

Exploring the rationale and potential of LCCs' self-interlining

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LCCs' business evolution

- LCCs first emerged in the USA, followed by the EU and the rest of the world, after industry deregulation (Francis et al., 2006), including a breakthrough strategy in managing airlines
- Core features: short-haul point-to-point service, operational effectiveness through the simplification of services and processes, and revenue management through dynamic pricing strategies (Gillen and Lall, 2004; Malighetti et al., 2009).
- No head-head competition with FSCs: Opening of new markets
- Most recently, the ability of LCCs to stimulate demand is running out, and many markets seem to be at or near the saturation point (Binggeli and Pomepo, 2005)
- Increase of «within» LCC-markets competition (Malighetti et al. 2013)
- Network carriers have tried to emulate LCCs' business model cutting costs, while chartered flights started to enter LCC routes

Increasing market pressure -> New strategies

LCC hybridization - Connecting flights

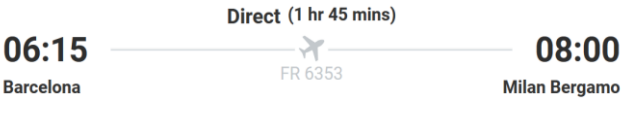
- Low-cost carriers have started to address the need of connecting passengers along with their **hybridization process** (Klophaus et al., 2012; Morandi et al., 2015).
 - Shifting to primary airports, starting hubbing activities, providing meals and other inflight services, and entering alliances (de Wit and Zuidberg, 2012)
- Nowadays, new network strategies are going to be experimented by LCCs in the European framework, such as self-interlining, i.e. the connection of already operated flights by a single airline.
 - Interlining has been mostly addressed at intercontinental level and within alliances' agreements, whereas knowledge is however scarce about the effect strategic choices on single legs (e.g., price formation (Lijesen et al. 2002).

Goal of our project:

- First systematic attempt to explore self-interlining into the LCC framework, highlighting its effects on passengers and airlines' profits.

Ryanair interlining

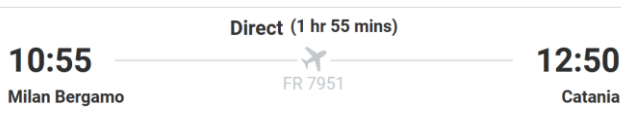
Objective: From Barcelona to Catania



Save 6.73

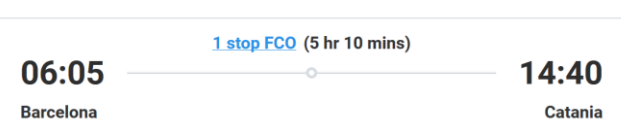
from 26.92

I LEG



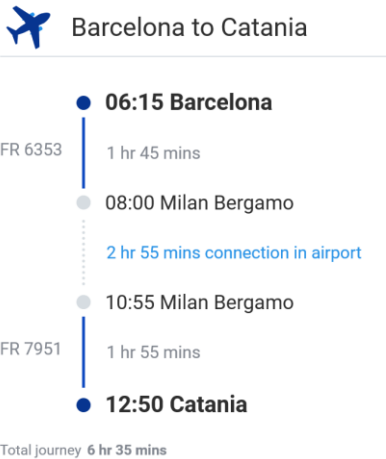
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II LEG



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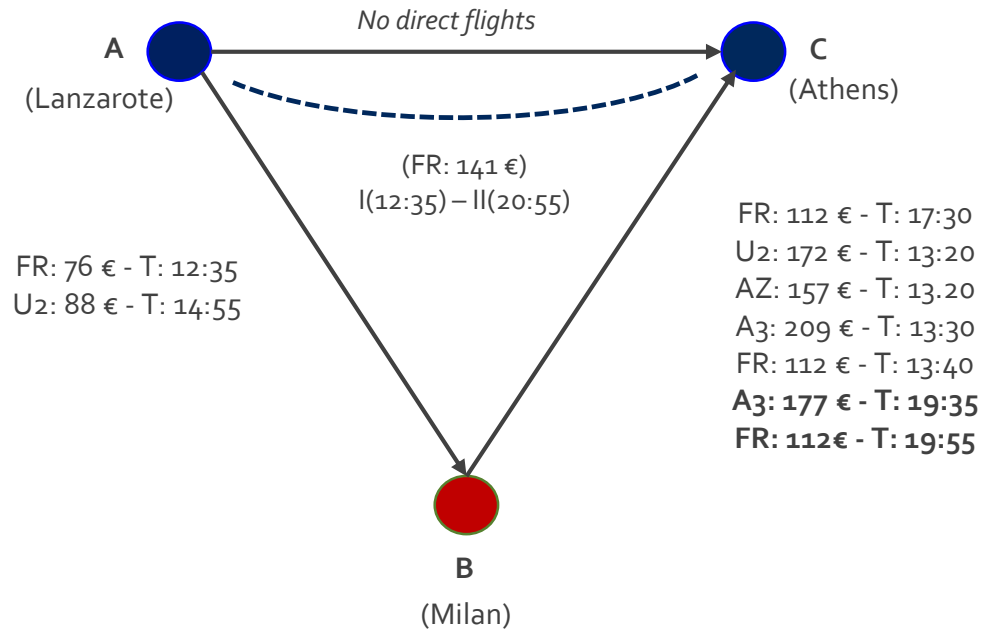


I LEG + II LEG
Interlining

Network (A-B-C)

From Lanzarote to Athens

Departure: 17/07/2018



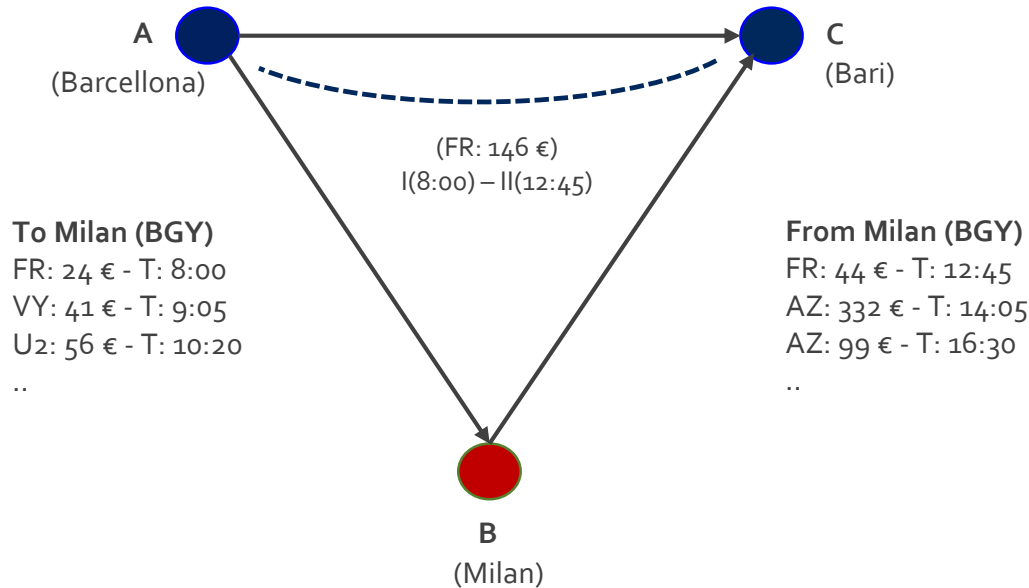
Network (A-B-C) & competitors

From Barcelona to Bari

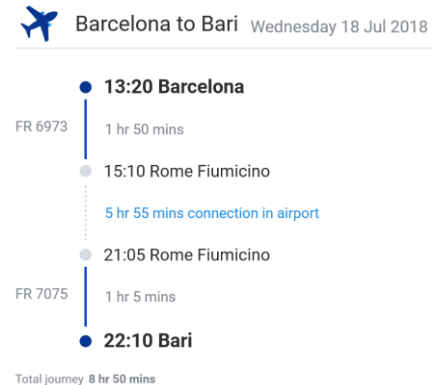
Departure: 18/07/2018

VY: 76 € - T: 22:00

IB: 82 € - T: 22:00

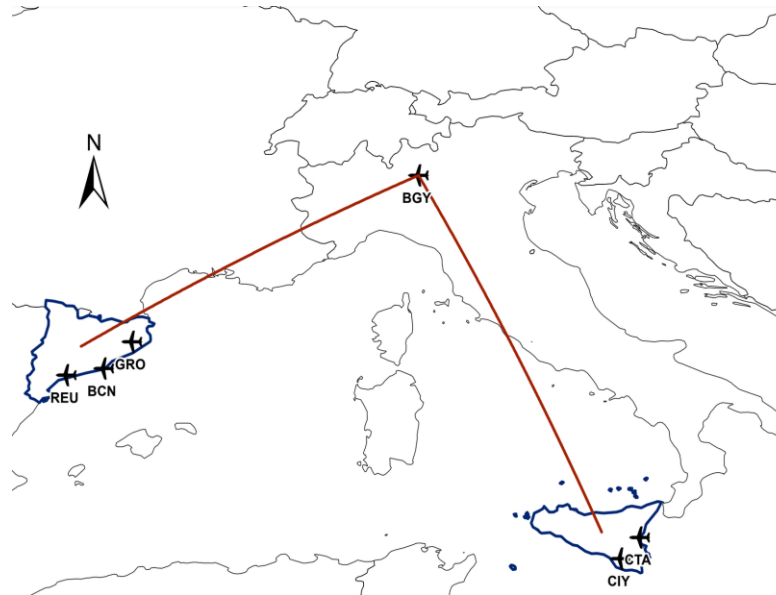


A further alternative for B:
FCO (FR interlining: 91 €)



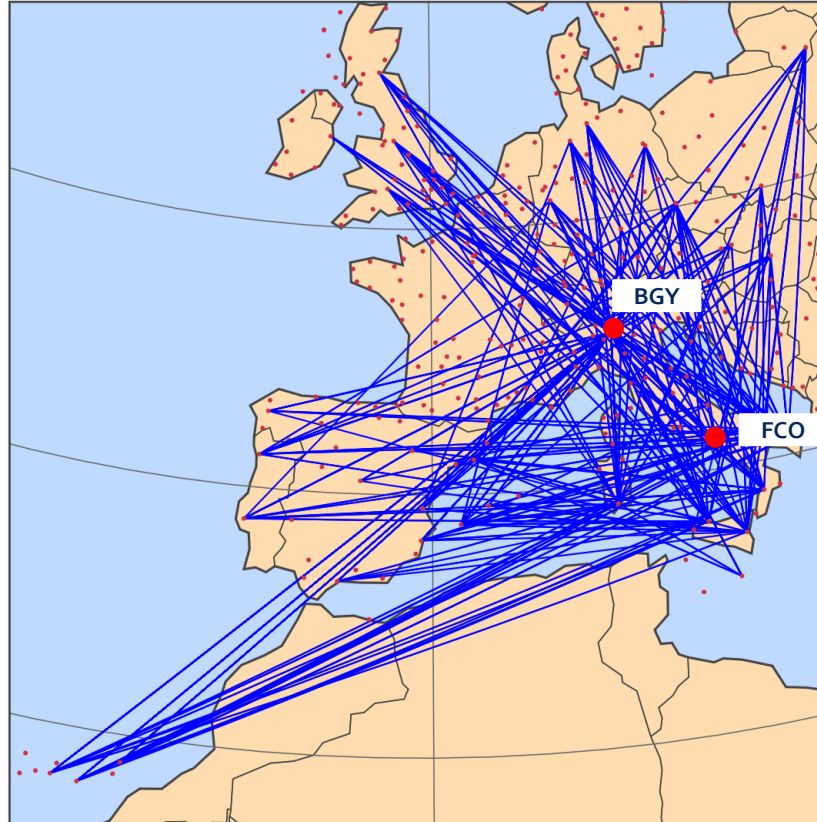
Data and sample

- Ryanair interlining hub: Milan-Bergamo airport
- Unit of analysis: European city-pairs
 - City pair: airports within a radius of **100 km** from the city centre (43 European cities)

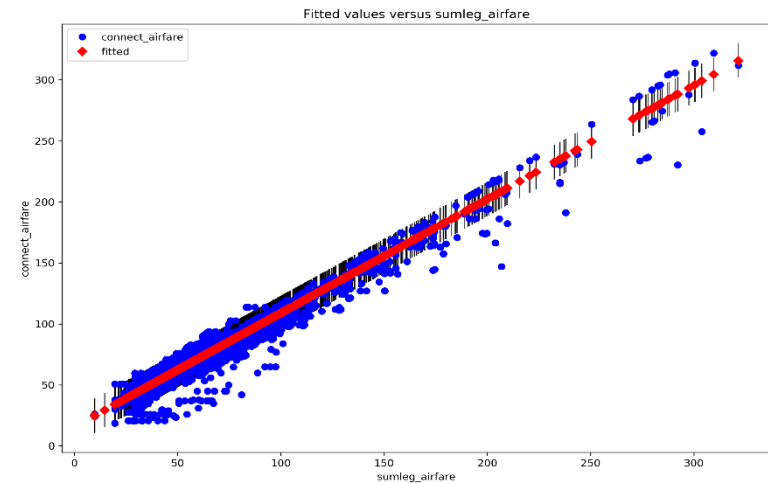
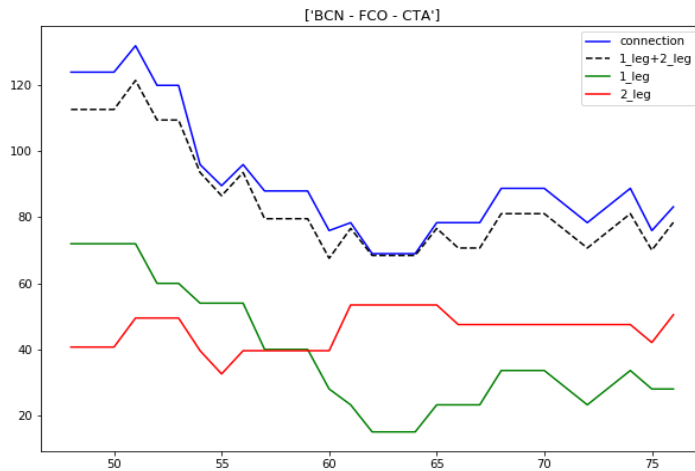
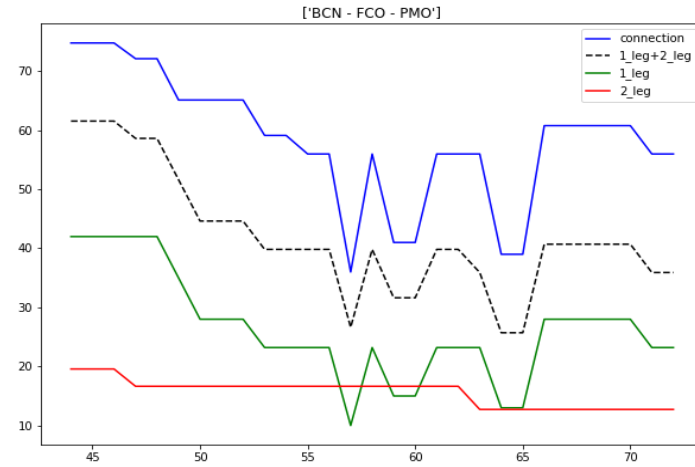


Interlining

- 320 interconnected destinations considering **Milan (BGY)** as the destination of the first leg



Interling pricing



LS Regression Results

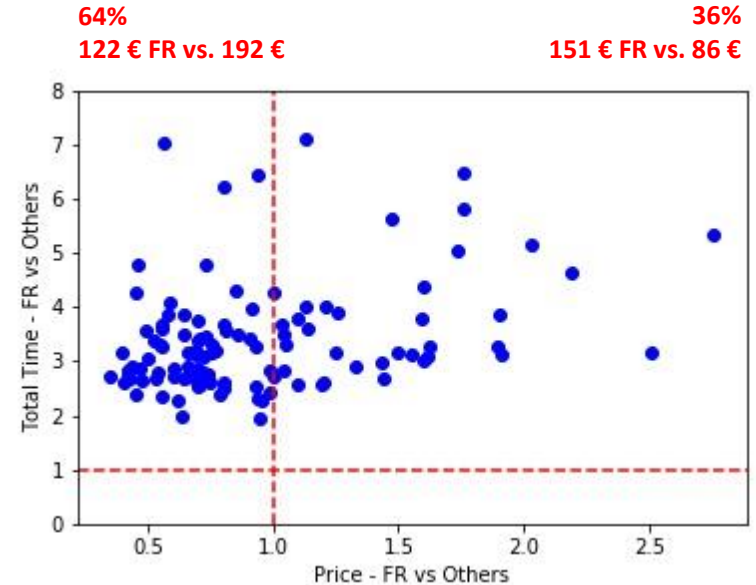
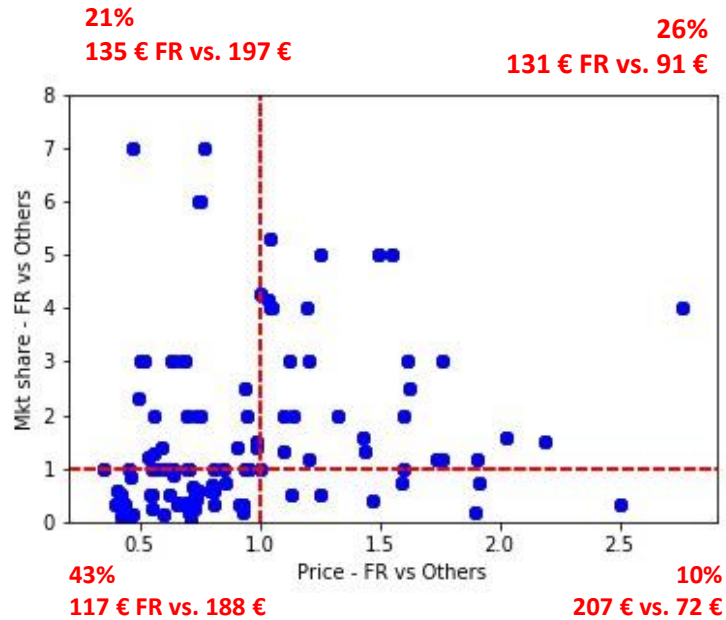
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Dep. Variable:    connect_airfare    R-squared:                0.933
Model:            OLS                Adj. R-squared:           0.933
Method:            Least Squares      F-statistic:              3.738e+05
Date:              Thu, 28 Jun 2018    Prob (F-statistic):       0.00
Time:              16:02:57           Log-Likelihood:           -91101.
No. Observations: 26897              AIC:                     1.822e+05
Df Residuals:      26895              BIC:                     1.822e+05
Df Model:           1
Covariance Type:   nonrobust
=====
```

	coef	std err	t	P> t	[0.025	0.975]
const	15.6840	0.087	180.264	0.000	15.513	15.855
sumleg_airfare	0.9333	0.002	611.421	0.000	0.930	0.936

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Descriptive statistics

- Weekly-statistics (from 16 July 2018) on the integrated trip A-C



Descriptive statistics

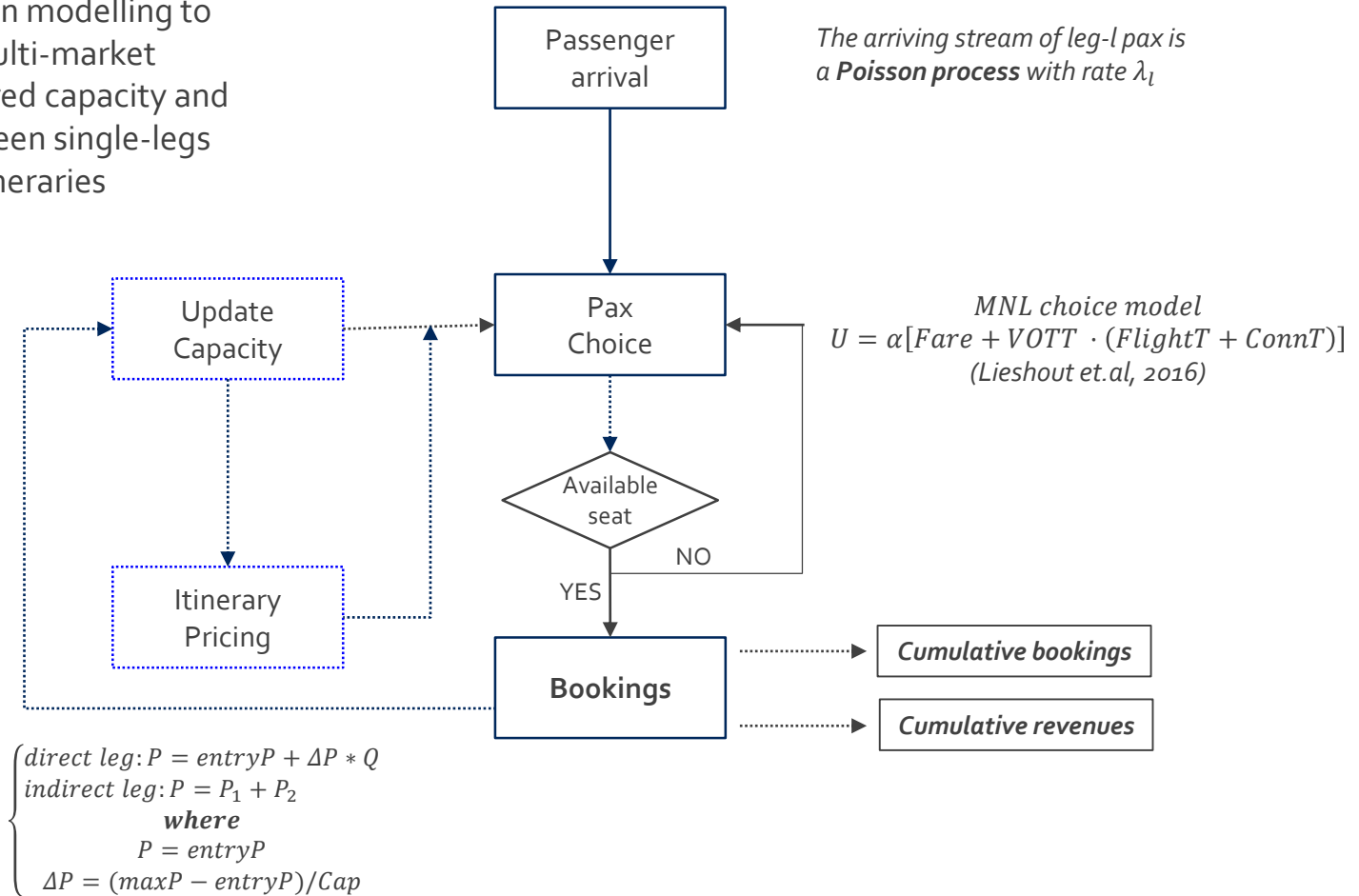
- Weekly-statistics (from 16 July 2018) on the integrated trip A-C

<i>Top 5 – Price(FR)/Price(Others)</i>		Direct competition						FR (via BGY)					
Origin city	Destination city	mean	min	25%	50%	75%	max	mean	min	25%	50%	75%	max
Ibiza	Palermo	54	54	54	54	54	54	161.67	107.67	134.92	162.16	171.6	271.3
Corfu	Palermo	61	61	61	61	61	61	168.24	156.04	156.8	162.38	173.82	192.18
Vilnius	Bari	51.67	32	45.5	59	61.5	64	129.52	129.52	129.52	129.52	129.52	129.52
Athens	Lamezia Terme	71.5	65	68.25	71.5	74.75	78	156.72	152.98	152.98	152.98	158.59	164.2
Athens	Bari	60.2	36	44	65	78	78	122.13	96.88	104.02	122.89	137.43	145.84

<i>Last 5 - Price(FR)/Price(Others)</i>		Direct competition						FR (via BGY)					
Origin	Destination	mean	min	25%	50%	75%	max	mean	min	25%	50%	75%	max
Madrid	Athens	332.56	210	236	289	381	551	141.08	128.5	135.64	142.78	147.37	151.96
Catania	Bratislava	182.08	117	162	162	210.25	264	76.53	61.81	67.13	78.3	87.7	87.7
Catania	Nottingham	209	40	206	218	264	317	85.25	76.09	81.16	86.24	89.84	93.43
Naples	Bristol	254.33	148	201.25	213.5	247.5	495	101.84	90.76	96.3	101.84	107.37	112.91
Catania	Bristol	259.5	95	177.25	259.5	341.75	424	91.36	78.08	84.72	91.36	98.01	104.65

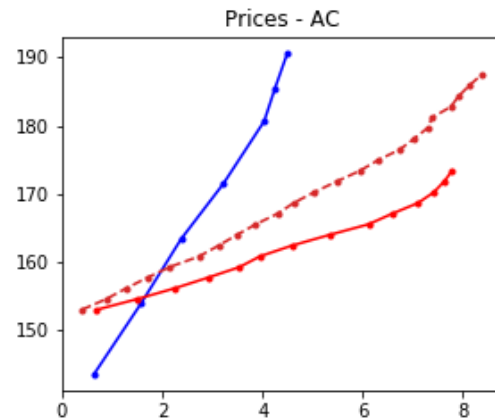
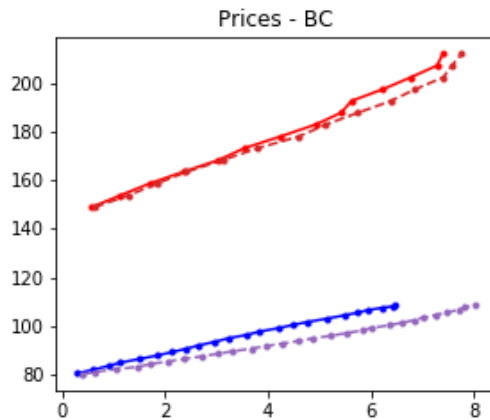
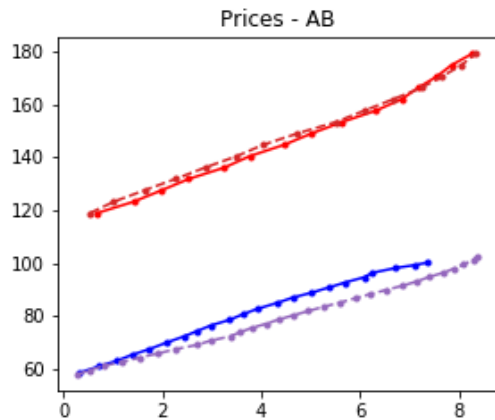
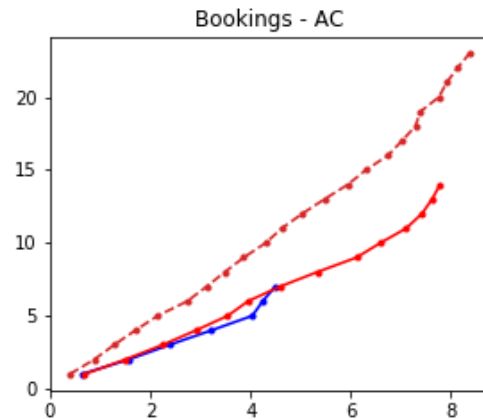
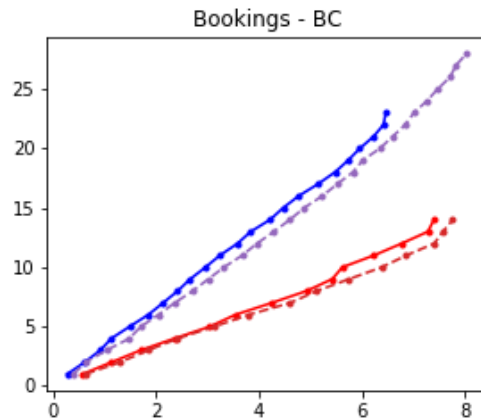
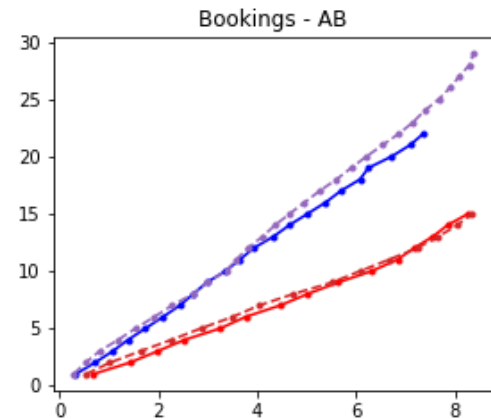
Simulation modelling

Discrete simulation modelling to investigate the multi-market scenario with shared capacity and interactions between single-legs and integrated itineraries



Simulation features

- Competition (interlining)
- ... Competition (no interlining)
- FR (interlining)
- ... FR (no interlining)



Conclusion & further developments

- LCCs' interlining is a recent and quickly evolving phenomenon
- The set of Ryanair's interconnections are not homogeneous in terms of time/price performance, relative to its competitors
- It is unlikely Ryanair's interlining strategy will be limited to charge
- A better understanding of the reasons why LCCs are implementing interlining strategies is required by deeply simulating the behavior of Ryanair and competition across different market scenarios
 - Testing a potential increase of Ryanair's frequencies on specific routes
 - An attempt to evaluate the possibility to hit competitors on specific markets
- Further developments to explore the impact of:
 - Increasing arrival rate using non-homogeneous Poisson process
 - Intertemporal pricing dynamics
 - The willingness to pay of different categories of passengers (business/leisure)
 - Different type of competition

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