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# Competition in the domestic airline sector in Mexico\*

Agustin J. Ros  
Senior Economist, OECD

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\* This work is output from the CFC-OECD Competition Assessment Project. Opinions expressed do not necessarily reflect official views of the OECD nor of the governments of its member countries nor the Mexican Competition Commission.

# Outline of presentation

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- i. Summary of main results
- ii. Review of competition concerns
- iii. Structure of the market, 1989-2008
- iv. Summary of 2009 econometric study
- v. Policy recommendations & estimate of benefits

# Summary of main results

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1. Strong passenger growth, 1989-2008.

Compound growth rate of 5.40%, economy grew at 3.00%

2. Declining concentration, 1989-2008.

1989 HHI of 4396, 2008 HHI of 1766

3. Emergence of low cost carrier as strong competition.

LCCs captured 1/3 of market within several years

# Summary of econometric analysis

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4. Average fares are 30% lower on routes with low cost carriers, robust result.
5. Average fares are between 40% and 80% higher at Mexico City Airport (saturated) airport, robust result.
6. Average fares are between 11% and 23% lower when incumbents compete, statistical significance varies.

# Competition concerns

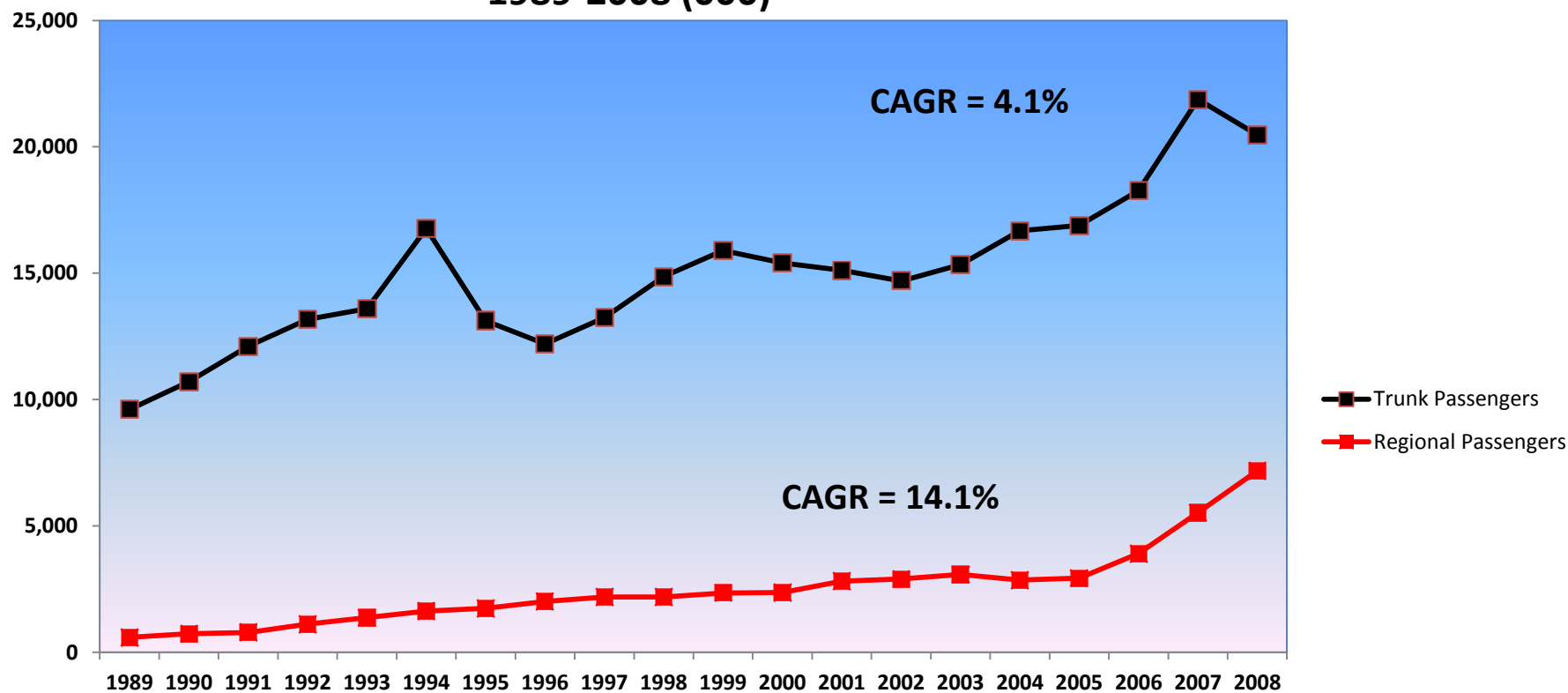
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COFECO has examined competition conditions in airlines on several occasions, barriers identified:

1. No cabotage service and 25% foreign ownership restriction.
2. Barriers to airport facilities, esp. in saturated airport.
3. SCT discretion in awarding concessions and additional routes.
4. Structural barriers (sunk costs, attracting customers to new airline, etc).

# Competition assessment

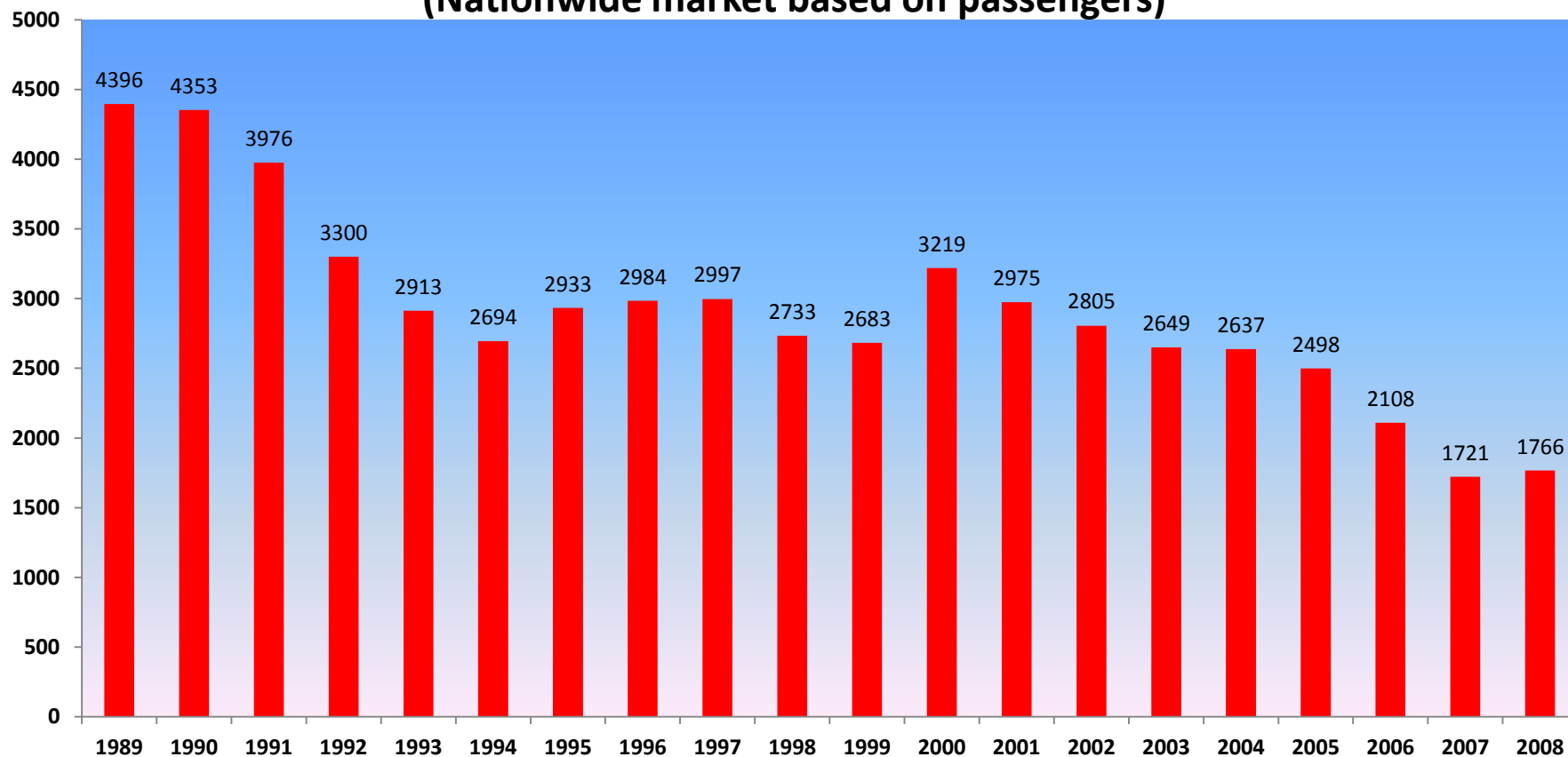
Number of Domestic Airline Passengers  
1989-2008 (000)



Soure: SCT, *La Aviación Mexicana en Cifras, 1989-2008*

# Competition assessment

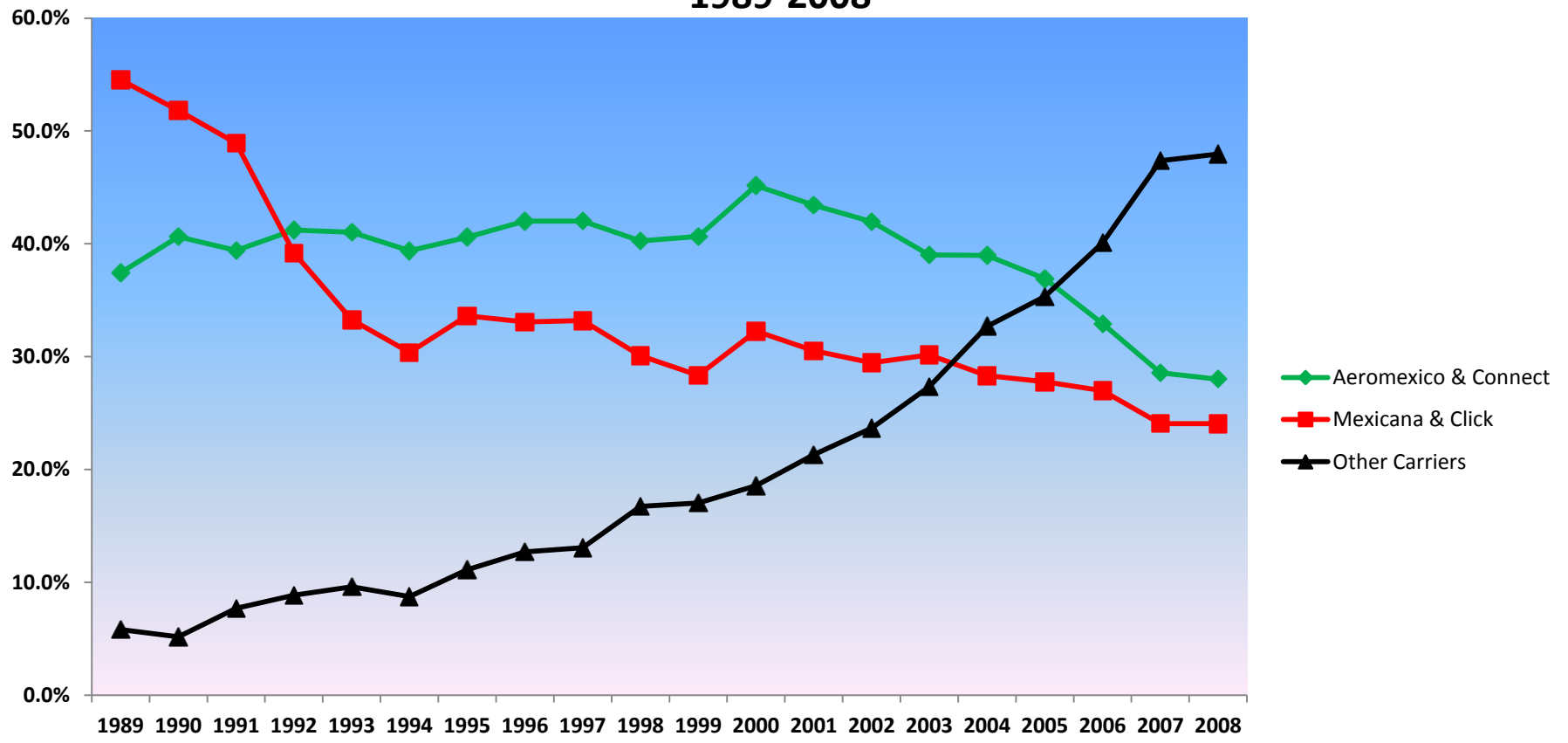
## HHI for Domestic Airline Service (Nationwide market based on passengers)



Soure: SCT, *La Aviación Mexicana en Cifras, 1989-2008*

# Competition assessment

Domestic share of Aeromexico, Mexicana & other Carriers  
1989-2008

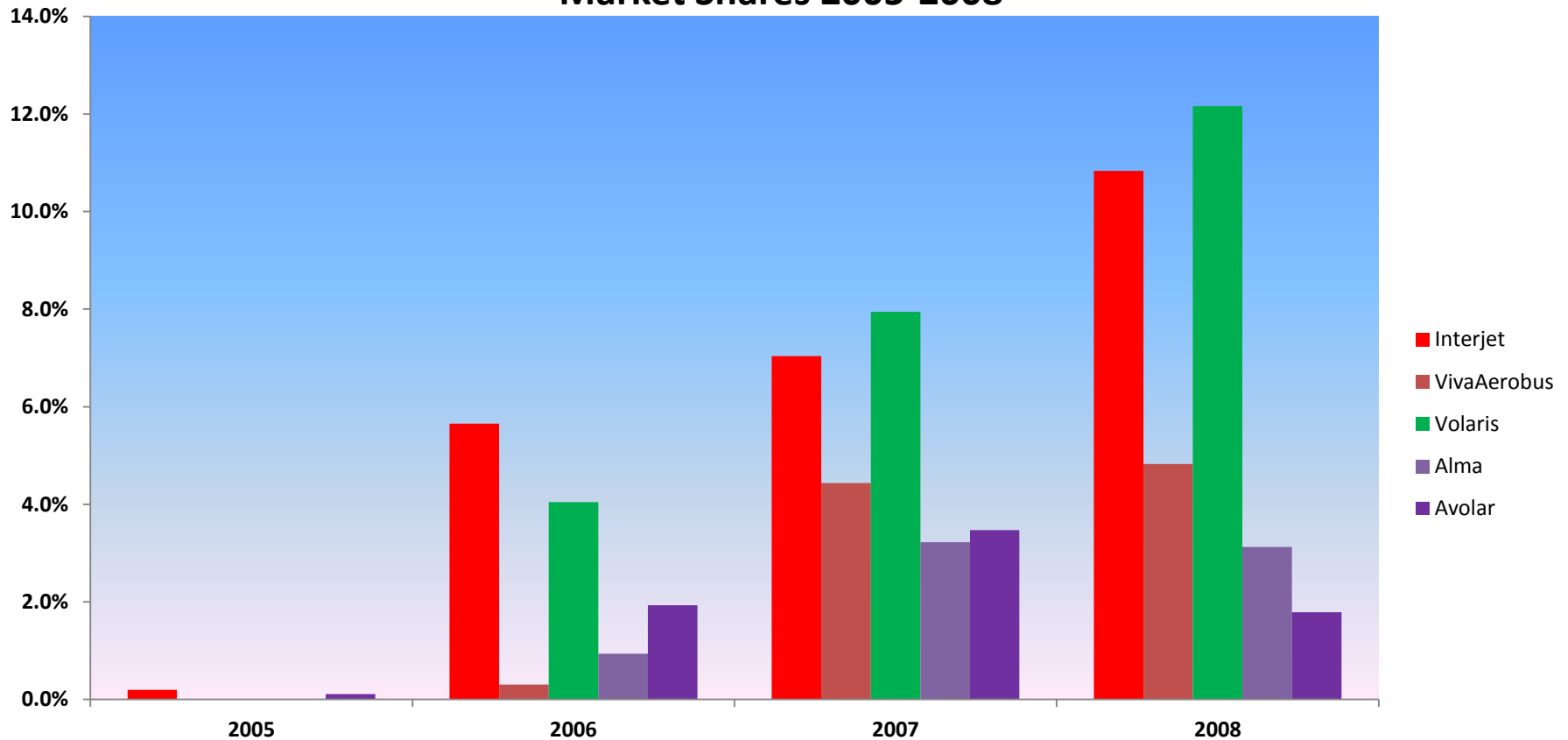


Soure: SCT, *La Aviación Mexicana en Cifras, 1989-2008*



# Competition assessment

**Growth of Low Cost Airlines  
Market Shares 2005-2008**



Soure: SCT, *La Aviación Mexicana en Cifras, 1989-2008*

Note: Avolar & Alma ceased operations in 2008

# Summary

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1. Strong output growth
2. Decreasing concentration
3. Strong performance by entrants

# Data analysis, purpose

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Investigate relationship between airline fares and:

1. Competition variables (# of airlines, # of low cost carriers, competition between incumbents).
2. Policy variables (airport “saturation,” airport fees, codesharing agreements).
3. Economic variables (economies of density, distance, demand, etc).

Use results to estimate impact of competition policy reforms.

# Data analysis

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Collected data on approximately 500 domestic routes, between April-August 2009.

SCT database on: routes (origin-destination cities), 2008 demand and airlines in operation in 2008.

8 airlines: (5 traditional: Aeromexico, Mexicana, Aeromar, Aviacsa, Magnicharter: 3 LCC: Interjet, Vivaaerobus, Volaris). Obtained from SCT.

Lowest-quoted fares collected from airlines' respective websites.

# Average fares by carriers

Airline	Obs	Average distance/route	Mean	Std. Dev.	Min	Max
<b>“Traditional” Carriers</b>						
Aeromexico	354	964	2.88	1.90	0.75	15.41
Mexicana	347	866	2.98	1.37	0.95	15.24
Aeromar	97	677	5.15	3.09	1.25	14.36
Aviacsar	10	869	2.90	1.37	0.95	5.20
Magnicharter	13	803	2.45	0.97	1.46	4.40
<b>Average</b>	<b>465</b>		<b>3.05</b>			
<b>“Low Cost”Carriers</b>						
Interjet	145	977	2.01	0.91	0.90	4.70
Vivaaerobus	46	934	1.32	0.45	0.71	2.72
Volaris	82	1496	1.39	0.44	0.70	2.99
<b>Average</b>	<b>207</b>		<b>1.78*</b>			

# Low cost carrier impact

<b>“Low Cost” Carrier</b>	<b>Obs</b>	<b>Mean</b>	<b>Std. Dev.</b>	<b>Min</b>	<b>Max</b>
0 LCC	290	3.44	2.46	0.64	14.29
1 LCC	157	2.17*	1.08	0.81	5.36
2 LCC	34	1.79*	0.49	0.91	2.98
3 LCC	16	1.61*	0.48	0.95	2.60
At least 1 LCC	207	2.06*	0.99	0.81	5.36

# Incumbent competition & Mexico City impact

	<b>Obs</b>	<b>Mean</b>	<b>Std. Dev.</b>	<b>Min</b>	<b>Max</b>
Incumbent competition present	237	2.81	1.88	0.82	12.46
Incumbent competition not present	260	2.92	2.27	0.64	14.29
Airport not saturated	397	2.61	1.72	0.64	12.27
Airport saturated (Mexico City)	100	3.89*	2.96	1.16	14.29

# Summary, differences in means

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1. Average prices 40% lower on routes with at least one LCC.
2. Average prices 33% lower on routes not involving the Mexico City airport.
3. Average prices 4% lower when incumbents compete.
4. Need econometric model to examine how robust are the results and control for factors affecting fares.



# Econometric models

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$$(1) \quad Y_i = X\beta + \varepsilon_i$$

$Y$  is average airline **price/km** per route.

$X$  is  $N \times k$  matrix of sample values of the independent variables and  $\beta$  are the  $k$  parameters to be estimated.

Main policy variables are: LCC, airportsat (Mexico City) and incumbentcomp, all dichotomous variables.

# Econometric models

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Additional X variables included: distance, prior year's demand, leisure/non-leisure, income of origin & destination city.

Airportcost is added as a control: cost by airport of takeoff/landing fees, platform, security costs, etc.

Thus the airportsat (Mexico City) variable measures the impact of high entry barriers and lack of potential competition.

# Econometric models

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$$(1) \quad Y_i = X\beta + \varepsilon_i$$

Assumption that  $E[\varepsilon_i | \mathbf{X}] = 0$ , thus use ordinary least square to estimate parameters in (1).

Assumption is relaxed to account for the fact that LCC, number of comp. & demand may be endogenous.

That is, under assumption that  $E[\varepsilon_i | \mathbf{X}] \neq 0$ , we use instrumental variables (IV) to estimate parameters in (1) and compare with the OLS estimates.

# Econometric models

## Percentage impact, OLS estimates

	Model 1	Model 2	Model 3	Model 4
Airportsat (Mexico City)	.463 <sup>***</sup>	.461 <sup>***</sup>	.359 <sup>***</sup>	.390 <sup>***</sup>
Lcc	-.296 <sup>*</sup>	-.291 <sup>***</sup>	-.239 <sup>***</sup>	-.255 <sup>***</sup>
Incumbentcomp	-.310 <sup>*</sup>	-.210 <sup>***</sup>	-.212 <sup>**</sup>	-.159 <sup>**</sup>
Cdshmexmar	.401 <sup>***</sup>	.319 <sup>***</sup>	.491 <sup>***</sup>	.376 <sup>***</sup>

\* p<.05, \*\* p<.01, \*\*\* p<.001

# Econometric models

## Percentage impact, IV estimates

	<b>Model 5 IV</b>	<b>Model 6 IV</b>
Airportsat (Mexico City)	.795 <sup>***</sup>	.706 <sup>***</sup>
Lcc	-.309 <sup>*</sup>	-.349 <sup>**</sup>
Incumbentcomp	-.113	-.229 <sup>*</sup>
Cdshmexmar	.365 <sup>**</sup>	.306 <sup>**</sup>

\* p<.05, \*\* p<.01, \*\*\* p<.001

# Policy implications (airlines)

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Importance of addressing the conditions at the Mexico City airport. Alleviate saturation conditions so that barriers to entering and expanding are lowered.

Increases threat of entry and potential competition.

Consumer benefits can be high: 39 billion pesos/year

Average prices \$3,043 pesos, model  $\approx$  60% price reductions;  
15.7 million passengers through Mexico City, 2008;  
Linear demand curve  $Q(p) = a - bP$  and price elasticity of -1.2

# Policy implications (airports)

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Remove regulatory obstacles to new carriers entering the market and carriers expanding on routes.

Guarantee that any safe airline can enter and expand.

Consumer benefits can be: 3.9 billion pesos/year

Average prices \$3,151 pesos, model  $\approx$  30% price reductions;  
7 million passengers on routes with 0 LCC, assume this lowered  
to 3.5 million;

Linear demand curve  $Q(p) = a - bP$  and price elasticity of -1.2

# Conclusions

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1. Airline competition in Mexico is a success story. More passengers traveling, more options and lower prices.
2. Less concentrated market and declining trend, success of LCCs indicate barriers on certain routes are low.
3. Policymakers can improve situation by addressing bottleneck at Mexico City airport and making entry and expansion approval more transparent and timely.