

ENTRANCE AND PRESENCE OF AZUL AIRLINES: A FOCUS ON AIRPORT SELECTION, ROUTE COMPETITION, AND MULTI-MODAL THOUGHTS

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ABSTRACT

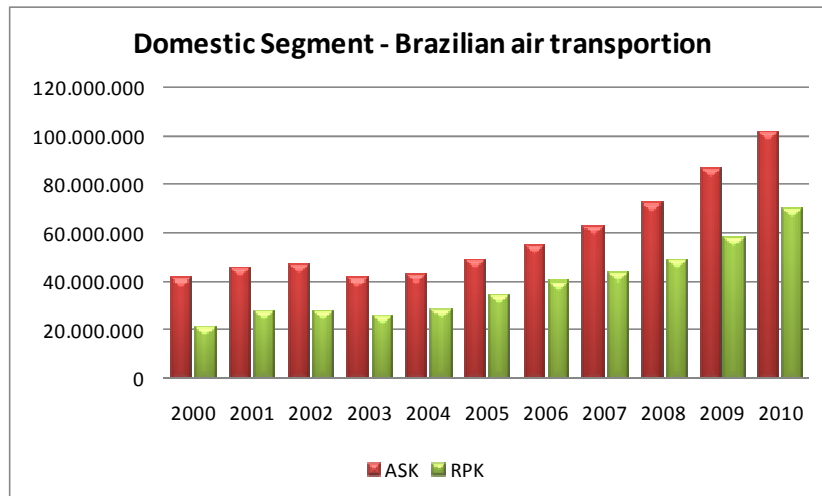
Azul Airlines just completed two and a half years of activity in Brazilian domestic markets for scheduled passenger service and is already the third power in the industry, just behind the TAM and GOL virtual duopoly, accounting for 7.5% of Brazilian domestic revenue passenger-kilometres. The aim of this paper is to deepen the analysis first developed in Bettini and Oliveira (2010) by intensely exploring publicly available data on capacity at airport- and route-level, measured in terms of number of departures. First, we return to the theme of the entry pattern of Azul Airlines, try to understand its rationale and compare it with existing paradigms. Second, we perform a comprehensive study on capacity-wise rival reactions Azul triggered. Amid these two main objectives, we also present the reader with the latest developments of Brazilian passenger air transportation and some thoughts on the evolution of Brazilian transportation matrix.

RESUMO

A Azul Linhas Aéreas acaba de completar dois anos e meio de atuação no segmento doméstico do transporte aéreo regular brasileiro e já se consolidou como a terceira liderança na indústria, atrás apenas do duopólio composto pela GOL e pela TAM, ao responder por 7,5% do passageiro-quilômetro pago. Este artigo aprofunda a análise que Bettini e Oliveira (2010) desenvolveram por meio de uma exploração intensa de dados de planejamento de capacidade em aeroportos e ligações – em termos de partidas semanais – e que estão publicamente disponíveis. De início, revisitamos o tema dos padrões de entrada da Azul, em uma tentativa de compreender sua racionalidade e compará-la com os paradigmas existentes. Em segundo lugar, desenvolvemos uma análise ampla das reações em capacidade que a Azul provocou de seus rivais. Além destes dois objetivos, também apresentamos ao leitor alguns dos mais recentes desenvolvimentos do setor e fazemos considerações sobre a matriz brasileira de transportes.

1. INTRODUCTION

Brazilian scheduled air transportation has been experiencing unprecedented growth since the middle of the 2000-decade: virtually all metrics portrait that this segment is living some of the best years ever. Figures for available seat-kilometres (ASK), revenue passenger-kilometres (RPK) and load-factor, as well as aircraft movements and passengers flown are all testifying a huge transformation on the dimensions of this industry in Brazil. Data from Agência Nacional de Aviação Civil (ANAC) – Brazilian Civil Aviation Authority shows that the number of domestic passengers increased 109% in these latest 10 years, a figure that achieved 58,471,243 in 2009 from 28,016,184 in 2000, while Empresa Brasileira de Infra-Estrutura Aeroportuária (Infraero) – Brazilian public company in charge of the administration of 67 of the most important airports in the country shows that the number of take-offs from airports under its responsibility increased 46% in the last five years, achieving 2,474,233 in 2010 from 1,698,641 in 2005. Graphic 1 shows the intense growth in Brazilian scheduled air transportation from the perspective of traditional ASK and RPK metrics.



Graphic 1 – Decade evolution for Domestic ASK and RPK (thousands)
Source: Agência Nacional de Aviação Civil (ANAC) Statistical Yearbooks

A fragment of reality absent from the crude figures shown above is the healthy interiorization process of air transportation in Brazil – a topic that will be pervasive in our analysis at Sections below.

Protagonists of such a growth, Brazilian airlines are crossing, on their average, extreme good times in terms of financial health. GOL posted a net income of R\$ 890.8 million in 2009 and R\$ 214.0 million in 2010. Equivalently, TAM Airlines posted a net income of R\$ 1.34 billion in 2009 and R\$ 637.4 million in 2010. In spite of smaller in 2010 than in 2009, those figures put these Brazilian airlines well positioned in international comparisons. Additionally, Avianca (rebranding for Ocean Air) repositioned itself, definitely giving away from less dense city-pairs and reinforcing its links with Colombian sister airline, and Webjet Airlines could successfully establish itself in the market, after a couple of years of lack of definition regarding its business plan.

The current period is also very much favorable for air transportation customers in Brazil. According to monthly data ANAC collects for the full universe of domestic routes scheduled Brazilian airlines operate, the yield – average price per kilometer – is in an ever-decreasing trajectory, achieving all-time lows each month. According to ANAC Relatório de Yield-Tarifa (2011), there was a real, inflation-discounted decrease of about 60% in the average fare Brazilian passengers pay for domestic flights between December 2002 and December 2010. Furthermore, January 2011 saw the smallest average fare for the month since the historical series began in 2002. The importance of this figure shall not be neglected, as January is the all-year high season month in Brazil, when fares typically peak.

Domestic air transportation in Brazil is on track for beating yet another historical record: if trends do not capsize, 2011 will be the first time in the history of Brazilian passenger transportation matrix that the number of passengers flown will be higher than the number of passengers using bus for inter-State services. Although not directly comparable, as a relevant number of domestic air transportation passengers fly intra-State routes, the sense

of the figure is sufficiently symbolic. Data from Infraero and Agência Nacional de Transportes Terrestres (ANTT) – Brazilian Authority for Land Transportation show that the almost equivalence achieved in 2010 – 65.9 million passengers flown versus 66.7 million passengers transported by roads – will probably shift places by the end of 2011.

Amid these positive developments, it is also worth noticing the reflourishment of the regional aviation segment. Airlines such as Passaredo and TRIP have been achieving unprecedented growth in terms of fleet, destinations and operational, financial results. For sake of illustration, Passaredo has been flying the biggest regional jet fleet in Brazil since the demise of VARIG's affiliate Rio Sul in the early 2000s, while TRIP spans its wings over more than 80 cities, a record for a single carrier since the demise of the SITAR program, a government-led instrument that granted regional monopolies for local carriers up to the 1990s. The current attractiveness of the Brazilian regional aviation segment is so intense that a few capital transactions took place recently: US operator Skywest took a 20% share in TRIP in 2008, while TAM assumed a bullish profile and acquired the totality of Pantanal Airlines in the last days of 2009 and a 31% share of TRIP in March 2011, while the recent takeover of Webjet by GOL will surely deserve dedicate studies. First understandings regarding these strategic movements taken by TAM – an apparent return to regional origins – can be found at Bettini (2011).

Amid this regional aviation upsurge – and in line with the interiorization of air transportation above-mentioned – airports other than traditional São Paulo's, Rio de Janeiro's and Brasília have been presenting impressive growth, actually above the national average. Taking scheduled domestic movements (departures and arrivals) between 2005 and 2010 for a few “out-of-the-circuit” airports, the 46% domestic average increase is easily surpassed at locations such as Cuiabá (53,484 from 34,786 movements, a 54% increase), Goiânia (64,287 from 37,631 movements, a 71% increase), Belo Horizonte Confins (79,431 from 36,047 movements, a 120% increase – even accounting for the 34% increase at Belo Horizonte Pampulha city-centre airport, although facing rising operational constraints) and Campinas Viracopos (66,105 from 19,154, a 245% increase in just five years). Indeed, figures such as these for “out-of-the-circuit” airports, especially for the Campinas Viracopos case, shows that, in terms of scheduled domestic aviation in Brazil – and the airlines that take the protagonist role – times have changed and in the middle of such process one has to take into account the extremely well-succeeded market entry of Azul Airlines.

With these extremely dynamic times for the Brazilian air transportation industry as background, this paper follows the pioneer venture of Bettini and Oliveira (2010) and tracks Azul in this two and a half-year balance. In this task, the following structure is adopted: Section 2 reviews some of the latest developments achieved by Azul Airlines. Section 3 then empirically deals with actual entry pattern Azul followed in the beginning of its operations by means of revisiting the structure of analysis used by Oliveira (2008) as far as low-cost carriers paradigms (classic Southwest, jetBlue – sister airline, as it shares the same mentor – and AirTran-Frontier) and entry choice at airport-level, are concerned. We will make extensive use of ANAC's *Horário de Transporte* (Hotran), public-available OAG-like schedules for Brazilian territory. Section 4 dedicates its

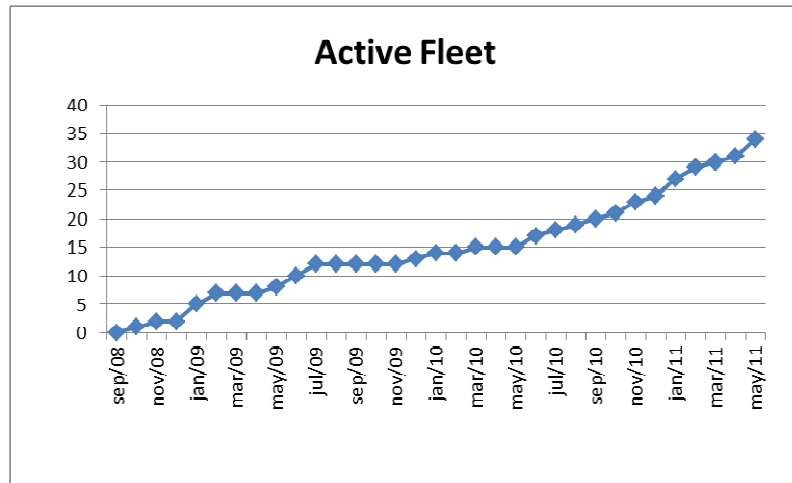
attention to the reactive side of airport- and route-choices. At this point, the aforementioned interiorization of Brazilian air transportation, coupled with the roles TRIP and Passaredo play for TAM and GOL, respectively, will be duly highlighted. Section 5 wraps up.

2. THE MATURING PROCESS OF AZUL AIRLINES

Azul Airlines is, as stated in Bettini and Oliveira (2010), the latest case of successful entry into Brazilian domestic commercial aviation market, having started its operations just before Christmas 2008. The sole newcomer since circa 2005 to have actually succeeded, Azul started impacting the dynamics of the Brazilian domestic market even before the take-off of its first flight, as anticipated in Bettini and Oliveira (2010), but has definitely gone beyond. The rapid achievement of traffic milestones attests the vigour of this newcomer: Azul took 8 months before transporting its 1st millionth passenger (August 2009). After that, the 2nd millionth took another four months (December 2009) and the 3rd millionth passenger boarded yet four months after, in April 2010. After that, the 4th millionth passenger was recorded in July 2010 and the 5th millionth in September 2010, closely followed by the 6th millionth in November 2010. The guidance for 2011 predicts 14 million passengers will have been transported by the year-end. Indeed, Azul transported the 7th millionth passenger in February, the 8th millionth in April, the 9th millionth in May and the 10th millionth in June, signing a promising path for the goal. These traffic figures are actually higher than those presented by GOL Airlines in its first two years: GOL flew 1.6 million passengers in its first year (Azul moved 2 million) and 3.9 million in its second year (Azul surpassed 4 million). Indeed, Business Week (2010) says Azul is the world leader in what relates to the highest number of passengers transported in the first year of operations.

Azul Airlines debuted with an aggressive marketing strategy even before the take-off of its first flight, as the name itself for the airline was chosen by mobilizing a polling built with public opinion massive participation. After the debut of its operations, Azul kept developing wide marketing campaigns: All aircraft are Christianized after a name based on the word “Azul” – a practice also common at jetBlue, an airline which also came to life from the mind of David Neeleman. Additionally, Azul is pretty much active on stickering its planes with special colours, what adds both ancillary revenues and customer recognition at airports: a broad agreement was signed with Nestlé Chocolaterie for up to fifteen airplanes, and a pink couple of aircraft is flying for a campaign for Breast Cancer Fight since October 2010.

In terms of fleet evolution, deliveries for the original firm order for 36 Embraer E-Jets from 190 and 195 models has being stead: within two and a half years, active fleet jumped from two airplanes to thirty-five samples, as Graphic 2 illustrates. Still before taking all deliveries, Azul signed a supplementary agreement with Embraer for 5 additional jets, taking the firm order to 41 E-Jets. Whether those five supplementary jets came from the partial exercise of the purchase option for 40 aircraft the airline has with Embraer is not clear: notwithstanding, Azul has an agreement for at least 76 airplanes with Embraer among firm orders and options.



Graphic 2 – Azul Active Fleet Evolution
Source: Airfleets

Graphic 2 aggregate numbers hide something noteworthy: Azul crossed an important strategic transformation between its first and second years of operation in what regards fleet strategy. Although original business plan pointed to the strategy of relying on a new, sole, and smaller-than-average type of aircraft, the July 2010 Farnborough Air Show brought a striking surprise, as Azul ordered 20 firm, plus 20 options for the ATR 72-600 turboprop, an aircraft developed for the transportation of some 70 passengers on regional segments, with six pre-owned, anticipatory and directly leased from the manufacturer airplanes of the type already in fleet and due to operate until the purchased units start being delivered. Not just the founding rule was abandoned in favour of smaller aircraft, but those new planes were to come from a different manufacturer, as the choice was *not for* Embraer 170 and 175s models. This fact is especially surprising since we now know, according to Época Negócios (2011), that the business plan that gave shape to Azul was actually conceived by Embraer itself, originally supposed to gain corpus with the now bankrupt BRA Airlines.

To interpret such strategic movement as an implicit answer to a rival reaction – the development of TRIP Regional Airlines with the addition of up to 30 Embraer E-Jets to a fleet composed by dozens of ATRs and employed on a network operated in a number of code-share agreements with TAM Airlines – is highly inviting. Indeed, the whole strategic interaction existing between Azul by one side, and TAM + TRIP by the other is a phenomenon that comes to the top of the research agenda, as the lines between regional and mainline fleets and networks seem to be blurring.

The network of Azul Airlines also evolved in these two and a half years of the airline. The first strategy put in place – the aggressive addition of new destinations, with medium-to-long average stage length – was partially replaced by the developed of what the airline calls secondary hubs, airports where the airline intends to deploy its arriving turboprop fleet. Indeed, Porto Alegre, Belo Horizonte, Recife and Fortaleza – all examples of what we termed as “out-of-the-circuit” cities – now host a number of daily, non-stop links among some of them and with several other cities of the airline network in

both shorter and equal average stage length. Actually, today almost 30% of the flights operated by Azul Airlines do not have Campinas as origin nor destination. Additionally, the number of destinations in the Northeastern region of Brazil is remarking (11 out of the 35 airports served), possibly signaling that the loans granted by Banco Nacional de Desenvolvimento Econômico e Social (BNDES) – Brazilian Development Bank for financing part of the airline's fleet indeed had a formal or informal clause regarding the focus in that region of the country as a counterpart for the loan.

Still relating to network conception, *Época Negócios* (2011) reported the main lines of the route-selector algorithm Azul is using. In line with data regarding the imminent surpassing of air passengers over land passengers at the national level, Azul indeed makes use of information regarding land transportation in order to decide for new airports and new routes. Among the elements the airline uses for identifying expansion possibilities, information on passenger volumes and the cost of driving the way are used, what gives further credit to the assumption that not just the lines between regional and mainline fleets and networks seem to be blurring, but also the lines for multimodal competition seems to be under scrutiny.

Among the latest developments regarding Azul Airlines, the fact the airline was granted with the right to use 8 slots at Congonhas airport on weekend days figures high: ANAC followed a rule for the slot redistribution that accounted for the operational efficiency – both punctuality and regularity – as pre-conditions for auction eligibility. In these two criteria, Azul is performing high and may, because of this, be eligible for a number of more slots in the 2011 edition of the rotational auction. If it happens, the success Azul is achieving against rival airlines in Brazilian territory may mine them also at the most valuable airport.

In spite of all those favourable developments, the trade still casts doubts on the profitability of Azul operations, measured both in terms of revenues and in terms of margins. As a closed capital airline, numbers as these are not reported in the periodicity or in the details that guide the practice of public-listed companies.

Table 1 – summary, descriptive figures for Azul

	1 st semester	1 st year	2 nd year	Current (5 th semester)
<i>Fleet</i>	12	14	27	35
<i>Airports</i>	13	16	28	35
<i>Airport-pairs</i>	14	19	51	53
<i>Airport dominance</i>	57.6%	55.9%	74.1%	78.3%
<i>Weekly flights</i>	506	732	1445	1635
<i>RPK market-share</i>	4.3%	4.75%	7.7%	7.5%

* Airport dominance: share of weekly departures out of the most important airport of its network (Campinas Viracopos)

Sources: Anuário Estatístico do Transporte Aéreo (ANAC), and Hotran+ database (Lacte).

3. AZUL ENTRY PATTERN: FIRST QUANTITATIVE EVIDENCES AND COMPARISONS WITH KNOWN PARADIGMS

According to what was reported in Bettini and Oliveira (2010), after setting its operational base in Campinas Viracopos, Azul progressively added a number of airports into its network. The cities of Porto Alegre, Salvador, Curitiba and Vitória were added right in the first months of operations, later followed by other dense cities such as Fortaleza, Recife and Rio de Janeiro, plus a small number of less dense ones such as Manaus, Navegantes, Campo Grande, Londrina and Maceió. In common, all those destinations were served with non-stop, multiple flights from the airline base in Campinas, signal of a sound strategy aimed at building a hub in Campinas, enabling Azul to gain some market power, and providing customers from all the airports within its network with multiple (in both senses of destinations and departure times) connecting possibilities.

This first airport picking followed initial statements of the airline, pronounced still in 2008 and before the first flight occurred, that Curitiba and Rio de Janeiro Santos-Dumont were supposed to receive flights and that the newcomer was determined on stepping aside the Brazilian most crowded airport pair, the one linking São Paulo and Rio de Janeiro city-centre airports of Congonhas and Santos Dumont. However, this list reveals at least one apparent frustration regarding the first plans, as Belo Horizonte – both the intended city-centre Pampulha airport and far-located Confins airport – was put aside.

The presence of five Northeastern cities in this initial network could also feed the rumour – described at Bettini and Oliveira (2010) – that BNDES, Brazilian Development Bank, may have indeed had attached a special condition while providing the financing for a handful of aircraft Azul received in its first year of operations, according to which Azul should privilege Brazil's North-eastern region in its network expansion plan.

Facts such as these cast interest in the following question: “is there any recognizable pattern on criteria guiding airport selection”? This question becomes even more interesting once we have in mind that, according to Oliveira (2008), jetBlue established a paradigm of its own in the US low-cost, low-fare market: In addition to a pronounced focus on business low-fare passengers, jetBlue distinguished itself by presenting the highest average stage length of the LCC in the USA, sometimes more than 1500 km. Indeed, on the “software” side of its product, Azul and jetBlue share a number of similarities in subjects such onboard product differentiation: Azul counts on onboard product differentiation (a superior class named Espaço Azul – *Blue Space*, counting on a higher pitch separation between rows of seats), offers passengers with the possibility of being rewarded for their fidelity (Program Tudo Azul - *All Blue*), and explores economies of scope, as it provides courier service taking profit of belly cargo capacity available on its passenger aircraft. Finally, other attribute that easily displaces Azul from a typical low-cost airline label is the encouragement for connecting passengers thru its Campinas hub. These issues were originally dealt with, for instance, in Bettini and Oliveira (2010).

Hence, the path we chose to make a preliminary exploration of this subject – what paradigm does Azul seem to follow – was to extent Oliveira (2008) approach and to

vaguely try framing Azul into one of the existing low-cost carrier paradigms, namely (i) Southwest, (ii) jetBlue and (iii) AirTran-Frontier. This approach is especially thrilling as David Neeleman is the founder of both jetBlue and Azul. So, a question such “Does Azul follow jetBlue paradigm?” sounded extremely inviting.

In this task of assessing the entry pattern of Azul Airlines and its overall identity, a brand-new database was constructed. Built on data publicly available, monthly Hotran figures for capacity planning at airport and airport-pair levels were coupled with yearly data on passenger traffic. Then, a very simple discrete-choice model for airport picking for Azul’s first year of operations was specified.

Departing from the grand total of 160 airports that received scheduled flights in the year 2008, our model tried to identify what patterns could be present on airport selection by Azul for the composition of its 1st year network. A couple of filters were applied. First, we excluded from the experiment the two airports serving the city of Campinas – Amaraes and Viracopos, as our interest is to identify airports others than the operational base. Also, due to the proximity (less than 90km far), the three airports serving the city of São Paulo – Congonhas, Guarulhos and Marte – were also excluded. After that, a last filter excluded seven private aerodromes that serve farms in Brazilian countryside. These filters resulted in a sample of 148 Brazilian airports.

Instead of applying the approach Oliveira (2008) chose – to depart from a flexible post-entry equilibrium profits equation, in line with Boguslaski, Ito and Lee (2004) – we chose a simple, reduced-form model, specified as follows:

$$\Pr(PRES_k = 1) = \alpha_0 + \alpha_1 dist_k + \alpha_2 pdew_k + \alpha_3 NE_k + \alpha_4 JET_k + e \quad (1)$$

Index k stands for airport and can be easily suppressed. Equation 1 above was estimated using standard Maximum Likelihood Estimator and results are reported in Table 2, with goodness of fit statistics Pseudo R² as good as 20% and without attaining especial attention to parameter associated with the constant term.

Table 2 – regression results

	(I)	(I)	(I)	(II)	(II)	(II)
observations	148	148	148	70	70	70
distance	-.000381	-.0002714	-.0000681	-.000381	-.0003866	-.0000539
pdew	.00021 (*)	.0004426 (***)	.0004801 (***)	.00021 (*)	.0002841 (**)	.0003114 (**)
NE	.7982286	1.309727	(-)	.7982286	1.297258	(-)
Jet	(drop)	(-)	(-)	(drop)	(-)	(-)

Void, (*), (**) and (***) mean insignificant, significant at 10%, significant at 5% and significant at 1%

Sources: Anuário Estatístico do Transporte Aéreo (ANAC), and Hotran+ database (Lacte).

Results are conclusive: as jet presence predicts failure perfectly, this variable was automatically dropped. That means that no airport that was not already served by scheduled, jet service became an airport served by Azul in its first year. For this reason, a

subsequent estimation was done excluding this variable. As the significance of distance and Northeast variables was unaltered, binary variable for this later geographic feature was excluded on the third experiment. Indeed, results proved robust to this different specification: for Azul in its first year, all that matter was airport density. Distance from its base airport was out of question, what puts the airline away from a simple approximation with the jetBlue paradigm, at least for its first year of activities.

In order to try investigating if this overwhelming importance of density was coming from a sample that contained too many airports that were equally far and endowed with scarce traffic – airports in the Amazon region – a second set of the three specifications was carried on, now cutting the sample at the 70th most dense airport, with a PDEW figure just at the limit of the profitability of the Embraer 190 airplane: some 50% of occupation. Again, results were unaltered, including the neglectful presence of a presumable “BNDES-effect”, and the irrelevance of distance for the decisions Azul took. Indeed, with both specifications tested, airport picking seemed to follow a single principle: airports that proved to be dense in the year before. Curiously, a jetBlue-inspired airline seemed to follow an indigenous, tropical Southwest-paradigm.

4. REACTING TO AZUL AIRLINES: AIRPORT- AND ROUTE-LEVEL EVIDENCES

Section 3 dealt with the first part of the history of Azul. After its first year, network kept increasing and contact with rival airlines followed the same pace. With the same availability of capacity data, are we able to identify signals of capacity game?

Looking for literature on the theme, capacity games – strategic interaction involving the setting of capacity in routes – are assumed to be rare. With very few exceptions – probably the American Airlines vs. United Airlines in Chicago, as reported in Brander and Zhang (1993), stands as one of them – no evidence is present, for instance, in more recent studies, such as Goolsbee and Syverson (2008). However, a closer look may reveal some patterns and curiosities that surround this subject in the case of Azul, even in spite of the lack of formal, structural econometric modelling.

4.1. Monopoly Routes

Out of the current 53 airport-pairs Azul flies, 21 see no competitor. Surprisingly, they are easily identified according to one of three patterns: 17 of them depart Campinas Viracopos, especially to nearby destinations in South, Southeast and Centre-west Regions of the country. Two of them have São José dos Campos as vertex, and other two of them links Belo Horizonte Confins airport with long-range destinations in Northern (Belém) and Northeastern (São Luís) parts of Brazil.

4.2. Azul as a Pioneer

A set of 15 airport-pairs saw Azul as the first to enter, but were then followed by the entry of rival airlines. GOL and TAM are the main followers and airport-pairs include the ones linking Campinas to Northeastern destinations (Fortaleza, Maceió, Recife and Salvador), but also the route to Porto Alegre. Porto Alegre was also surrounded, as the link with Navegantes watched the arrival of Webjet, and the route between Porto Alegre

and Rio de Janeiro Santos Dumont testified the arrival of TAM. To some extent, Azul assumed some pioneer role.

4.3. The Entrance of Azul is Accommodated

Basically all routes linking Campinas with airports in nearby States are accommodated, in the sense that the arrival of Azul does not modify the presence of the main incumbents. That means, for routes such as Campinas to Curitiba, Rio de Janeiro Galeão, and Belo Horizonte Confins, Azul enters these existing routes and incumbents (GOL and/or TAM) choose to do nothing.

4.4. Special Case 1: the entrance of Azul is anticipated

Capacity setting by airlines is a free endeavour in Brazil nowadays. However, the process of asking for authorization is time-consuming, and in this time window rival airlines get to know what the plans of each rival are. This can explain why links such as Campinas to Brasilia and Florianópolis saw an upsurge in the flight supply of GOL and TAM in the last months of 2008, just before Azul got its first flight into the air, a finding that corroborates what Bettini and Oliveira (2010) anticipated.

4.5. Special Case 2: competition with TRIP

The most interesting findings relate to the behaviour of Azul and rival airlines not in Campinas, its first operational base, but in Belo Horizonte Confins airport. A number of links between this airport and destinations in nearby States and in the Northeastern region of the country are settled chronologically jointly by Azul and TRIP. Again, this is a finding that corroborates Bettini and Oliveira (2010), in a signal that competition with TRIP seems fierce.

4.6. Special Case 3: abandoned routes

A last group of routes that are very interesting to have in mind are those that were abandoned by Azul. These routes – nine airport-pairs in total – are mixed in their profile, but a pattern emerges: Goiânia and Campo Grande showed to be somehow hostile to Azul. Not surprisingly, they are becoming hubs for Passaredo and TRIP, respectively. Actually, in this sense, the behaviour of TRIP in Belo Horizonte follows the same rationale, as this airport is becoming, increasingly, a hub for this airline. Indeed, Figure 1 shows what may be the first signs of the new geography of connecting airports in Brazil, now promoted by second-tier airlines (Azul, Passaredo, TRIP) at equally second-tier airports (Cuiabá, Campo Grande, Goiânia, Campinas and Belo Horizonte Confins). The importance of this special case gains yet more momentum if we keep in mind that Passaredo and TRIP may not act by themselves, but rather in close alignment with GOL and TAM, respectively: although the coordination level achieved between Passaredo and GOL is something still far from obvious, the same cannot be said regarding the one TRIP and TAM already achieved. If the premise is correct, then Passaredo and TRIP shall not be regarded as fragile, second class companies, but actually as arms of the two most important Brazilian airlines, eager for defending their most traditional market segments by means of neutralizing Azul on its growth ambitions.



Figure 1 – Brazilian First- and Second Generation Connection Belts
Source: ANAC and Hotran+ database (Lacte)

Concluding Remarks

In addition to main findings reported at previous sections – Azul's 1st year of growth was driven by observed, previous year density, and the most intense capacity competition seems to occur against TRIP – we will now refer to topics that deserve especial attention by one side, in the terms of macroeconomic sensitiveness, and others that justify further study by the theoretic side.

A first topic, macroeconomic by nature, that deserves further monitoring relates to the relation between the recent expansion rate of the industry and the favourable exchange rates, as pre-owned aircraft composes a relevant share of the fleets that are fuelling up the expansion of air transportation capacity at regional level. This applies to Azul but also to a significant share of the other second-rank carriers: TRIP, Passaredo and Avianca are all dependent on pre-owned jets, leased at terms that are, by their own nature, dependent on the exchange rates. In this aspect, TRIP flies three ex-Paramount Airlines Embraer 175 and three ex-Baboo Embraer 190. The 13-strong fleet of Passaredo is wholly composed by pre-owned, leased 50-seater Embraer Regional Jets. Both Passaredo and TRIP deals were arranged via ECC Embraer Leasing Company Ltd. Avianca now relies on a small sub-fleet of Airbus A318 that came from Grupo LAN, while the ATR 72s that are flying for Azul came in second hand, in a scheme arranged by the manufacturer. In case of macroeconomic turmoil, will these fleets stay in Brazil, or leave? Will airlines that rely on them be able to pass-through their increased costs to customers that are already pay all-time low fares? This is a subject that deserves attention as they are vital for the understanding of the sustainability of growth in the segment.

In second place, but by no means least important, a transversal theme extremely pertinent for a forum such the ANPET meeting gains impetus: taken together, the advances Azul

and TRIP are achieving, the latest figures for both air and land passenger transportation, the consolidation of Azul land feed at Campinas Viracopos airport, the revelation of Azul route selection algorithm, the establishment of new and alternative air hubs as shown in Figure 1, and the recent comprehensive agreement TAM signed with Pássaro Marron, one of Brazilian most important bus service companies, and ultimately the ever-decreasing yields, all these aspects also coupled with the upsurge of a new middle-class point to a striking field of research and public policy centered at two axis.

First, the most recent expansion trajectory for domestic air transportation finally starts disputing long-distance bus services. As we get closer to the implementation of ProPass [ANTT, 2009] and come to an end in the terms for the auction of the Brazilian High Speed Train, the interaction between aerial and land means of transportation may be redesigned and forge a renewed matrix for passenger transportation in both long-distances (ProPass sphere) and the densest and most lucrative (Rio de Janeiro – São Paulo – Campinas) markets. Second, the success Azul achieved on its task of selling Viracopos airport as “São Paulo” shows that the urban and transportation planning of the metropolis shall now officially encompass a radius of circa 100 kilometres, what redefines – by means of enlarging yet again – the sense of the Brazilian biggest city and its metropolitan area. Coupled, these two axes may signal that both theory and practice of multi- and trans-modality in Brazil may be on their way of achieving increased, unprecedented levels.

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