Evolution of the airport and air transport industry in Colombia and its impact on the economy

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Abstract

Purpose: This article aims to describe the development and evolution of the airports and air transport industry in Colombia. During the past fifteen years Colombia has witnessed a remarkably rapid and dynamic growth in air transport. This period coincides with the establishment and continuous implementation of public policy specifically designed for the air transport sector and airports.

Design/methodology: The evolution of air transport in Colombia is evaluated descriptively through the analysis of air transport and socio-economic historical data. The impact of public and investment policies is analyzed through a cause-effect approach.

Findings: This paper describes how the air transport/airport industry in Colombia has been directly and positively affected by the implementation of public policies and other legislation, while measuring the effect and impact of this industry on the Colombian economy.

Originality/value: This work fills a notorious deficiency in specialized literature concerning air transport in Colombia and Latin America in all its aspects and dimensions.

Keywords: Colombia; airports; air transport; airport concessions; Latin America
1. Introduction

Colombian air transport is undergoing rapid and dynamic growth, never before seen in its history, which started approximately 15 years ago. This period coincides with the establishment of continued implementation of public policy designed specifically for the air transport sector. The development of public policies has led to the transformation of air transport in a short time, becoming one of the most important services in the Colombian economy. In fact, in first place, owing to the difficult topography, making other methods of transport extremely difficult, it eases integration and connectivity, and for that reason air transport is essential to connect with, and reach some of the more distant regions of Colombian geography. Secondly, Colombia’s privileged geographical location permits connection with regional and global economies, a fact which is fundamental given the dynamics of world globalisation. In this sense, the Colombian state considers air transport an essential public service, which reflects its role as vital to national economic development.

The growth of air traffic in Colombia has been strengthened since the 1990s by a public policy oriented to liberalising air space for internal and external markets, and by refocusing public investment towards modernising and updating airport infrastructure, and outsourcing the airports with greatest air traffic in the country. Since the economic opening of 1991, Colombia changed from regulation that made access to the market highly restricted to a scheme of supervised freedom. This is how, during the last 20 years, after having a national flag carrier, new companies were allowed to enter the market, to the point where through different forms of corporate reorganisation the market now boasts an important percentage of participation from foreign capital. On the international level liberalisation was undertaken through the signing of various bilateral agreements, as well as the decision to sign open skies agreements with various countries (ORE, 2011; IADB, 2007; CAF, 2006). On the other hand, the first generation of airport concessions was undertaken in the middle of the 1990s, and since then three more generations have been implemented. These public policies have been complemented by certain institutional reforms where the Colombian state restructured the national airport authority that administers the airports and Colombian airspace, with the aim of strengthening aspects related to concessions and airport decentralisation.

This essay will describe how, the evolution and the development of the Colombian air transport industry has been directly and positively affected by the implementation of public policies and other legislative instruments (laws, decrees, standards) and also its effects and impact on the Colombian economy will be measured.
2. Institutional framework of Colombian air transport

Current Colombian institutional framework divides public air administration among three groups with different levels of participation (SIC, 2013).

- Ministry of Transport. This ministry manages and heads regulation, development, supervision and control of the transport sector in Colombia. The Ministry of Transport has general and specific responsibilities laid down by Law 489 of 1998. The Ministry delegates many of its competencies among independent specialised entities in its own jurisdiction. In the specific case of air transport the Ministry of Transport delegates competencies and responsibilities to the Special Administrative Unit of Civil Aeronautics (henceforth Aerocivil) and the National Infrastructure Agency (henceforth ANI) (Ministerio de Transporte, 2011a).

- Aerocivil. The Special Administrative Unit of Civil Aeronautics - Aerocivil is an entity attached to the Ministry of Transport, with separate judicial recognition, administrative autonomy and independent equity, to undertake the responsibilities of Aeronautic Authority in all of the national territory (Ministerio de Transporte, 2004). This unit has the jurisdiction and competency to regulate, manage, supervise and control the use of Colombian airspace by civil aviation, and to coordinate relations of this sector with the state; developing policies, strategies, plans, programs and projects on the subject, contributing thus to the maintenance of security and national sovereignty. Aerocivil is also responsible for the administration of airports in the country and in this manner also for the maintenance and construction thereof.

- National Infrastructure Agency. In 2003, through decree 1800, the National Institute of Concessions (INCO) was established, public agency of national order attached to the Ministry of Transport, with separate judicial recognition, independent equity and administrative and financial autonomy. Entrusted with the undertaking, planning, structuring and administration of contracts of concession for transport infrastructure with private capital participation in Colombia. Nonetheless, this Decree indicated that these activities would be undertaken only for roads, rivers, railroads and ports, thus excluding the concession of air transport infrastructure projects from the responsibilities of INCO and keeping them under exclusive control and management of Aerocivil (Ministerio de Transporte, 2003). After a few years of INCO operations and the celebration of airport concession contracts by Aerocivil, the Ministry of Transport, through decrees 4164 of 2011, and 4165 of 2011 (Ministerio de Transporte, 2011b, 2011c) restructured the method of the state contracting for the transport sector, especially for air transport that, as has been said, after that date was responsibility of Aerocivil. On the one hand, through decree 4164 of 2011, the tasks of structuring,
celebration and contractual management of concession projects associated with airports would transferred to the responsibilities of INCO (Ministerio de Transporte, 2011b), in addition this decree established that the INCO would be in charge of undertaking this tasks as of 1 January 2012 and as at that time, the airports that are to be given in concession will be handed over to INCO, by Aerocivil, under the figure of administration. On the other hand and during the same year-2011, the Ministry of Transport through Decree 4164 of 2011, restructured INCO starting with its name, stating that as of that date the agency should be called the National Agency for Infrastructure (Agencia Nacional de Infraestructura - ANI). Legislation stated that the new entity, in charge of designing and implementing all of the concession contracts in the transport sector (all modes) replaced INCO completely and assumed its functions, adding to them as well, in order to, according to legal dispositions, be the agency in charge of: planning, coordinating, structuring, contracting, managing, administering and evaluating concession projects and other forms of public and private association, for the design, construction, maintenance, operation, administration and/or exploitation of the public transport infrastructure and related services.

3. Public policy in the Colombian airport sector

The National Development Plan, published every 4 years by the National Department of Planning (Dirección Nacional de Planeación - DNP), is the document that is the basis of and provides strategic guidelines for public policy (including the investment plan) formulated by the President of the Republic of Colombia through his team in the government. Its design, communication, evaluation and follow-up is the direct responsibility of DNP.

National development plans before 2002 contained public policies for investment in transport infrastructure in general, with a great emphasis on road transport, and therefore there were no specific policies for the air transport sector. The first national development plan with established public policy for the air transport sector albeit in an indirect and implicit way was for 2002-2006 (DNP, 2002). In the section Strategic Infrastructure for Transport the plan says that the national government will give continuity to the investment policy in infrastructure, where supposedly those for the air transport sector are included. Subsequently, the national development plan for 2006-2010 (DNP, 2006) made substantial strides in the establishment of public policy for the air transport sector. In view of evolution of the movement of air cargo and growing participation of this in the value of foreign trade, the national government reaffirms the importance that air transport has acquired in Colombia during the past few years. For that reason it establishes that actions related with the airport infrastructure should be focused on improving the air transport system for cargo and passengers, through the intervention in
terminals and runways and other areas of strategic importance for national and/or regional competitiveness. In addition, the government states that it will continue with the implementation of the programmes for participation by the private sector for the administration and modernisation of airports infrastructure and the channelling of investment in these types of projects, according to traffic volume. The government will likewise develop plans for efficient and harmonic articulation of the airports to optimise the operation within the territorial and/or regional framework of which they are a part. In addition it states that Aerocivil should implement programs oriented to the generation of financial resources from activities related to the air transport service such as commercial exploitation of the terminals and air navigation services. Subsequently, the national development plan 2010-2014 (DNP, 2010), considering the important growth of the industry, and its significant contribution to the national economy at that time (2010), establishes that the national government will continue applying policies, for the positive technical legal and financial development of the airport concession contracts already under way (8 at this time) and that may be celebrated in the future. In addition the plan states that the national government implement a programme to improve infrastructure of 17 airports which have regular passenger service in Department capitals and strategic points identified by Aerocivil. A program to maintain the basic conditions for operation will be implemented in another 32 airports. In distant regions where air transport is the best alternative for communication, improvement and maintenance of regional airports will be undertaken, incorporating the risk variable in the definition of the programmed construction. To deal with the increase in air transport Aerocivil will modernise the aeronautic infrastructure along with satellite technology systems and communication, navigation and air space systems established in the Aerial Navigation Plan (PNA-COL) (Aerocivil, 2014c). This plan is oriented by the World Aerial Navigation Plan of the International Civil Aviation Organisation (ICAO, 2013b) so as to promote with neighboring States an appropriate integral system for future in aviation is promoted. In addition the increase of nocturnal cover an operation of airports that serve business centres and allow for simultaneous landing and takeoff will be sought. As regards management of airspace, the Colombian Aeronautic Regulation (RAC) (Aerocivil, 2014i) must be updatable and flexible to be adapted to the economic environment of the aeronautic sector and compliance with international standards and treaties, with the aim of stimulating even more competition in the national market. At the national level the plan requires the search of alternatives to facilitate the entry of new operators, taking into consideration the evolution of the air market, the financial indicators for the industry, occupation levels, markets of important players, market concentration and the effect of oil prices on the behaviour of the market. At an international level alternatives for the entry of new operators will be analysed, stimulating free competition in passenger and cargo markets. Finally, an improvement in portfolio recovery and aerial navigation service, with the
aim of increasing income from aspects such as: overflights, protection services to national and international flights, meteorological help, publications, authorisation of obstacles, among others.

Concerning the management of airport infrastructure Colombia has followed the regional tendency to outsource the administration of this infrastructure (Espírito Santo, 2013; ICAO, 2013a; Serebrisky, 2012; ICAO, 2011; Mendiola, Arévalo, Maratuech, Pérez & Valencia, 2011; Carvallo, 2008; Lipovich, 2008; Rico Galeana, 2008; Bosch & García Montalvo, 2003; CLAC-ACI, 2003). This model seeks to liberate the state from the high expense required for aeronautic infrastructure. This process is regulated by a national law (Law 80 of 1993, article 30). Through another regulation (DNP, 1994) the State formalised the process of outsourcing airports by way of a plan for order in airport infrastructure. Aside from proposing a technological renovation, the document authorised the process of concession of the airports to private companies, and considered economic payment to the state as the only element necessary to deliver the concession. The destination of these payments were defined as:

- increase the aeronautic compensation fund to subsidise unprofitable airports,
- finance new investments in said airports and
- finance the services of air traffic and security.

The above meant that in parallel that Aerocivil could concentrate its efforts on the operation, control, development and maintenance of the airspace and supervision of air operations.

In this way, from the middle of the 1990s and in four phases or generations, the Colombian government, through Aerocivil handed over various airports in the country in concession, the largest and most important of the 75 that the public aeronautical authority administers (Aerocivil, 2014d) with the aim of achieving a better administration, modernisation and expansion, operation, commercial exploitation and maintenance of the airports with greater traffic under the stated objective from the airport concessionaires in the country. The company, society, consortium or airport concessionaire functions only as an administrator thereof. A final, comprising only the airport of Barranquilla, was given concession at the end of 2014 (Ministerio de Transporte, 2015), and which would be the fourth generation of concessions. The information for these concessions is listed in Table 1.
The first generation of concessions was undertaken under a model of guaranteed minimum income to the concessionaires, where no risk was assumed. In this generation all regulated and unregulated income from imports is given to the concessionaire, in return for a fixed payment to the state. It also established the responsibility for the handling, maintenance and operation of the terminal, runway, ramp, airborne installations and audiovisual and approximation helps and accessories to the concessionaire. In this generation the concessions did not have a master plan, which made it impossible to identify and quantify the investment needed and therefore those that were undertaken were only minor repairs to the terminals, determined by the concessionaire himself. In this way, the presence of private capital in infrastructure was insignificant.

Starting with the 2nd generation of concessions, in the period 2000-2007, payments to Aerocivil were distributed between some fixed costs and some variable costs over the gross income of the concessionaire. This change in privatisation terms for the airports was necessary given that the income received by Aerocivil from certain airports was insufficient for the investments they had in mind. Likewise, responsibilities were projected depending on the different agents involved in the process and consequently a re-assignation of risks was performed. The concessionaire was in charge of a series of obligatory investments and rehabilitation, linked to demand, through master plans that established the short, medium and long-term needs, with an estimation of the associated costs. The latter should have been
completed within the first 12 months after the start of the contract, if they did not certain sanctions would be applied (Fedesarrollo, 2011).

The third generation of concessions in 2010 maintained and improved the conditions of the second generation. Nonetheless, the most important differences arose from, and on the one hand, by the method of determining the increase in the percentage of gross income is not made up of fixed income and variable income but rather corresponding to a determined percentage of the concessionaire must pay Aerocivil. On the other hand, compliance with the master plan is deemed obligatory, and therefore the execution of investments and the care and risk of the concessionaire, defining an estimated income model from which the regulated income generated can be equated.

The policy for airport concessions was accompanied by an investment policy. Public investment in the air transport sector has been increasing steadily during the last decade reaching 14% as a percentage of the air transport GDP for the year 2013, double the amount of a decade ago (Ministerio de Transporte, 2014). Private investment in airports has evolved according to the dynamics inherent in the concessions, passing from nonexistent in 1996 year zero for the start of the first concession, to 20% as a percentage of air transport GDP for 2010 (Fedesarrollo, 2012). Along these lines, during the last few years the concessions generated an important packet of private investment in almost all of the outsourced airports. These investments are programmed, implying that to date these investments have already been made, but as the contract are signed for a long term (see Table 1) future investment is expected. In Table 2 investment made by private operators in the different airports during 2010-2013 can be seen. To get a better idea of the investment made (given that the figures are in local currency, Colombian pesos-COP) average annual private investment for the period 2010-2013, represents 18% of the air transport GDP for the year 2013 (Ministerio de Transporte, 2014).

<table>
<thead>
<tr>
<th>Airport Operator</th>
<th>Investment (COP - constant 2009)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AirPlan</td>
<td>254,144,000,000</td>
</tr>
<tr>
<td>CASYP</td>
<td>2,878,000,000</td>
</tr>
<tr>
<td>AeroOriente</td>
<td>60,519,000,000</td>
</tr>
<tr>
<td>Opain</td>
<td>1,470,533,000,000</td>
</tr>
<tr>
<td>AeroCali</td>
<td>8,016,000,000</td>
</tr>
<tr>
<td>SACSA</td>
<td>38,360,000,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,834,450,000,000</strong></td>
</tr>
</tbody>
</table>

Table 2. Investment by private operators in their respective airports for the period 2010-2013 (Aerocivil, 2014e)

As for market participation for each airport operator, with regards to the number of total passengers transported, Table 3 describes the segmentation for the period 2009-2012. As can be seen from the information shown, the concessionaire Opain S.A. that manages the Bogotá-
El Dorado Airport, completely dominates the Colombian airport market in terms of total numbers of passengers transported. And on the other hand, private operators as a group, control the majority of air traffic in Colombia (87% in 2012), leading a very reduced participation of 13% to the public operator Aerocivil, percentage which is spread among 58 small airports that it operates and manages.

<table>
<thead>
<tr>
<th>Airport Operator</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opain</td>
<td>47.4%</td>
<td>47.6%</td>
<td>49.0%</td>
<td>47.6%</td>
</tr>
<tr>
<td>AirPlan</td>
<td>14.6%</td>
<td>14.2%</td>
<td>13.8%</td>
<td>15.0%</td>
</tr>
<tr>
<td>AeroOriente</td>
<td>7.2%</td>
<td>8.5%</td>
<td>8.4%</td>
<td>8.2%</td>
</tr>
<tr>
<td>AeroCali</td>
<td>8.5%</td>
<td>8.3%</td>
<td>7.8%</td>
<td>7.8%</td>
</tr>
<tr>
<td>SACSA</td>
<td>5.4%</td>
<td>5.3%</td>
<td>5.2%</td>
<td>5.9%</td>
</tr>
<tr>
<td>CASYP</td>
<td>3.0%</td>
<td>2.6%</td>
<td>2.8%</td>
<td>2.8%</td>
</tr>
<tr>
<td>Total</td>
<td>86.0%</td>
<td>86.6%</td>
<td>87.0%</td>
<td>87.3%</td>
</tr>
</tbody>
</table>

Table 3. Share of airport market concessionaires in relation to total number of passengers transported (SIC, 2013)

In the case of air cargo transport, as could be seen on Table 4, the airports operated by Opain, AirPlan and AeroCali whose main airports belong to the cities of Bogotá, Medellin and Cali, transport the highest tonnage in air cargo, both incoming and outgoing, be it to other Colombian cities or other countries. As a consequence of this the operators Opain, AirPlan and AeroCali completely control the airport cargo transport market. Globally, as in passenger transport, private airport operators control as a group 85-90% of this sector of the air market, the remainder is managed directly by the government operator Aerocivil (SIC, 2013).

<table>
<thead>
<tr>
<th>Operator</th>
<th>2009 inbound/outbound</th>
<th>2010 inbound/outbound</th>
<th>2011 inbound/outbound</th>
<th>2012 inbound/outbound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opain</td>
<td>61.8% / 70.0%</td>
<td>66.1% / 69.9%</td>
<td>68.1% / 71.1%</td>
<td>47.6% / 71.0%</td>
</tr>
<tr>
<td>AirPlan</td>
<td>10.7% / 15.3%</td>
<td>9.5% / 15.5%</td>
<td>9.1% / 15.5%</td>
<td>15.0% / 15.6%</td>
</tr>
<tr>
<td>AeroCali</td>
<td>6.6% / 3.0%</td>
<td>5.5% / 2.8%</td>
<td>8.4% / 3.0%</td>
<td>8.2% / 2.9%</td>
</tr>
<tr>
<td>CASYP</td>
<td>1.6% / 0.9%</td>
<td>1.6% / 0.9%</td>
<td>7.8% / 0.9%</td>
<td>7.8% / 1.1%</td>
</tr>
<tr>
<td>AeroOriente</td>
<td>1.5% / 0.8%</td>
<td>1.3% / 0.7%</td>
<td>5.2% / 0.8%</td>
<td>5.9% / 0.7%</td>
</tr>
<tr>
<td>SACSA</td>
<td>1.1% / 0.6%</td>
<td>1.0% / 0.6%</td>
<td>2.8% / 0.6%</td>
<td>2.8% / 0.7%</td>
</tr>
<tr>
<td>Total</td>
<td>83.4% / 90.6%</td>
<td>85.0% / 90.5%</td>
<td>87.0% / 91.8%</td>
<td>87.3% / 92.0%</td>
</tr>
</tbody>
</table>

Table 4. Share of airport market concessionaires in relation to total amount of air cargo (inbound and outbound) total transported (SIC, 2013)
4. Public policy in the Colombian aerocommercial market

One of the most important barriers for access to markets are rules and controls for routes, capacity and tariffs. As regards to local or domestic markets, during the past 25 years Colombia has evolved from a protectionist scheme to a supervised freedom scheme. Although access to the national market has been gradually liberalised recently there is still an established maximum number of operators for passenger routes and there is a ceiling on airfare prices still in effect. Within this policy of flexibility, the great economic crisis in Colombia from 1999-2002 resulted in the contraction of the market and with it the bankruptcy and disappearance of certain national airlines, as well as a decrease in demand resulting from the terrorist acts of September 2001 in United States and an increase in the price of oil. The circumstances motivated the national government to intervene in the national air market, defining criteria and general guidelines with regards to offer, establishing a maximum number of designations for route origin/destination and greater control by Aerocivil when authorising new projects or routes. There was even the obligation to constitute cautions when presenting project for constitution of a new company, with the aim of organising regular air transport, and strict requirements for suspension or cancellation of services were defined. From 2006 public policy becomes flexible and some barriers were eliminated (for example: extension of quotas for operators by route, flexibility of requirements with respect to the minimum number of aircraft, etc.) (Fedesarrollo, 2011).

With respect to international markets, integration and flexibility initiatives for air traffic in Latin America have progressed, spurred on fundamentally by aeronautical authorities and commerce. Colombia has been no stranger to this scenario of global development, having passed from a protectionist model with restricted access and tariff control to an intermediate focus of gradual access starting in the 1990s. During the past 20 years achievements include not only a sub regional agreement but also a relationship of bilateral agreements whose aim has been the harmonisation of policies in the granting of traffic rights, regulation of conditions for access to markets and fluidity of air transport. This process of liberalisation of traffic in Colombia has been undertaken in 3 fundamental stages: the stage started at the beginning of the 1990s with the opening of commerce, and the implementation of a model in which the limiting factors that were eliminated with regard to foreign investment in airlines operating in the country and permission for more companies to operate in the local market. Finally, as of 2009 a policy of complete deregulation is consolidated, through the promotion of agreements for greater liberty up to the so-called open skies with countries that have air connections with the country to guarantee a completely free market, with the aim of advancing towards free access to the market and tariffs (ORE, 2009). Currently, Colombia has signed multilateral agreements with the nations of the Andean Community of Nations, 33 bilateral agreements established formally to regulate international air transport and 3 reciprocal relations,
distributed thus: 21 in America (of which 18 are Bilateral Air Service Agreements), 12 in Europe and 3 in Asia. Bilateral agreements were also signed with Belgium, the UAE, Barbados, Singapore, Korea, Paraguay, Iceland and Turkey (ORE, 2011; IADB, 2007; CAF, 2006).

As a result of the implementation of the public policy for the airlines, the national and international market has been segmented according to what is shown in Figures 1 and 2. As regards the transport of passengers, the market is dominated by Avianca both in the national sector as well as the international sector with a market share of 55% and 34% respectively for 2013. While in the transport of air cargo, Tampa dominates the international air cargo market with a 22.8% share and Avianca does the same in the domestic sector with a market share of 37.6% (Aerocivil, 2014f).

![Market share of airlines (Domestic flights) (2013)](image)

Figure 1. Market share (%) of air operators in passenger transport, national flights, 2013 (Aerocivil, 2014f)
5. Colombian air transport development

5.1 Passenger and air cargo

For a decade the Colombian airport industry has experienced unforeseen, rapid and dynamic growth. In 2013 the network of Colombian airports under jurisdiction of Aerocivil, whether under concession or not, transported almost 54 million national and international passengers, an increase of 140% with respect to the number transported in 2004 (see Figure 3). The rate of growth seen in both segments of passengers, domestic and international, is very similar in the analyzed period, but as in 2004 there was an important point of departure for domestic passengers, it is this segment that has contributed to significant growth in absolute terms, of air passenger traffic in the last decade (see Figure 4). Passenger traffic in 2013 grew similarly, with respect to 2012, in both domestic passenger traffic (16.6%) and international passenger (14.2%) markets.
As regards air cargo, growth between 2004 and 2013 was 7% (see Figure 5), with an average annual growth of 1.13% for the period 2004-2013. It should be noted that for the period 2001-2004, the growth of total cargo transport experienced strong growth of 40 % (Aerocivil, 2014g), but this tendency diminished as of 2004. Between 2008 and 2009 there was an...
important drop of 10% in international cargo and 15% in domestic cargo. This period coincides with the last world economic crisis (2008-2009). But as of 2010 the tendency to grow has shown itself once more (see Figure 6) (Aerocivil, 2014a).

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**Figure 5.** Air cargo transported in Colombia (Aerocivil, 2014a)

**Figure 6.** Growth (%) of air cargo transported (Aerocivil, 2014a)
In another matter, today air transport in Colombia presents excessive centralisation where the Bogotá-El Dorado Airport, in the capital of the country, completely dominates all passenger and cargo air traffic. Figure 7 shows the development of passenger traffic during the last decade for Bogota-El Dorado Airport (BOG) and in Figures 8 and 9 the four remaining major airports in Colombia, Medellin (MDE), Cali (CLO), Cartagena de Indias (CTG) and Barranquilla (BAQ). A similar, even more pronounced, situation is also seen in the air freight where the airport of Bogota-El Dorado (BOG) absolutely dominates this market segment carrying 69% of the total cargo (2013) (Aerocivil, 2014a).

![Figure 7. Development of passenger traffic in Bogota-El Dorado Airport (BOG) (Aerocivil, 2014a)](image-url)
Figure 8. Development of domestic passenger traffic in the Barranquilla (BAQ), Cali (CLO), Cartagena de Indias (CTG) and Medellin (MDE) airports (Aerocivil, 2014a)

Figure 9. Development of international passenger traffic in the Barranquilla (BAQ), Cali (CLO), Cartagena de Indias (CTG) and Medellin (MDE) airports (Aerocivil, 2014a)
5.2 Connectivity

As regards Colombia's connectivity with the rest of the world (international routes) between 2002 and 2007 the number of international flights to and from Colombian airports increased by 39%, and international frequencies increased by 34% for the same period (IATA, 2007). By 2010 there were 77 active international routes to and from Colombia (Oxford Economics, 2011). As regards principal international routes, i.e. those who move the greatest volume of international passenger traffic to and from Colombia, its growth has been very important during the past decade and with respect to all connected regions. Table 5 shows the growth seen by main international routes for 2004-2014 according to the regions (Aerocivil, 2014g).

Finally in relation to the measurement of real (or effective) passenger traffic (RPK), during 2013 37 billion passenger-kilometres were transported in all of the airports in the Colombian network and all of the routes (domestic and international). The RPK in 2013 grew 12% with respect to 2012 (Aerocivil, 2014h). This is more than double the average world growth of 5.2% (ICAO, 2014).

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>North America</td>
<td>9</td>
<td>22</td>
<td>144%</td>
</tr>
<tr>
<td>South America</td>
<td>12</td>
<td>14</td>
<td>17%</td>
</tr>
<tr>
<td>Europe</td>
<td>4</td>
<td>10</td>
<td>150%</td>
</tr>
<tr>
<td>Central America</td>
<td>7</td>
<td>11</td>
<td>57%</td>
</tr>
<tr>
<td>Caribbean Islands</td>
<td>5</td>
<td>6</td>
<td>20%</td>
</tr>
</tbody>
</table>

Table 5. Colombian connectivity with international destinations (Aerocivil, 2014g)

5.3 Air operator offers

Turning to another subsector of the airline industry, with regard to passenger transport, the market is dominated by the Avianca airline, both domestically and in the international segment, with a market share of 55% and 34% respectively in 2013 (see Figures 1 and 2). While in the transport of air cargo, Tampa dominates the international air cargo market with a 22.8% share and Avianca does the same in the domestic sector with a market share of 37.6% (Aerocivil, 2014f).

Colombian airlines have responded to the increased market demand, offering more seats and more flights (see Table 6). In 2009-2013 seat numbers in the international sector grew by 43% and the seats on offer in the national sector grew by 53%. As regards flights offered by the airlines, during the same period these grew by 30% for international flights offered and 17% in national flights offered (ATAC, 2014).
<table>
<thead>
<tr>
<th>Year</th>
<th>Intl. seats offered (millions)</th>
<th>Domestic seats offered (millions)</th>
<th>Intl. flights (000)</th>
<th>Domestic flights (000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>8.67</td>
<td>17.4</td>
<td>75</td>
<td>246</td>
</tr>
<tr>
<td>2010</td>
<td>9.37</td>
<td>20.56</td>
<td>80</td>
<td>268</td>
</tr>
<tr>
<td>2011</td>
<td>9.96</td>
<td>20.61</td>
<td>84</td>
<td>260</td>
</tr>
<tr>
<td>2012</td>
<td>11.18</td>
<td>23.76</td>
<td>90</td>
<td>274</td>
</tr>
<tr>
<td>2013</td>
<td>12.19</td>
<td>26.55</td>
<td>96</td>
<td>285</td>
</tr>
<tr>
<td>Growth in the period:</td>
<td>43%</td>
<td>53%</td>
<td>30%</td>
<td>17%</td>
</tr>
</tbody>
</table>

Table 6. Offer of seats and flights by airlines in Colombia (2009-2013) (ATAC, 2014)

6. Colombian air transport around the world

Sustained growth of Colombian air transport in the last decade has also been reflected in international indicators. For the period 2005-2013 annual increase for total number of passengers in Colombia has been 10.5%, more than twice the world average and two thirds above the average for the Latin American and Caribbean region (see Figure 10) (ACI, 2007, 2008, 2010, 2014; Aerocivil, 2014a).


With respect to the total cargo transport by air in Colombia this was severely affected by the last world economic crisis (2008-2009), which accelerated negative growth that was already being felt in traffic from the previous year (2007), principally in national cargo whose negative growth was double that experienced by international cargo for the year 2009. Compared with the transport of cargo worldwide and the L&C region for the period 2005-2013, except for the short period 2007-2009, growth in the air cargo transport sector showed a pattern of growth
similar to those shown worldwide as well as for the L&C region (see Figure 11) (ACI, 2007, 2008, 2010, 2014; Aerocivil, 2014a).


For the L&C region Bogotá-El Dorado Airport (BOG) is the third most important regional terminal in terms of total passengers, after the airports of São Paulo (GRU) and Mexico City. On a relevant note, BOG is the first airport in the region in terms of total air cargo shipped (see Figure 12) (Aerocivil, 2014a; AICM, 2014; ALTA, 2014; GRU, 2014).
7. Economic dimension of Colombian air transport and its impact

In this essay the dimension and economic impact of the Colombian air transport industry is measured from three sources:

- by its contribution to GDP,
- support to other industries and
- by creation of employment.

7.1 Contribution to GDP

The contribution of air transport GDP to national GDP in Colombia has been practically constant during the last decade, about 0.43% overall it has shown an uninterrupted an important increase since 2010, reaching 0.52% for the year 2013 (see Figure 13) (Banco de la República, 2014). The percentage participation of the air transport subsector in the transport sector has grown during the past decade while the latter has been practically invariable with respect to national GDP during the same period (see Figure 14) (Ministerio de Transporte, 2014). in comparing the evolution of the three methods of transport, air, sea, and land, for the period 2000-2013, the GDP for air transport showed the highest growth, 6% annual average for the
period against 4.1% of GDP for land transport and only 1% of GDP for maritime transport (see Figure 15) (Ministerio de Transporte, 2014).

Figure 13. Growth of National GDP and Air Transport GDP (as % of National GDP) (Banco de la República, 2014)
Figure 14. Participation GDP air transport in GDP transport, and of this in national GDP (Ministerio de Transporte, 2014)

Figure 15. Comparative behaviour of the three transport sub sectors' GDP (%) (Ministerio de Transporte, 2014)
7.2 Support to other industries

The transport of cargo by air is an important building block of Colombian foreign trade. During the past decade (2003-2013) the average annual growth of exports by air was 16.78%, while the average annual growth of total Colombian exports was 8.82%. Imports by air cargo also show a positive annual growth average, albeit more modest, 1.39% (Ministerio de Transporte, 2014; MinCit, 2014a). It is true that in terms of tonnage maritime transport has the greatest share of total exports, 98%, but in terms of value maritime transport has a share of 85%, and air transport only 10%. But if the transport of coal, petroleum and petroleum derivatives are excluded, the participation in the value of exports might gear is 25% of the total (MinCit, 2014a).

And finally, mention that the contribution of air transport to tourism is relevant, especially if one considers that in Colombia, tourism is the 3rd most important source of foreign exchange after oil and coal. During 2004-2013 the increase of foreign visitors arriving by air was 186%; in 2013 1.8 million tourists entered the country by air, 86% of the total, the rest (14%) came by sea (via cruise ships) (MinCit, 2014a). The contribution of the aviation industry and air transport to attracting foreign tourists is superlative due to:

- poor infrastructure system in international road transport (cross-border),
- the nonexistent railway passenger transport (be it either domestic or international), and finally
- a very small (though growing) contribution of maritime international passenger transportation system (via cruise ships).

This situation leads to the fact that the main and most important means of arrival of foreign tourists to the country has always been by air (Ministerio de Transporte, 2014).

Finally, the travel and passenger transport account balance of payments, an account which is supplied with data from the air transport industry among others, shows a rapid and dynamic growth in the last decade, reaching the total of 4.7 billion USD in 2013, 400% more than in 2003 (see Figure 16).
7.3 Employment creation

The air transport industry generates approximately 124,000 jobs in Colombia distributed in the following manner:

- 55,000 direct jobs;
- 44,000 indirect jobs, associated with the industry supply chain and
- 25,000 induced jobs.

And in parallel, the promotion of the creation of 198,000 jobs in related industries, mainly in tourism, as a result of the catalytic effects of the air transport industry (Aerocivil, 2014b; Oxford Economics, 2011).

8. Conclusions

The most relevant public policies for the air transport sector in Colombia were implemented halfway through the first decade of this century. It wasn’t until 2005 when the Colombian national government, in view of the evolution of the industry indicators, really understood the strategic importance of air transport for the national economy. For this reason, although
certain policies for the sector were already being implemented in national development plans and other legislative instruments (ad hoc norms and decrees) since the mid 1990's it was only until the latter half of the first decade of 2000 when the most important public policies for air transport emerge into national development plans for the periods 2006-2010 and 2010-2014. These were implemented, administered and controlled principally by the National Aeronautical Authority, Aerocivil, and to a lesser extent by the National Agency for Infrastructure (ANI). Industry indicators show that both the airport concession program to the private sector, undertaken in four phases between 1996 and 2014, along with deregulation and progressive liberalisation of the commercial sector, which began in 1990s were fundamental for the growth, consolidation and strengthening of the Colombian airport structure and air transport industry both locally and internationally.

The impact and effects of public policy on air transport illustrate clearly the indicators shown here. These policies have not only catapulted the industry but have also meant that air transport on the one hand, contributes significantly to national wealth, and on the other hand supports and stimulates growth in other strategic sectors in the country, for example tourism. In short, there is a large void in the field of air transport investigation in the Colombian geo-environment in almost all its aspects, therefore, this paper is a first contribution to the knowledge of how public policies have positively affected the industry's development, assessed through air transport and socio-economic indicators. The authors are already working on related items, for example, on standards of competitiveness reached by the local airport industry and its regional and global benchmarking, the development and geo-economic importance of small-regional Colombian airports, an assessment of the gravitational model applied to the domestic air transport network, and an analysis of connectivity achieved by the domestic air transport network.

References


