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ACCESS TO INFORMATION, INSTITUTIONAL CAPACITY AND INEFFICIENCY IN THE MEXICAN AIR TRANSPORT SECTOR

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What is not followed, is not achieved
(Traditional Japanese phrase)

1. Introduction

Once again, operational and financial problems of one of its flag carriers[3], have revealed the fragility of the air transport industry in Mexico.[4] The fact that such an airline is on the brink of bankruptcy is not an uncommon event, either in Mexico or the world, but in the case of Mexicana and its subsidiaries it has gained considerable attention from the public and the media in Mexico, due to its significant participation in the Mexican aviation market, the number of direct and indirect jobs it generated, the disarray it has caused in its future restructuring process, and the tarnished image Mexico´s business community has shown to the world.

The costs we have observed since Mexicana ceased operations, and the additional risks of Aeromexico´s (Mexico´s other flag carries) unknown financial situation, show the increased fragility of Mexico´s airline industry. Mexicana and Aeromexico had a 43% share in the Mexican aviation market in 2009. Besides the fragility, it is important to analyze the public policy objectives regarding air transportation in Mexico, such as safety and efficiency that are vital to the future evolution of the industry.

The objective of this paper is to explore what are the structural causes that generate the fragility of the industry and the lack of institutional capacity to reach safety and

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[3] In this document flagship airlines are understood to offer complete services as well as their subsidiaries Aeromexico, Aeromexico Connect, Mexicana and Click
[4] In this paper, fragility means that one of the following events can occur if an airline leaves the market, and its competitors are unable to cover their services quickly enough: a) in routes where there are no competitors and services are suspended b) in routes where capacity supplied is lower than demand, some passengers are left without service c) in routes where reduced conditions of competition, some airlines increase their prices harming consumer welfare. All these effects represent a high cost to consumer welfare, and a significant cost to the country at whole, because reduces its connectivity to the rest of the world.

efficiency goals. The answers to these questions are significant because they are the basic inputs to help design, implement and monitor public policies that foster safety and efficiency and promote growth in Mexico´s airline industry.

To show the importance of the air transportation industry in the economy, the International Airline Transportation Association (IATA) estimated that in 2006, for each dollar that a passenger spent on its airline ticket, the Mexican economy received 2.5 dollars. In a direct and indirect way, the industry represented 3 to 4% of GDP in 2006.

Since a strong limitation of this paper, is the lack of actual, systematized public information about the industry, some of the issues treated here will be of an exploratory nature. Even more important to underline is that, the absence of public information distorts the decision making process of all private agents in the industry and increases the level of errors in the formulation of public policies.

In this context of limited information, this paper will try to argue that the supposedly erroneous management decisions and the presumably high labor costs of both legacy carriers, have contributed to its apparent inefficiency and low profitability. In this line of thought, inefficiency, low profitability, in conjunction with a lack of adequate airport infrastructure and regulation in Mexico City, market and government failures and internal regulatory restrictions, generate certain fragility in all the airline industry in Mexico.

If these issues are properly identified, it is possible to design public policies that generate the necessary incentives to increase safety and efficiency, and reduce fragility in the sector, and at the same time, minimize market and government failures. One of the first things required, is that the regulatory agency develops access to a wide range information system for the industry that would improve the decision making process of all the agents involved, and reduce the risk of public policy design.

It is very important that government institutions involved in the air transportation sector: the Transportation and Communications Ministry (TCM) through the Civil Aviation General Office (CAGO), the Federal Competition Commission (FCC), the Consumer Protection Agency (CPA), clarify their role in Mexico´s airline industry evolution. As an example, with managerial and union decisions, public institutions have to set the norms or rules for decision making ex-ante, but they also have to monitor and safeguard (ex-post) aviation safety and security, competition conditions and consumer welfare.

Basically, decisions linked to the business model, service network, route entry, tariff fixing, strategic alliances or labor contract negotiations are decisions proper to the

industry[5], government cannot make different participants assume a particular orientation, or direction. Despite this, government authority can ease agreements between agents, has to set the rules for route access and slots, and must monitor and punish any opportunistic behavior, or omission, that harms air transportation safety, the competition process or/ and consumer welfare.

For the ex ante and ex post regulatory design to be effective it is indispensable the independence of the regulatory institution so it can strengthen and develop institutional capacities (financial, human and technical) to: design adequate rules, generate up to date information, monitor the compliance of regulations and punish behavior that inhibits growth or the competition process. This means that CAGO evolves into an autonomous body independent of the TCM and the federal government agenda.

Mexico City, as the political and economic capital of the country suffers from a severe lack of adequate airport infrastructure. Even though the increase in capacity in the Toluca International Airport (TIA) has been an important alternative for passengers, this airport and the Mexico City International Airport (MCIA) are not perfect substitutes. Presently, the lack of infrastructure in the Mexico City area poses a limit to growth, connectivity and competition in the sector, which is why the government must foster the creation of a new airport, with greater capacity and efficiency.

This paper is organized in the following way: Section II describes the recent performance of the airline industry in Mexico. In section III, private and public market failures are analyzed and finally, in the last section conclusions and recommendations are offered. [6]

2. Evolution of the airline industry in Mexico

In this section we describe some indicators that help understand the air transportation structure in Mexico and how it has evolved in recent years. In the second section, we analyze market failures and the lack of institutional capacity of the regulator agency that increase industry inefficiencies and prevent the country from reaching high international safety standards.

[5] Government´s role in air transportation private agents decision making is subject to strong debate. There are two separate, distinct positions a) the anglo-saxon approach that sustains that market forces will lead to economic efficiency and that government`s role is to intervene only to correct market failures and b) the Continental Europe position that conceives transportation as more complex process than requires intervention, not only to achieve efficiency, but also improve income distribution and trade growth. For more details see Button (2005).

[6] Notes, highlighted in grey, are optional reading sections that contain complementary information.

The benefits generated by the air transportation industry are not only its market value, nor its direct and indirect effects through salaries and suppliers. Air transportation induces the exchange of goods and people that generate value in any economy. From this standpoint, air transportation has and will be fundamental for the integration of the Mexican economy to global markets, so it is important to question how important is the airline sector for Mexico.

According to IATA, the market value of the air transportation sector in Mexico in 2006 was 9.63 US billion dollars. The sector contributed with: 1) 6.5 US billion dollars to Gross Domestic Product (GDP), in a direct and indirect way through suppliers and other industries 2) through tourism with 18.6 US billion dollars. The total impact of the air transportation sector in the rest of the economy reached 25.1 billion US dollars or 3% of GDP and generated 134,000 jobs. For each dollar a traveler pays, 2.5 dollars were generated in the Mexican economy.

Evolution of the Mexican airline industry

Passengers carried

Table 1 shows the size of the air transportation market in Mexico measured by passengers transported, which reached 49 million passengers en 2009. The table includes all airlines (Mexican legacy airlines, Mexican low cost airlines (M-LCC´s), Mexican regional carriers and foreign airlines), and all markets (national, international, regular, and charter). Between 2000 and 2009, the total number of passengers carried increased 24%.

Table 1. Market Size of the Air Transportation Industry in Mexico
Thousands of Passengers

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Legacy, domestic regular	13,752	13,256	12,566	12,734	13,145	12,825	13,279	14,426	14,392	14,118
Legacy, domestic charter	177	205	47	167	233	214	104	261	109	31
M-LCC´s, domestic regular	4,010	4,667	5,025	5,677	6,386	7,004	8,886	12,975	13,257	10,313
M-LCC´s, domestic charter	590	136	91	114	82	268	363	448	482	135
Legacy, international regular	6,061	5,688	5,264	5,089	5,601	6,355	6,559	6,803	7,245	6,572
Legacy, international charter	197	172	131	146	193	337	347	201	339	115
M-LCC´s, international regular	352	385	503	671	758	813	256	145	162	245
M-LCC´s, international charter	620	539	425	248	6	14	13	13	68	121
Foreign, international regular	9,799	9,677	9,832	11,116	13,532	15,179	16,426	17,872	18,244	15,723
Foreign, international charter	3,853	3,557	3,373	3,314	3,587	3,101	2,492	2,218	1,878	1,462
Total	39,412	38,283	37,256	39,276	43,523	46,110	48,725	55,362	56,176	48,835

Source: authors calculations based on data from the Civil Aviation General Office.

The domestic market, exclusively operated by Mexican carriers, contributed with 15% of the total, while the international market with the other 9%. . In the national market, legacy carriers and M-LCC´s or regional´s, contributed with 0.6% and 14.8%, respectively. In the international market, we see the following shares: Mexican flag carriers 1.1%, M-LCC´s or regional´s -1.5% and foreign, 9%.. In Mexico´s main international market, the United States, Mexican airlines reduced their flow, while US airlines increased their participation.

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From table 1, we can also calculate that for the year 2000, market share for Legacy airlines (Aeromexico and Mexicana), the M-LCC´s or regionals and the foreign airlines, was 51, 14%, and 35%, respectively. For 2009, these numbers changed to 43, 22 and 35%.

Table 1, shows that even though flagship airlines increased, marginally, their total volume of passengers carried, they lost market share. M-LCC´s or regional airlines grew significantly in volume and in market share in the domestic market, but they both reduced their participation in the international market. Finally, foreign airlines increased their volume and market share in the regular international market, but decreased both in charter service.

The main factors that, most probably, stimulated the growth of the Mexican market in the last decade, are the moderate but steady growth of the Mexican economy, the marginal growth in international trade, foreign direct investment (FDI) and tourism.

According to data from the International Monetary fund (IMF), by the end of 2010, the Mexican economy should have grown 18% real terms in the last decade, a 2.1% yearly average. These figures are lower than the growth rates for emerging markets such as China and India, who have grown 6 and 8% annually, respectively. Mexico´s GDP per capita is expected to grow only 6% in the whole period. In terms of trade, between 2000 and 2008, Mexican exports and imports, grew 2 and 3%, respectively. Both figures are lower than the projected world growth, of both variables, of 5% (World Trade Organization),

Regarding FDI, the CIA World Factbook (September 2010), classifies Mexico as the number 14th receptor in the world in the last years, with 307 billion dollars and places it in the 29th position in the list of issuers with 53 billion dollars. The Ministry of Tourism reported that Mexico received 13.3 million international visitors in 2009; 11 million came by air transportation, a 37% increase from 2000. International air transportation passengers by contrast, increased 14.3%, worldwide.[7]

[7] Source ICAO (2009).

Note 2. Growth Factors and Trends in the World Air Transportation Industry.

According to Gillen (2009), the factors that have contributed to the growth of the world air transportation industry in the world have been increases in Gross Domestic Growth (GDP), international trade, foreign direct investment (FDI), liberalization in international regulation, changes in airline´s business models, the increase in alliances, and the growth of airline fleets for long-haul flights. Such as the accelerated economic growth in Asia and the entry of the so called low cost airlines (LCC´s) in Europe, whose business model is based in maximum reduction of costs, lower prices and less comfort for passengers.[8] Other factors that have not contributed to the growth of the industry are the 2007 international financial crisis, the hike in jet fuel prices, the recurrent terrorist´s attacks, the 2009 health crisis, such as the one generated by the H1N1 virus, or protectionist measures towards international trade.

Other international airline industry characteristics and trends are: market concentration through strategic alliances, airline mergers or bankruptcies, the increasing participation of LCC´s in short distance routes; the prevalence of legacy carriers in long distance routes, the systematic decrease of yields; increasing freedoms of airlines to choose routes and tariffs (liberalization), and a strong concern for the environmental impact of the industry.

Labor Costs

At the end of the eighties and beginning of the nineties, when a deregulation and privatization process began in the Mexican domestic airline industry, authorities considered that the entrance of new airlines to the private sector would revitalize the industry, allowing a fresh entry of private capital and "new management practices". The argument in favor of this deregulation, was that as each airline aimed for efficiency and profitability, a vigorous competitive process would be generated, lowering prices for the consumer.[9]

After 20 years of deregulation, we find that the results have not complied with the positive predictions for the airline industry. This is due, at least partially, from the fact that deregulation was not accompanied by changes in labor legislation and schemes that would reflect the new competitive conditions. It is highly likely that flag carriers,

[8] According to Morrison (2010) the LCC´s models are evolving and are recognizing that increasing passenger comfort and increasing costs is advisable for higher profitability. Some LCC´s are choosing a more traditional airline model. Seminar: The Importance of the Access to Airline Transportation Services: Liberalization in the Aviation Industry. Mexico City. April 2010. Available in :www.anahuac.mx/mba/seminarioaviacion.php

[9] For more information see Avalos and Valdes (2006).

be them private or public, faced increasing labor costs, higher than those of international competitors. For example in 2004, salaries and compensations for all employee of CINTRA (controlling company of Mexicana, Aeromexico and its subsidiaries at the time) represented 29% of its total revenue, much higher than the 13% for Copa Holdings of Panama or 14% of Lan Airlines of Chile (LAN).[10]

¿How much do administrators, pilots, flight and land personnel impact these labor costs? We can´t individually calculate each cost with the information available. It is also impossible to calculate these indicators for 2010, since Mexican flagship airlines no longer quote their stock in Mexican Stock Exchange. What we do know is that airlines and employees have engaged in negotiations in the last couple of years, to reduce labor costs. It is still an open question if these efforts have been sufficient to make their operations more competitive at the national and international level,

Tariffs and profitability

Ros (2010) and Valdés and Ramírez (2011) found that air transportation prices in the domestic market have decreased in the last decade. According to their results, the main factor that has contributed to this reduction has been the significant increase in competition, due to the expansion of regional airlines and market entry of LCC´s. Nevertheless, factors such as a high concentration levels in routes or saturation of the MCIA, have had a perverse, negative effect, since both have reduced significantly market disputability.

There is few available systemized and non-aggregated data about Mexican airline industry profitability. Table 2 shows financial information about flagship airlines for the 1973-2009 period.

Table 2. Average Annual Operative Margin

Period	Aeroméxico	Mexicana	Other Airlines
1973-1988	-3%	8%	¿?
1989-2005	1%	0%	¿?
1989-1994	-1%	-6%	¿?
1995-2000	6%	7%	¿?
2001-2005	-4%	-2%	¿?
2006-2009	¿?	¿?	¿?

Source: ICAO.

[10] Information from airlines annual reports.

Table 2 shows two distinct periods of negative profitability: 1989-1994 and 2001-2005. The first period probably caused by the increase in competition that came about with the entrance of two LCC´s, Taesa and Saro, to the market, and the second due to the fall in Mexican economic activity after the US 2001 recession, the 2001 World Trade Center attacks, and more competition from Aviacsa and Aerocalifornia.[11] The 1995-2000 period, was favorable in terms of profitability, when flag carriers had profitability ratios above international standards, since they faced limited competition conditions in the international and domestic market.

Although, it is not possible to define profitability for the 2006 – 2009 period, because Mexican flagship airlines ceased participation in the Mexican Stock Exchange, we can infer from recent Mexicana´s events, that most likely flag carriers experienced marginal profitability in their best scenario. To face increasing domestic competition, Mexican flag carriers looked for major presence in long distance international routes, where LCC´s were not expected to compete. Both airlines competed with themselves, in routes where each had a presence, a strategic decision that is not very comprehensible in terms of profitability. As a result, both ended in increasing domestic and international competitive markets, which given the world economic and H1N1 health crisis in 2009, eroded both their financial stability. Some media sources, suggest that for 2010, profitability had considerable decreased in most Mexican airlines, to levels below their international competitors.[12]

Note 3. World-wide air transportation industry profitability

According to Button (2010), annual average operating margins in the air transportation industry in the United States, have fluctuated between 4 to 6% in the last twenty years. Simultaneously, the US airline industry has gone through profit and loss cycles that have lasted between three to five years.[13] As such, the airline business is not very favorable in terms of profitability compared with other industries, but it is a fundamental business for economic growth, since it fosters the flow of people and goods in the world.

[11] Although, Aerocalifornia and Aviacsa did not market themselves as LCC´s, their combination of lower comfort facilities for passengers and lower prices allowed them to capture a significant share of the Mexican domestic market.

[12] According to *Airline Weekly* of August 9, 2010, it is interesting to see that only one Mexican airline registered profits for 2010, while practically all airlines in the rest of the world had registered positive profits.

[13] Button, K. (2010). *Implications of Open Skies*. Presentation during the seminar: The importance of Access to air transportation services: Liberalization in aviation markets." Mexico City, April 2010. Available in www.anahuac.mx/mba/seminarioaviacion.php

Flag carriers are not the only ones who suffer from bad profitability results: regional airlines and LCC´s have also experimented low profitability periods, forcing many of them out of the market. Valdés and Ramírez (2011) show that after the industry deregulation period of 1989, six LCC´s and ten regional industries came into the market, as seven LCC´s and sixteen regional airlines exited the market.

Safety

There is very little information about the level of safety in which Mexican airlines operate. In 2009, the TCM through the CAGO, removed the service concession to Aviacsa, for presumed irregularities in its fleet maintenance operations. Most recently the Federal Aviation Administration (FAA) of the United States degraded Mexico for not complying with safety IASA (International Aviation Security Assessment) standard. [14] The IASA standard is a regulatory instrument, but it has strong economic implications. Degrading Mexican aviation safety from category 1 to category 2, means that no Mexican airline can establish a new service (routes or frequency) towards the United States, this literally translates to banning Mexican airline growth in the US market.

Infrastructure

Mexico has 59 international and 26 national airports; the MCIA is by far the most important, since it moves the majority of international and national air traffic. Air traffic growth in Mexico City has created a saturation problem since 2005. Saturation is defined as if airline demand is greater than the 54 slots available per hour; or if MCIA has exceeded the maximum number of passengers it can serve per hour, 25 times in the last year.

Ros (2010) showed that prices of domestic routes that operate in the MCIA are between 40 to 80% higher than those routes that do not use this facility, and this price spread is highly correlated with airport congestion.

Ros (2010) suggests that reducing saturation conditions and bringing higher transparency to slot allocation, would reduce barriers of entry and could improve consumer welfare. Ros (2010) recommendations could be partially met with the future increase in the number of slots to 62 thanks to Terminal 2 addition to the MCIA infrastructure, but further actions must be taken to solve the congestion problem.

The Toluca International Airport (TIA) expansion has been a partial solution and an escape valve for growth and better tariffs for consumers. TIA has increased its land

[14] The IASA Standard is based on the International Civil Aviation Organization (ICAO) standards, which evaluates air safety standards in various countries.

infrastructure in the last couple of years, and has installed a navigation safety system to increase safety during take-offs and landings. TIA has increased its number of passengers from 138 thousand in 2005 to more than a million and a half in 2009. According to Valdes and Ramirez (2011), TIA has had the following impact in the Mexican air transportation industry:

"The almost exclusive use by Interjet and Volaris (Mexican LCA airlines) of the Toluca International Airport, shows that the combination of a greater share of slots with lower tariffs, is a very powerful strategy of the new market competitors, to reduce Aeroméxico and Mexicana´s market share. The Bertrand competition strategy of the LCC´s seems to be a tough test for the established flagship airlines, since it casts into doubt their old differentiation strategy based on premium service." [15]

Even though there is an increase in capacity in the TIA, it is still crucial to have access to slots in the MCIA to meet air transportation demand in the center of the country. TIA and MCIA are not perfect substitutes for consumers; when Aerocalifornia exited the market, Interjet had access to their slots, and moved the majority of its operations from TIA to MCIA.[16]

As a summary, air transportation market growth was lower than it would have been if GDP, income per capital, and FDI growth would have been higher. This is a very relevant factor, since it suggests that structural conditions of the Mexican economy have not allowed the airline sector to grow at the pace of other airlines in other regions of the world.

The market also experienced a strong change in its industrial structure, a growth in its efficiency through new airlines, an expansion of airport capacity and an improvement in its competitive conditions. On one hand, it migrated from a very strongly concentrated, protected market led by flagship airlines to a less concentrated market with high levels of competition due to the entrance of LCC´s. On the other hand, in the international market, the flag carriers went through an aggressive direct competition strategy over some routes and where not able to compete with international airlines, finally giving up their market share.

Mexican flagship airlines made in recent years, controversial strategic decisions such as the opening of certain international routes, that together with their incapacity to correct their cost structure, in a dynamic national and international environment, contributed to a deterioration of their profitability and an increase in the fragility of the industry.

[15] Valdes and Ramirez (2011), p. 19.
[16] Interjet now operates 8 routes from TIA and 23 from MCIA.

The growth and efficiency of the air transportation sector in Mexico depends heavily on Mexican economic growth, infrastructure expansion, solid business models and internal airline agreements. The active and effective participation of the regulating authorities, is also crucial, to develop solid public policies that will try to minimize market and government failures that still prevail in the sector, and promote positive behavior practices in terms of increasing safety and efficiency. In the next section, we analyze the effective role for the regulating authorities.

3. Market and Government Failures

Market Failures (Excessive Competition)

Airline industry competition conditions have radically changed in the last decade. Previously the industry faced concentration and high tariffs, we now face a vigorous and sometimes excessive competitive environment. According to Button (2005), excessive competition can be considered a market failure that can destabilize the market in the short term, generate sub-production in the long-term and finally undermine incentives for innovation.

Excessive competition originates when given a certain potential demand between origin and destination (defined by price, income, economic activity, tourism supply or family ties), the number of competitors increase - without previous agreement- that generate an aggressive reduction in prices below variable costs. Button (2005) affirms that some public policy initiatives that try to contain these perverse effects on airline transportation have tried to control the number of licenses granted to limit the number of competitors (taxis and buses), as well as relaxing antitrust law that allows suppliers to protect their market through cartel type agreements (alliances between airlines).

Aeromexico and Mexicana recent competition practices in international markets can be considered excessive competition. Mexicana opened flights to Sao Paolo, Brazil; Madrid and London in 2008, where Aeromexico operated, to seek markets that were out of reach of LCC´s. By the end of 2009, Aeromexico operated 27 international routes, Mexicana 30 and directly competed in 13. The operation of these routes became inefficient and most likely harmed the financial health of both airlines (Expansion Magazine, May 2010 and Airline Weekly, August 9, 2010).

Excessive competition problems question one of the main definitions of regulation: open or close the entrance to new competitors in the market and foster competition conditions. Empirically, strict regulation practices have been very costly for the industry. International evidence shows that a usual path is gradual liberalization of domestic and international markets. But Aeromexico and Mexicana´s presence in

international markets show that open entry policies can result, sometimes, in excessive competition and high costs for the industry. .[17]

Is it desirable and possible to develop public policy to minimize excessive competition in Mexico? There is not one or definite answer to this question. Even though market failures are undesirable, public intervention cannot always improve the situation, since it does not have the necessary instruments to implement the proper public policy or because the same policy can create severe distortions in the market. Besides, from a competition perspective, exit of competitors from the market is also a natural process in any free-market economy.

What we saw in Mexico was the government (TCM) established its pro-consolidation position, the companies couldn't reached an agreement and the Federal Competition Commission (CFC) stood against the merger. This scenario, probably, deepened the failure, and there were no ability or willingness of any public body to assess the possible costs of such failure and how to correct it. The result: Mexicana´s ceasing operations, lower connectivity and seemingly higher prices. Is this a natural process or could any public body do anything to minimize the costs? It is an open question.

Government Failures: Information asymmetry [18]

According to Button (2005), the air transportation industry needs a great quantity of data to operate optimally, as well as proper mechanisms to use information efficiently. Button sustains that some market agents are favored in the industry because the regulating authority does not have the adequate information to act upon.

Transparency and information access, bring the industry to closer public scrutiny, generates positive incentives for private firms performance and public authorities Reliable information and solid analysis can be very valuable sources for the design, implementation and evaluation of public policies in the airline sector.

Mexico has a considerable information lag because agents do not perceive the importance of having solid data available, there is wrongly understood culture of secrecy and there are no financial, human or technological resources to develop an air transportation efficient information service. For example, the CAGO publishes biweekly, monthly and annual aggregate operative information about passenger

[17] Officials from the Ministry of Communication and Transportation informed the media, during Mexicana´s debacle, that Mexico should only have one flagship airline for international routes. They saw two options: merger or bankruptcy of one of the airlines. Newspaper sources suggest that both airlines, Mexicana and Aeromexico, saw a merger with favorable eyes, but the type of aircrafts they operated (Boeing vs. Airbus) among other conditions, limited the incentives for a merger (Expansion Magazine, May 10, 2010).

[18] I refer to the absence of public and available information for any industry agent (airlines, airports, suppliers, government and consumers).

transported by airlines and airports, but does not publish systemized and timely information of tariffs, financial statements[19], air transportation safety and airline punctuality. There is very limited information about the performance of public sector authorities such as the MCIA, Airports and Auxiliary Services (AAS)[20], Navigation Services in Mexican Air Space (SENEAM) and CAGO itself.

The consequences of lack of information of air transport services are:

1) Airlines have to register their tariffs with authorities, but they do so on paper, which makes it hard to process the data. The lack of an adequate data base that manages price data in a long period of time limits the analysis of competition conditions in the market by the regulatory authority and the Federal Competition Commission.

2) The lack of public information concerning airline´s financial performance hampers and creates considerable transaction costs for different industry agents. It can generated bad investment decisions by financial investors, since they lack the necessary objective parameters to evaluate airline industry´s profitability.

Lack of timely information can be very costly for suppliers and consumers. Suppliers can face "non-payment" of their products and services if the airlines go bankrupt. Even though this is a latent for any credit transaction in the economy,[21], having access to recent airline performance, can mitigate or internalize this risk for suppliers. Consumers face a high vulnerability when they cannot evaluate airline survival and are exposed to a loss of their airline tickets if companies cease operations.

It is also a problem for regulators and competition authorities that have to analyze the impact of public policies on the performance of the industry, and base their studies on incomplete information. Even though industry profitability is not a government objective, it has to foster it to allow airlines to grow and offer their services in the medium and long-term.

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3) There is no public information available of industry safety guidelines and results, nor regulatory agencies evaluation of safety issues. In the past, this information vacuum, created speculation about regulator leeway and improper decisions, when making verification visits. The recent degradation IASA standard by the FAA shows

[19] We understand that this type of information can be sensitive and can be subject to industrial secrecy regulations., but annual or quarterly reports similar to the ones international airlines present to their stock markets are enough..

[20] AAS is the sole supplier of jet fuel in Mexico and owns and operates about 20 public airports in Mexico.

[21] It is important to explain that industry financing through suppliers is a common practice in Mexico.

that the lack of timely public information can be costly for the country in terms of international sanctions. By not reacting in an prompt matter, the Mexican government raised a barrier of entry to Mexican airlines that wish to open or increase their frequencies or routes to the United States.

There is very scarce information about punctuality and delays from the CAGO, and the one that exists is impossible to use by consumers. The FAA in the United States publishes daily reports regarding airline punctuality. US airline ticket reservation web pages show punctuality percentage of all airlines in their reference route. Since Mexico does not have prompt punctuality reports it limits the information that consumers can rely on to make rational choices among airlines based on punctuality performance.

5) There is a lack of transparency in the operation of the Time Committee of the Mexico City International Airport in slot assignments. [22]. Since slots are a necessary condition for airlines to be able to offer their services, non-access to this information consists a strong barrier of entry. The lack of transparency of this committee leads to suspect that there is discretionality, and this has an important impact in the competition conditions of the Mexico City International Airport and the welfare of consumer who use the airport, as Ros (2010) shows in his study.

6) Minimum performance reports from public institutions such the CAGO, the MCIA, ASA and others (like SENEAM), limit the efficacy evaluation of public policy in the sector and the efficiency of these regulatory and public agencies. Evaluating the performance of these organisms is important, since they are part of the value chain of the industry, their efficiency or lack of, can impact airline efficiency.

Institutional structure.

Mexican Civil Aviation Law, Airport Law and other normative instruments establish that the Ministry of Communication and Transportation main prerogatives are designing and implementing public policy, and regulation for the air transportation sector. Among the main policy objectives of the norms are security, judicial certainty and equity, regional integration of the country, access to air transportation services by the Mexican population, efficiency, healthy and just competition, air transportation staff training and effective reciprocity in external air transportation relations.

Many of the above objectives are indispensable and adequate in terms of policy design for the development of the sector, especially in terms of air transport safety. Others, such as regulation of minimum and maximum tariffs must be reviewed. In terms of implementation, many of the objectives have not been met by the government which

[22] Slots are take-off and landing time tables in the airport. .

has not been able to develop an adequate institutional structure to meet air transportation norm objectives.

The CAGO does not have the sufficient human, technical, financial resources or independence to carry out, in an efficient manner, its objectives. Velasco (2006) documented the precarious conditions under which the CAGO personnel operated in Mexico. Insufficient staff, low salaries and a reduced budget where the norm to carry through fundamental supervision activities for the industry. CAGO needs many resources to carry out efficiently its safety and economic regulation duties.

Safety must be its first priority, because it is the responsibility of the public authority to safeguard the integrity of passengers, through inspections and sanctions to aviation operators.

In terms of economic regulation, it must try to bring about air transportation efficiency in all of its value chain (air transportation, airport services, etc).

1) Reduce significantly market barriers of entry to the domestic and international market (transparent access and efficiency criteria in slot allocation, for example). Greater flexibility in Bilateral Agreements of Air Transportation, that will make commercial trade and tourism easier, recover the Standard 1 of IASA, so Mexican airlines can freely decide if they want to increase their operations in the United States and
2) Permanently monitor and evaluate all the value chain markets with explicit methodology

2.1) if the regulatory framework is generating low operating costs and competitive conditions can generate greater welfare for the consumer and airlines and 2.2) if there is any anti competitive practice that should be investigated by the Federal Competition Commission.

To reach these economic regulation goals, it is necessary to have a normative change, since we have presently a design and implementation normative confusion. In particular, the Civil Aviation Law and other normative instruments take into account, that even there is free tariff fixation, the authority has to prevent anticompetitive practices such as predation or market power exercises by minimum and maximum tariff regulation.

This policy is aimed at securing minimum profitability for companies and maximum prices for consumers, but faces serious conceptual and technical problems. On one hand, theoretically and empirically, no all tariff regulation of minimum and maximum prices resolves anticompetitive practices; it can even generate distortions in the price

structure or service quality.[23] On the other hand, the technical difficulties to prove anticompetitive behavior, the necessary information to carry through the analysis of this behavior, and the lack of human and technical resources of the CAGO, have made regulatory guidelines inoperative.

A regulatory framework change is also necessary in the liberalization process of international markets. It is necessary that open sky policies or other liberalization schemes be integrated to the regulatory agency for Mexico to increase its commercial trade and tourism flow with other countries in a very globalized and de-regulated environment. In principle, this type of policy represents a threat for Mexican airlines, but also represents an opportunity to increase their efficiency. Simultaneously, this policy is desirable because it generates a significant benefit for the rest of the economy through greater connectivity, increase in commercial trade and a greater number of international tourists. Finally, market liberalization is a necessary condition to minimize the fragility of the industry, because when a competitor exits the market, there are no regulatory barriers that prevent a new agent to enter the market.

What institutional structure should the Mexican air transportation regulator have to comply with the safety and economic regulatory objectives presented in this document? According to Faya (2010), for a regulatory agency to have an efficient performance it needs: 1) a clear mandate and attributes 2) Effective autonomy and independence, 3) Sufficient human and material resources 4) Transparency and performance evaluation.

Point 1), mandates and attributes are generally correct, even though it is necessary to make some modifications to the Civil Aviation Law and other legal norms, so these can be congruent with reality, and can generate correct incentives to economic agents. The great challenge is to implement many of the guidelines that already exist in the air transportation norms, but are not presently applied.

An improvement of points 2), 3) and 4), would increase the institutional capacity of the regulator, minimize market and government failures and generate adequate incentives in favor of safety and efficiency.

Effective autonomy and independence, would allow the regulator to gain credibility in its decision making process, not being conditioned by the executive´s power agenda nor influenced by regulated air transportation companies interests.

[23] Examples of this are the competition for quality in the United States in the 50´s and the X-Efficiency that can be created when prices are regulated.

Greater human and material resources are indispensable so the regulator can design, implement, operate, monitor and sanction effective regulatory policies. Concrete action such as the implementation of a public information system of the air transportation industry or the adequate training of public sector employees to foster direct credibility, would increase the level of analysis and would minimize the errors of the regulatory agency. Indirectly, it would promote efficiency and competition, and solve problems such as the recent FAA degradation and would be able to monitor, systematically, the possible presence of anticompetitive practices.

Finally, greater transparency and performance evaluation of the regulator would result in major credibility, efficacy and efficiency, since it would be subject to higher scrutiny by the industry and society at large.

4. Conclusions and Policy Recommendations

This document explored the possible causes of the failure of lack of information, the reduced institutional capacity of the regulatory agency, as well as the inefficiency of the flagship airlines in Mexico.

Air transportation agents must assume a greater degree of responsibility in their own actions to be able to correct the serious setbacks that exist in the Mexican air transportation industry. It is necessary that these agents implement short and long term actions to solve the transparency and efficiency issues of the industry. There are some simple ones that only require the decision of only one agent or regulator and there are complex ones that require the voluntary action of many agents and regulators. All of them are necessary to reach the standards of safety, improve the efficiency and promote de growth of the air transportation sector in the overall Mexican economy.

Long term factors are the construction of a new airport that increases capacity and meets long term demand of the Metropolitan Area of Mexico City. The Mexican government must recover its original new airport project and involve the pertinent agents in the project to reach its objectives.

Short term issues must be solving high labor costs (in comparison with international standards) and strengthening the institutional framework of the regulator. If labor costs of Mexican flagship airlines are not aligned with international competitors' costs, it is crucial for airlines and workers to reach an agreement to meet that goal. If this issue is not solved, it is difficult to predict that flag carriers would experiment growth and profitability.

It is of the upmost urgency to strengthen the regulatory agency and increase its institutional independence. This strengthening process must be accompanied by transparency, access to information and accountability so the regulatory agency can gain credibility. It is necessary that it have the sufficient resources to improve its design, implementation, supervision, and evaluation work in an efficient manner. Air transportation safety must be a priority and the pertinent authority must enforce safety standards. For example, the FAA in the United States proposed a civil fine for American Airlines for 24 million dollars for not solving in a prompt manner some of its aircraft failures. According, to the FAA these failures pose a safety risk in their aircraft. FAA actions, illustrate the power of dissuasion a safety regulatory agency has to make airlines comply with established standards.

It also has to strengthen economic regulation measures, to minimize barriers of entry and monitor competition conditions to detect the possible presence of a possible

regulatory failure or anticompetitive behavior. Finally, if these actions are not taken to correct the structural failures in the air transportation industry in Mexico, the country will exhibit, independently if there are losers and winners in the short term, an inferior performance in the long term.

Recommendations.

1. Implementation of an information system about the overall state of the airlines: tariffs, financial statements, safety issues and punctuality. More information made available for consumers, competitors, and the regulatory agency will reduce costs and improve the private decision making process and would minimize the error margin of public policies.

2. Independence of the regulatory agency and institutional strengthening. This would allow the regulatory to have the human, technical and financial resources to carry out activities efficiently. This process must be accompanied by major transparency to prevent any type of discretionality by the authorities. A institutional design evaluation mechanism must be included for economic agencies and the regulatory authority. If the regulatory agency is subject to constant evaluation by consumers, competitors, investors and public sector employees and society watchdogs, it would have incentives to improve its performance.

3. It is necessary to incorporate in an active manner the debate about open sky policy in Mexico to be able to evaluate the best strategy that Mexico must apply to insert itself in the international air transportation system.

4. In the short term it is necessary that the Time Operation Committee of the Mexico City International Airport assign slots with transparent criteria and in favor of market efficiency and consumer welfare. The criteria for slot allocation, is a pending issue and must be dealt with soon for a more efficient distribution of slots for the configuration of their service networks. Basically, MCIA slots are a key issue in the debate for one flagship airline and will define, broadly industry structure for the next decade.

5. It is necessary in the long term to build a new airport in Mexico City to meet future growth in air transportation demand.

6. The establishment of performance guidelines for public organisms, departments, such as Airports and Auxiliary Services, the Mexican International Airport and others, would improve the evaluation of public policy efficiency and would generate incentives for all agents to improve their behavior in the air transportation industry.

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