2- Context Study

Rome and Milan

Rome:
- 2,663,666 population
- 2 airports
- 3 HSR stations

Milan:
- 1,274,211 population
- 3 airports
- 3 HSR stations

2 High-Speed Rail operators:
- Trenitalia
- Nuovo Trasporto Viaggiatori

500 km long.

Air Ro-Mi Passengers

Number of air passengers by route with HSR events occurred (2005-2012)

3- Econometric Results

The RP and SP Error Component and Random Parameters Logit Model

The direct and cross-point elasticities

4- Policy Analysis

1- Research Questions

Research Goals

Which attributes are important for the Ro-Mi passengers' mode choice?

Which are the market shares in the Ro-Mi corridor?

Which are the Ro-Mi travellers' reactions to selected hypothetical policy changes?

Is there substitutability between air and rail transport in the Ro-Mi corridor?

The Ro-Mi transport operators

An example of Choice Experiment

5- Conclusions

- There is inter and intra-modal competition in the Ro-Mi corridor, but...

- Total travel time and cost are the main important attributes, but interesting results were also obtained with reference to the on-board services and ticket flexibility.

- The estimated Ro-Mi market shares are: Trenitalia 40%, NTV 23%, Alitalia-CAI 36%, Ryanair 1%.

- The most effective policies for HSR transport operators are travel time reduction while for Alitalia-Cai is fare reduction.

- With important improvements in the daily frequency and travel time reduction by the HSR system, the average fare convergence and the cross-point elasticity measures indicate that air and rail transport should be considered as substitutes and belong to the same relevant market.

Thank you for your attention, any questions?
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2nd Florence International Forum
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March 3rd, 2014, Florence

**POLICY COMPETITION BETWEEN
AIR AND HSR TRANSPORT
IN THE ROME-MILAN CORRIDOR**

Eva Valeri, University of Trieste (Italy)

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POLICY COMPETITION BETWEEN
AIR AND HSR TRANSPORT
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Research Goals

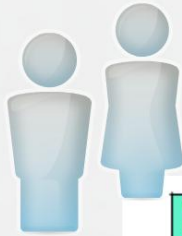Which **attributes** are important for the Ro-Mi passengers' mode choice?

Which are the **market shares** in the Ro-Mi corridor?

Which are the Ro-Mi travellers' reactions to selected hypothetical **policy' changes**?

Is there **substitutability** between air and rail transport in the Ro-Mi corridor?

The Ro-Mi transport operators

Methodology

Combining **Stated** and **Revealed** preference data.

Theory of the **Discrete Choice Data** (McFadden, 1978-1984; Train, 1986-2000; Ben-Akiva, Bierlaire, 1999; Hensher, Rose, Greene, 2005).

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500 km long

Air Ro-Mi Passengers

Number of air passengers by route with HSR events occurred (2009-2012)

Routes	2009	%	2010	%	2011	%	2012	%
LIN-FCO Alitalia-Cai, Easyjet	844.250	30%	749.966	30%	749.266	30%	679.036	33%
FCO-LIN Alitalia-Cai, Easyjet	876.701	31%	772.851	31%	772.918	31%	700.531	34%
MXP-FCO Alitalia-Cai, Lufthansa, Easyjet	333.957	12%	339.016	13%	334.306	13%	298.366	15%
FCO-MXP Alitalia-Cai, Lufthansa, Easyjet	337.439	12%	344.065	14%	340.530	13%	302.254	15%
MXP-CIA Ryanair	203.534	7%	159.553	6%	163.668	6%	30.000	1%
CIA-MXP Ryanair	202.797	7%	158.176	6%	163.046	6%	30.000	1%
	2.798.678		2.523.627		2.523.734		2.040.187	

Alitalia-AirOne merger, Meridiana exit

Lufthansa exit

Carnet Multi Fly

Easyjet entrance

EXIT

Source: Italian Civil Aviation Authority (2009, 2010, 2011, 2012)

Prezi

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Selected factors which determine the Ro-Mi transport competition

- **TOTAL TRAVEL TIME**: access time, station-to-station/ airport-to-airport, waiting time, egress time.

- **TOTAL TRAVEL COST**: access and egress cost, fare.

- **DELAY**: minutes of delay.

- **TICKET FLEXIBILITY**: possibility to modify the ticket reservation.

- **ON-BOARD SERVICES**: availability of on-board services

3- Econometric Results

Direct-point elasticities of the Ro-Mi demand respect an increase of 1% of the total travel time and cost attributes

Transport alternatives:	Overall		Time-sensitive		Non-Time sensitive	
	Total travel time	Total travel cost	Total travel time	Total travel cost	Total travel time	Total travel cost
HSR 1	-2.0424	-0.6980	-2.8890	-0.5053	-1.1138	-0.9514
HSR 2	-1.7654	-0.5313	-2.7311	-0.3896	-0.8715	-0.7182
FSC	-1.7569	-1.0608	-2.2166	-0.6664	-1.1468	-1.6168
LCC	-1.7414	-0.7627	-2.3426	-0.5160	-1.0365	-1.0926

Cross-point elasticities of the Ro-Mi demand respect an increase of 1% of the total travel time and cost attributes for **the HSR 1 alternative** (SP MNL model)

Transport alternatives:	Overall		Time-sensitive		Non-Time sensitive	
	Total travel time	Total travel cost	Total travel time	Total travel cost	Total travel time	Total travel cost
HSR 2	0.6634	0.2259	0.7910	0.1400	0.4348	0.3747
FSC	0.6900	0.2112	0.7579	0.1192	0.5493	0.4017
LCC	0.6620	0.2493	0.7847	0.1509	0.4692	0.4354

Note: The cross-point elasticities of demand are based on a change at HSR1 alternative

The direct and cross-point elasticities

Variables	EC/RP1 coeff.	EC/RP2 coeff.
Random parameters:		
Total Travel Cost	-0.0393***	-0.0395***
Total Travel Time	-0.0332***	-0.0334***
Service_MobilePhone	0.5912***	0.5845***
Service_MobilePhone+Internet	0.5735***	0.5720***
Non-random parameters:		
Delay	-0.0135***	-0.0139***
Flexibility_TicketChange€	-0.0159	-
Flexibility_TicketChange	0.0929*	-
Total Travel Time*Income	-0.0034***	-0.0034***
Total Travel Cost*Income	0.0057***	0.0056***
Total Travel Time*FreqHSR	-0.0029***	-0.0029***
Total Travel Time*FreqAIR	0.0089***	0.0089***
Flexibility_TicketChange€ (RP)	-	0.7166***
Flexibility_TicketChange (RP)	-	1.353***
Flexibility_TicketChange€ (SP)	-	-0.0667
Flexibility_TicketChange (SP)	-	0.0323
Heterogeneity in mean:		
Total Travel Cost*Age	0.00013*	0.00013*
Total Travel Time*Age	0.00012*	0.00012*
Alternative Specific Constants:		
ASC-Full Service Carrier	0.0807*	0.0995*
ASC-Low Cost Carrier	-0.1806***	-0.1706***
R^2 adj.	0.4357	0.4377

The RP and SP Error Component and Random Parameter Logit Model

Variables	EC/RP1	EC/RP2
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The direct and cross-point elasticities

4- Policy Analysis

Policy simulations

Six potential policies tested

N. of policies	Business strategy description	Trenitalia	NTV	Alitalia-CAI	Ryanair	Easyjet	Overall impact by sector HSR system	Air system
	Ro-Mi base-case scenario:	40%	23%	36%	1%	-	63%	37%
Policy 1	Market entry of Easyjet:	38%	22%	34%	1%	6%	60%	40%
	impact on the base:	-2%	-1%	-2%	0%	-	-3%	-2%
Policy 2	NTV travel time reduction:	37%	30%	33%	1%	-	66%	34%
	impact on the base:	-3%	7%	-3%	0%	-	3%	-3%
Policy 3	Trenitalia & NTV ticket price reduction:	42%	24%	33%	1%	-	67%	33%
	impact on the base:	2%	1%	-3%	0%	-	3%	-3%
Policy 4	Alitalia-CAI ticket price reduction:	33%	19%	47%	1%	-	53%	47%
	impact on the base :	-7%	-4%	11%	0%	-	-11%	11%
Policy 5	Trenitalia & NTV travel time reduction:	49%	32%	19%	0,5%	-	81%	19%
	impact on the base:	8%	9%	-17%	-0,4%	-	17%	-17%
Policy - mix	Combination of the previous business policies:	46%	30%	24%	0,4%	0,3%	76%	25%
	impact on the base :	5%	7%	-12%	-0.6%	-5,7%	12%	-18%

Competition Policy Implications

Point of view of the Ro-Mi transport operators
- Trenitalia
- NTV
- Alitalia-CAI airlines
- Ryanair airlines
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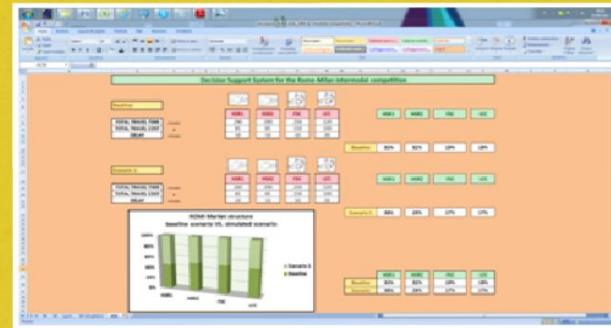- The Relevant Product Market

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- **There is** inter and intra-modal **competition** in the Ro-Mi corridor, **but...**

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Prezi