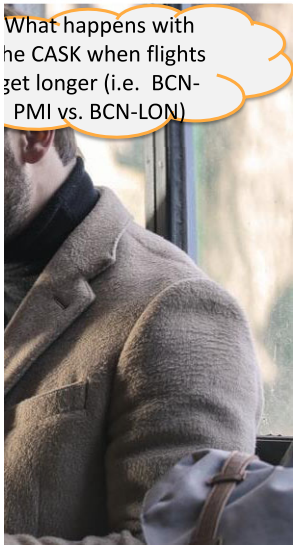


Exercise, research and/or analysis

Cost efficiency: LCC vs. Legacy profitability

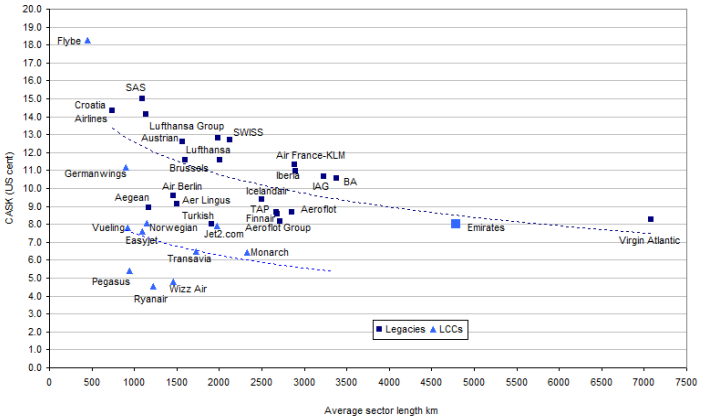
We are the managers of Airline 1 (LCC) and we are studying Airline 2 (Legacy). We need to determine what is the Rev/seat of Airline 2 making the following data and assumptions:

- Airline 1 (LCC): CASK 7,0 c€, Rev/seat 70€
- Both airlines have the same gauge (180 seats) and stage length (1100km)
- The unit cost difference follows the same pattern as the previous slide
- Both airlines are reporting the same profit margin



Stage lenght adjustment

https://centreforaviation.com/analysis/airline-leader/cask-analysis-allows-global-airline-unit-cost-benchmarking-and-strategic-mapping-282263



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