

**PART D**

**METHODOLOGICAL NOTES  
AND POSSIBLE REFINEMENTS**

A. METHODOLOGICAL NOTES

1. This section offers a detailed description of the methodology used by the Secretariat to assess the degree of liberalization of air transport regimes globally with its the QUASAR methodology. It seeks to provide all the information necessary to reproduce the Secretariat's computations.

2. By providing, as far as possible, an "open source" methodology, the Secretariat's intent is to allow any interested researcher or practitioner to extend, correct and, more generally, improve its analysis. It should thus be possible, for example, to code ASAs that are not part of the current ICAO sample or to introduce changes to the ones presently coded, to take into account additional market access elements (e.g. routes) or to disregard some of those currently considered, or to weight the various market access elements differently.

3. The Secretariat stands ready to share the underlying QUASAR Excel data sheets on demand. It should be noted that, even if substantially manipulated, a significant portion of the data therein is drawn from the ICAO WASA database, 2005 edition, and, hence, the object of copyright protection.<sup>1</sup> Similarly, traffic data have been kindly provided by IATA on the understanding that exact passenger numbers would remain confidential and that only traffic ranges would be disclosed.<sup>2</sup>

4. This section is organized in five parts. Part 1 describes the scope of the bilateral ASAs analysed and the qualifications introduced to the information contained in the WASA. Part 2 explains the weighting system and construction of the Air Liberalisation Index, and part 3 discusses the identification of "types" of bilateral ASAs. The choice of traffic data is described in part 4, while part 5 illustrates the additional indicators selected.

**1. Scope of the analysis**

5. As explained in Part A of the present document, the Secretariat's analysis is based on the information contained in the ICAO WASA database, 2005 CD-Rom edition. This database contains codified summaries of the main provisions of all bilateral ASAs filed with ICAO by its Contracting States<sup>3</sup>, as well as, for the first time in the 2005 edition, of a number of ASAs identified by ICAO *proprio motu*. In addition, differently from previously issued paper compendia of the WASA database, the CD-ROM version includes also the facility to search the database, a feature which, in itself, has proved key in enabling the Secretariat to carry out its analysis.

6. The 2005 version of the WASA contains over 2200 bilateral ASAs. While this is a major undertaking on the part of ICAO and represents what is acknowledged as the best and most complete publicly available source of information about the contents of the agreements<sup>4</sup>, the database does have limitations in terms of its scope.

---

<sup>1</sup> The ICAO WASA Database can be purchased from:  
<http://icaodsu.openface.ca/documentItemView.ch2?ID=9515>

<sup>2</sup> Should Members have an interest in obtaining, against payment, more detailed statistical data, they should contact IATA's Business Intelligence Services at: [bis@iata.org](mailto:bis@iata.org)

<sup>3</sup> In reality, WASA 2005 also contains data on territories that are not ICAO Contracting States., i.e. American Samoa; Aruba; Hong Kong, China; Macao, China; Netherlands Antilles and Tuvalu. At the same time, WASA does not cover all 189 ICAO Contracting States, as it contains no information about Andorra, Belize, Eritrea, Kiribati, Micronesia (Federated States of), Monaco, Palau, Saint Vincent, San Marino, Tajikistan and Timor Leste. Throughout the present document, the countries and territories contained in the WASA database have been referred to as Contracting States.

<sup>4</sup> Airline Business, April 2006.

7. The practice of registering bilateral agreements with ICAO has apparently declined in recent times, despite an obligation to this effect under the Chicago Convention.<sup>5</sup> The number of agreements registered with ICAO is estimated to represent about 60 per cent of all active agreements.<sup>6</sup> Recognizing the gravity of this problem, ICAO has begun to seek unregistered agreements and to include them in its WASA database. The 2005 version of the WASA contains 133 unregistered agreements.<sup>7</sup>

8. The Secretariat has focused solely on ASAs covering scheduled passenger services. Whereas the WASA database also contains information about non-scheduled services and cargo, the relevant clauses are often not coded independently.<sup>8</sup> In the case of cargo, for instance, apart from a few all-cargo clauses, the WASA coding refers indistinctly to "services for the carriage of passengers, their baggage, cargo and mail".

9. In some instances, the information generated by the WASA database has had to be altered or qualified, either in respect of the ASAs considered or in respect of the coding of their main features, in order to try to address a number of the database's shortcomings.

(a) Qualifications to the Air Services Agreements included in the WASA

10. Unless there has been a formal amendment or denunciation of a bilateral agreement previously notified to ICAO, it is still contained in the WASA database. As a result, the 2005 edition includes also a number of outdated agreements. Cases in point are the ASAs concluded between EC Member States, which were superseded by the introduction of the third and final Commission liberalization package.<sup>9</sup> Since then, the EC operates as a quasi-domestic market, where, for instance, stand-alone cabotage (i.e., the so-called ninth freedom) is permitted and all restrictions on foreign ownership are lifted vis-à-vis nationals of EC Member States. In view of these considerations, the Secretariat excluded all intra-EC ASAs contained in the WASA database from the analysis.

11. A second qualification concerns those ASAs concluded by States which are no longer in existence or which have been renamed. In the case of the USSR, Czechoslovakia and Yugoslavia, the corresponding bilaterals have been reallocated, respectively, to the Russian Federation (major traffic point and former capital city being Moscow), the Czech Republic (major traffic point and former capital city being Prague) and Serbia and Montenegro (major traffic point and former capital city being Belgrade). ASAs registered under Zaire have been listed under the Democratic Republic of Congo.

12. The names of a number of ICAO Contracting States as recorded in the WASA (i.e. often in abbreviated format) have also been changed, to bring them more in line with standard WTO

---

<sup>5</sup> See, in particular, Appendix A of Resolution 18 adopted at the ICAO Assembly of 2004, which states: "[...] the Assembly has repeatedly stressed the obligation of each Contracting State to comply with Article 83 of the Convention by registering with the Council as soon as possible all arrangements relating to international civil aviation, in accordance with the Rules for Registration with ICAO of Aeronautical Agreements and Arrangements".

<sup>6</sup> Airline Business, April 2006.

<sup>7</sup> Such non-registered agreements are identified in the WASA database by an "N" before the agreement number.

<sup>8</sup> The WASA database (2005) contains only seven agreements covering non-scheduled services independently of any other agreement between the parties concerned, which would have rendered a non-scheduled-only sample too small.

<sup>9</sup> For a fuller discussion, see compilation, page 207.

terminology.<sup>10</sup> Reference to WTO practice, rather than ICAO practice, has also been made when defining geographical regions.<sup>11</sup>

13. In some cases, the WASA contains more than one bilateral ASA between the same two parties. This has sometimes, but not exclusively, resulted from the reorganization of States.<sup>12</sup> In deciding which ASAs should be considered for the purposes of the analysis, the Secretariat has retained the most recent agreement, except where it pertains to non-scheduled services, in which case the – earlier – bilateral agreement covering scheduled services has been retained.

(b) Qualifications to ICAO's coding of Air Services Agreements

14. The WASA database contains ASAs which have been amended but are still recorded in their outdated version.<sup>13</sup> This is due, in part, to inadequate notification with ICAO, and, in part, to the time lag between the conclusion of a bilateral and its inclusion in the WASA database by ICAO.<sup>14</sup>

15. In order to replace these outdated ASAs with the most recent versions, the WTO Secretariat would have required the text of the bilaterals concerned in order to code their main market access features. Such an exercise would have absorbed significant time and resources, and would have inevitably ended up being geographically and linguistically biased. The Secretariat has, therefore, relied on the information as contained in the WASA database, which, at any rate, remains the best available source of coded information about bilateral ASAs. For the same reason, bilaterals not recorded by ICAO in the WASA have been disregarded, and no attempt has been made to rely on the WASA coding to chart historical developments in bilateral aviation policies.

16. One additional qualification with regard to the WASA coding is that commercially sensitive market access information (for example, about capacity limitations) is normally contained in confidential memoranda of understanding or exchanges of notes that are not filed with ICAO alongside the text of the ASA, and are hence not reflected in ICAO's coding. Furthermore, while there may not be an explicit agreement to modify the terms of an ASA, application in practice may in certain instances be more liberal. For example, changes in the ownership structure of an airline may contravene the terms agreed in the withholding/designation clause of a given bilateral, but the Contracting State concerned may decide not to raise objections or to grant a waiver.

17. The WASA also contains coded information on routes exchanged.<sup>15</sup> However, the ICAO Secretariat acknowledges that this information is, in most cases, not very easily quantifiable, as it is difficult to assess the openness or restrictiveness of certain routes. In order to interpret the existing provisions, rights or restrictions under a route schedule, it would be necessary to revert to the text of

---

<sup>10</sup> Aside from abbreviations, changes have concerned: Hong Kong, China (changed from China, Hong Kong SAR); Macao, China (changed from China, Macao SAR); Kyrgyz Republic (changed from Kyrgyzstan); Moldova (changed from Republic of Moldova); Slovak Republic (changed from Slovakia); Tanzania (changed from United Republic of Tanzania); Bolivarian Republic of Venezuela (changed from Venezuela).

<sup>11</sup> Seven regions have been identified: Africa; Asia and Oceania; Commonwealth of Independent States; Europe; Middle East; North America; South and Central America and the Caribbean.

<sup>12</sup> ASAs concluded by the former German Democratic Republic, for instance, are listed under Germany.

<sup>13</sup> Information about new or amended ASAs can be sketchily gathered from specialized journals and the press.

<sup>14</sup> On average, there seems to be a four-year lag between the conclusion of an ASA and its appearance in the WASA database. The most recent ASA contained in the 2005 WASA edition, which became available in May 2006, dates from February 2003.

<sup>15</sup> An ASA "usually contains route schedules and frequently contains conditions, some in the form of restrictions, which attach to some or all of the agreed routes or to the exercise of rights along those routes." (WASA Explanatory Notes, page 11).

the bilateral in question. In light of these difficulties, the information on routes contained in the WASA has been disregarded in the QUASAR.

18. In some instances, the ICAO Secretariat has been unable to code the market access clauses of some bilaterals, because of ambiguity, lack of information or insufficient detail in the text of the agreement. In these cases, the WTO Secretariat has attributed a weight of zero to the feature concerned (see below). In other instances, coding errors have been identified and accordingly corrected.<sup>16</sup>

## 2. Weighting system – Air Liberalisation Index

19. Using the bilateral ASA sample as modified, the Secretariat proceeded with the construction of an index of openness of ASAs. The WASA database does contain a rudimentary classification of bilaterals, i.e. traditional, transitional and full liberalization, which corresponds to the classification of agreements found in ICAO's Template of Air Services Agreements. However, the near-totality of the bilaterals contained in the WASA database falls within the traditional category (1982 out of 2201), with only 154 classified as transitional and 65 as full liberalization. Such a categorization was deemed to be too aggregated to allow for a detailed study of the openness of bilaterals, and the Secretariat has consequently embarked on the creation of its own index, the ALI.

20. This task involved three major steps: (a) the selection, amongst the main clauses coded in the WASA database, of the market access features deemed to be the most relevant indicators of openness; (b) the assessment of the relative importance of each feature in the ALI; and (c) a detailed assessment of the WASA coding of the variants of each market access feature in order to determine their relative weights.

21. Conscious of the degree of arbitrariness involved in any such exercise, in particular with regard to the assignment of relative weights, the Secretariat has devised, in addition to its "standard" weighting system, three additional ones, each giving comparably more weight to one specific market access feature. These non-standard weighting systems are intended to accommodate three specific geographical and economic situations that may influence the value placed on the different market access features of bilaterals. The three situations and their associated weighting methods are explained under section (d).

22. The entire selection and weighting exercise has been undertaken in consultation with a group of professionals, government experts, international civil servants and academics, all involved in the aviation industry.

(a) Selection of market access features

23. The features of ASAs taken into account in the ALI are (in parenthesis, the paragraph containing the definition of the clause in the Explanatory Notes of the WASA database):

1. **Grant of rights**, i.e. the right to carry out services between the two Contracting States (30). In particular, and as explained in Part A of the present document (see, in particular, Table A2), the following rights have been taken into account:
  - a. Fifth freedom rights (30.2)
  - b. Seventh freedom rights (30.4)

---

<sup>16</sup> In particular, two different capacity codes were found to have been attributed to the same ASA, whereas the coding should have been exclusive. Accordingly, the following changes were made: Agreement # 2907 (Fiji - United States), free-determination is "1" and all other fields are "0"; Agreement # 3883 (Japan - Jordan), other is "1" and all other fields are "0"; Agreement # 4196 (Germany - Malta), which was however later disregarded as it concerns two EC Member States, pre-determination is "1" and all other fields are "0".

- c. Cabotage (30.5)<sup>17</sup>;
2. **Designation**, i.e. the right to designate one or more than one airline to exercise the rights to operate the agreed air services (14);
  3. **Withholding**, i.e. the conditions required for the designated airline of the other party to have the right to operate (46);
  4. **Capacity clause**, i.e. the regime which determines the capacity (in terms of volume of traffic, frequency or regularity of service and/or aircraft type(s)) that may be carried on the agreed services (48.1-48.3);
  5. **Tariff approval**, i.e. the regime which governs the approval of the pricing of services between the Contracting States (53.1-53.5);
  6. **Statistics**, i.e. the exchange, or otherwise, of statistics on the part of the Contracting States or their airlines (27); and
  7. **Cooperative arrangements**, i.e. the right for the designated airlines to enter into cooperative marketing agreements (33).

24. The selection of these features<sup>18</sup> as indicators of openness is quite straightforward, except, possibly, for the latter two. With regard to statistics, an ASA that does not require that statistics be exchanged, though in itself not necessarily liberal, is indicative of the parties' intention not to monitor progress and performance of each other's airlines. Indeed, open ASAs tend not to require that statistics be exchanged.

25. As for cooperative arrangements, unfortunately, the WASA does not further distinguish between the types of marketing agreements allowed, although it would have been interesting to find out whether, in particular, third-party code-share is permitted.<sup>19</sup> At any rate, the possibility of entering into cooperative arrangements confers a number of commercial advantages to the carriers concerned and has thus been identified as an indicator of relative openness in bilaterals.<sup>20</sup>

26. The routes exchanged, and any conditions or restrictions attached to such routes would have obviously been key indicators to consider. However, for the reasons explained above, they have been disregarded (the relevant paragraphs in the WASA Explanatory Notes are 55-59).

(b) Relative importance of each market access feature in the Air Liberalisation Index

27. Having identified the seven main features, the next step involved determining their relative importance as indicators of openness, bearing in mind that, as explained in Part A, the maximum ALI that any given ASA may obtain has been set at fifty.

28. Table D1 shows the relative importance of each feature in the standard weighting system. Each feature presents a number of alternative (or, in the case of grant of rights, cumulative) variants. Table D1 shows only the points attributed to the most liberal alternative.

---

<sup>17</sup> The WASA coding does not allow a distinction to be drawn between consecutive cabotage and stand-alone cabotage.

<sup>18</sup> For further explanation and detail on each feature, see compilation, pages 183-216.

<sup>19</sup> For definition and a fuller description, see compilation, page 226, paragraphs 34-36.

<sup>20</sup> For a discussion of the benefits of code-sharing, in particular, see compilation, page 225, paragraphs 23-26.

**Table D1**  
**Relative importance of the market access features in the Air Liberalisation Index**

Features	Maximum points	Relative weight
1. Grant of rights	18	36%
<i>a. Fifth freedom</i>	6	12%
<i>b. Seventh freedom</i>	6	12%
<i>c. Cabotage</i>	6	12%
2. Designation	4	8%
3. Withholding	8	16%
4. Capacity	8	16%
5. Tariffs	8	16%
6. Statistics	1	2%
7. Cooperative arrangements	3	6%
<b>Total</b>	<b>50</b>	<b>100%</b>

Source: WTO Secretariat.

29. Cumulatively, traffic rights have been given the greatest weight, as they have been deemed to represent the essence of an ASA. In the same vein, third and fourth freedom rights, the most basic access feature of an ASA, have not been assigned any points in the ALI.<sup>21</sup> Fifth and seventh freedom and cabotage have all been assigned equal weights.<sup>22</sup>

30. Withholding, capacity and tariff clauses all represent indirect ways to potentially restrict the traffic rights exchanged, so that the most liberal variants of each feature have been considered as the second most important indicators of openness, with an individual weight of 16 per cent.

31. As for designation, the right to designate more than one carrier differs in importance depending on how many scheduled airlines are operating in the territories of the Contracting States concerned, but it is nevertheless indicative of a pro-competitive approach and has been given, in the standard weighting system, a weight of 8 per cent. Finally, in light of the preceding considerations concerning cooperative arrangements and statistics, these features have been weighted least, at 3 and 1 per cent, respectively.

32. In assessing these weights, it should be borne in mind that the ALI is built upon indicators of openness, rather than openness *per se*, as actual practices and the precise terms of an ASA are not necessarily known. Furthermore, the ALI does not chart the current regulatory practice in aviation markets, but is largely forward-looking. For example, although cabotage is granted in only two of the currently registered bilateral agreements in WASA, it is still given a high value in the index, in order to reflect the openness implicit in the granting of this traffic right. A bias towards low ALIs can therefore be expected, due to the underlying progressive philosophy of the index.

33. At the same time, as the WASA database codes the main clauses currently found in bilateral ASAs, the ALI makes no allowance for what might be more liberal, but as yet untested provisions. For example, the most liberal withholding clause found in the WASA is the "principal place of

<sup>21</sup> Sixth freedom, which is the combination of third and fourth freedoms, has similarly not been given any points.

<sup>22</sup> As previously indicated, the WASA database does not distinguish between passenger and cargo freedoms, but only indicates whether a given freedom right has been granted. This is likely to create a pro-liberal bias, as Contracting States have tended to be more protectionist when granting passenger traffic rights than cargo rights (see compilation, page 274). Points might therefore be attributed to the inclusion of a seventh freedom traffic right which only covers cargo.

business" criterion, but a more liberal clause might be envisaged, whereby carriers' designation would depend only on the satisfaction that effective regulatory control is exercised by the designating State.<sup>23</sup>

(c) Variants of each market access feature – ICAO coding and relative weights

34. After determining the overall breakdown of the ALI value for the seven market access features under consideration, the variants of each feature, and the way in which ICAO codes them in the WASA, were examined in detail, in order to assess their relative weight. The market access features have been found to fall into two main categories.

35. The first category comprises designation, cooperative arrangements and statistics, as well as, taken individually, fifth freedom, seventh freedom and cabotage traffic rights. These features can all be assessed only on a granted or not-granted basis. Either the feature is present, in which case full points are allocated, or it is not, in which case zero points are given; there are no intermediate variants. The second category consists of capacity, tariff and withholding clauses. All these features present multiple variants, which require the assignment of intermediate weights. Each feature is discussed in detail below.

(i) *Traffic rights*

36. Traffic rights are weighted cumulatively in the ALI. Beyond the basic exchange of third and fourth freedoms (and of sixth freedom) rights, which has not been awarded any points in the ALI, the WASA codes the presence or absence of a provision allowing for the right to exercise fifth freedom, seventh freedom and cabotage, respectively, subject to the following definitions.

37. Fifth freedom rights are the "rights to one party between a point or points in the other party's territory and intermediate and/or beyond points in third countries on the route or routes granted. The fifth freedom rights are considered to have not been granted where a route granted to one party names one or more intermediate and/or beyond points in third countries but denies local traffic rights between such point or points and the other party's territory, or where the general grant of such rights is made subject to subsequent agreement. However, if their use is only made subject to future specification, such as selection of a point or points, such rights are considered to have been granted."

38. So-called seventh freedom rights are the grant of "rights to one party between a point or points in the other party's territory and any point or points in third countries with no requirement to include on such operation any point in the territory of the recipient party, i.e. the service need not connect to or be an extension of any service to/from the recipient party of the carrier."

39. Cabotage rights refer to the granting of "traffic rights to one party between two points in the territory of the other party, either on a service which originates or terminates in the home territory or outside the territory of the granting party (also known as Eighth Freedom or "consecutive cabotage"), or on a "stand-alone" service performed entirely within the granting party's territory (also known as Ninth Freedom rights.)"

---

<sup>23</sup> In its 2002 judgments, the European Court of Justice ruled that the nationality clause found in bilateral ASAs of EC Member States was illegal and had to be replaced by a "Community clause". This clause states that Member States can designate EC carriers if these have an "establishment" in that Member State and are under effective regulatory control of the designating Member State. The notion of "establishment" has been interpreted very broadly by the ECJ, as it could be any sort of established presence, such as a business, sales office or subsidiary. This means that an EC carrier could have one, single principal place of business but several establishments and thereby be designated by a Member State other than that in which it has its principal place of business (for a fuller discussion, see Hörstke, "Air Carrier Ownership and Control Revisited at the Fifth Worldwide ICAO Air Transport Conference", *Annals of Air and Space Law* Vol. XVIII, 2003).

40. The corresponding codes in the WASA are as follows:

0 – Absence of a provision allowing for fifth freedom/seventh freedom/cabotage rights

1 – Presence of a provision allowing for fifth freedom/seventh freedom/cabotage rights

41. All the agreements coded in the 2005 WASA database provide in practice for fifth freedom, seventh freedom and cabotage rights sequentially, i.e. seventh freedom has not been granted without fifth freedom, and cabotage has never been granted without fifth and seventh freedoms. However, it would be theoretically conceivable that a bilateral agreement allowed, for instance, for cabotage (possibly to fill domestic gaps) without allowing tag-on or stand-alone international services to a third country from the territory of the Contracting State concerned. To account for such theoretical possibilities, it was decided to assign points separately to each of the freedoms.

42. The breakdown of the total points between these possibilities proved rather difficult, as opinions between the aviation experts consulted differed as to the relative importance of each freedom. It was eventually decided that the inclusion of any of these freedoms in a bilateral represented an important element of liberalization, which in all cases would substantially affect the operations and choices of the airlines concerned. It was therefore concluded that the same number of points (i.e. six) would be allocated to each freedom granted. As a result, an ASA that permitted fifth freedom, seventh freedom and cabotage traffic rights would be attributed 18 points.

(ii) *Designation*

43. The WASA Explanatory Notes define designation as "notification by one party to the other of which airline or airlines will exercise that party's rights to operate the agreed services".

44. The corresponding WASA codes are:

0 – Feature not referred to in the ASA

1 – Single designation, defined by WASA as "each party may designate one airline"

2 – Multiple designation, defined by WASA as "each party may designate one or more airlines. [...] A party may also designate more than one airline but with restrictions on specific routes"

45. Throughout the QUASAR, instances where the WASA coding indicates that there is no information about a specific provision have been weighted as the most restrictive variant. In the case of designation, the "0" code has therefore been assimilated to single designation, and all ASAs with a designation code of either "0" or "1" have been attributed zero points. ASAs with a "2" code have been allocated four points.

(iii) *Statistics*

46. The WASA database codes the "provision on the exchange of statistics, [which] may be mandatory, upon request or required only in cases of disputes over capacity " in two steps. First, it

indicates whether a clause providing for the exchange of statistics is present or absent, and, second, whether statistics need to be exchanged at specified intervals.<sup>24</sup>

47. The two corresponding codes in the WASA are as follows:

0 – Absence of a provision for exchanging statistics

1 – Presence of a provision for exchanging statistics

0 – Absence of a provision for exchanging statistics at specified intervals

1 – Presence of a provision for exchanging statistics at specified intervals

48. All four possible combinations of these two codes are found in the WASA. The Secretariat considered that only the simultaneous presence of two "0" codes could ensure a complete absence of exchanges of statistics. Only in such instances, therefore, was one point allocated. All three remaining combinations were attributed zero points.

(iv) *Cooperative arrangements*

49. The WASA Explanatory Notes' definition of cooperative arrangements reads "the presence of a provision for entering into cooperative marketing arrangements such as blocked-space and code-sharing. The designated airlines of the parties may enter into code-sharing arrangements with any other airline whereby services under the agreement on any route or sector of a route may carry the designated airline's code, in addition to that of the carrier operating the flight, as though those services were its own. The designated airline may be required to have the authority to exercise traffic rights over the whole of the route and the other airline be required to have the authority to exercise traffic rights over the sector or route segment."

50. The corresponding WASA codes are:

0 – Absence of a provision for entering into cooperative arrangements

1 – Presence of a provision for entering into cooperative arrangements

51. A "1" code is assigned three points, a "0" code no points.

(v) *Capacity*

52. The WASA database codes clauses regulating capacity, i.e. "a mutually agreed approach by two governments to a matter of fundamental commercial and operational importance to their designated airlines" into four possible regimes. These are:

1. Predetermination. This is defined as an arrangement requiring that "capacity be agreed to prior to the commencement of the operation, either by governments or their aeronautical authorities or between their designated airlines subject to government approval. Where the capacity provision is similar to a Bermuda I clause ... but a separate provision requires consultation on or coordination of capacity or the filing and approval of frequencies or schedules in advance, the reference file classifies it as predetermination. Similarly, an otherwise Bermuda I agreement may state that the aeronautical authorities should jointly determine the practical application of the capacity principles. This implies

---

<sup>24</sup> The Explanatory Notes specify that "a reference to an exchange "on request" would not meet this [i.e. the exchange of statistics at specified intervals] criterion".

their focusing on capacity *ab initio*, the essence of predetermination. If the capacity provision is not otherwise clearly one of predetermination or any other defined type, but requires that capacity increases be approved by the relevant authorities, the clause is categorized as predetermination."

2. Bermuda I. The WASA Explanatory Notes state that: "Under this arrangement, the governments set out the capacity principles for the designated airlines to follow but allow each airline the *ab initio* freedom to determine its own capacity, subject only to *ex post fact* review by the governments through their consultation procedure. These principles, concepts and wording of the Bermuda I system of capacity control, as negotiated between the United Kingdom and the United States in 1946, have been adopted widely in bilateral agreements. However, the adoption of Bermuda-type phraseology does not always signify acceptance of the practical application of Bermuda principles; the parties may clearly intend to predetermine capacity. The reference files therefore classify as Bermuda I only those capacity arrangements which are "purely" Bermuda I in both their format and their functioning. For example, where an agreement has both Bermuda phraseology and a provision, not necessarily in the capacity clause, that detracts from essential features, the reference file identifies it as one of other possible types. On the other hand, a Bermuda I system may be reinforced by a clause prohibiting the unilateral restricting of capacity."

3. Free determination. This is defined as an arrangement allowing "capacity to be decided by designated airlines free of regulatory control. The parties agree that neither shall unilaterally limit the volume of traffic, frequency, or regularity of service, or the aircraft type(s) operated by the designated airlines of the other party, except as may be required for customs, technical, operational, or environmental reasons under uniform conditions consistent with Article 15 of the Chicago Convention. The clause may also commit each party to ensure fair competition."

4. Other. This residual category exists for all those instances where "capacity and related provisions cannot be classified as any one of the above three types of capacity arrangements, being a hybrid of more than one or not identifiable as any one of them."

53. These regimes are mutually exclusive, and the corresponding codes in the WASA are as follows:

0 – Absence of a clause providing for a predetermination/Bermuda I/free determination/other capacity regime.

1 – Presence of a clause providing for a predetermination/Bermuda I/free determination/other capacity regime.

54. Aside from the "Other" residual category, the regimes have been listed above in increasing order of openness: predetermination represents the most restrictive regime and its presence has been attributed zero points, while free determination is the most liberal clause and its inclusion has been allocated the full eight points for capacity. In-between lies the Bermuda I clause, which has a hybrid nature. It provides *prima facie* for free determination of capacity, but is constrained by an *ex-post* review which would facilitate the introduction of subsequent capacity restrictions. Owing to its mixed nature, Bermuda I was considered to lie half-way between a predetermination and a free determination clause and as such attributed four points.

55. Consistent with the policy of assimilating no information about a specific provision to the most restrictive option, instances where all of the four regimes are coded as "0" (meaning that no information is available about the capacity regime in force) have been assimilated to the most restrictive scenario and attributed zero points.

56. With regard to the "Other" regime, 156 ASAs were found to fall into this category, which covers instances where the capacity terms cannot be classified squarely in one of the three other

capacity regimes. Ignoring these cases would have meant equating them with the most restrictive regime, i.e. predetermination, and allocating zero capacity points.<sup>25</sup> The Secretariat has therefore used a set of additional codes about significant elements of capacity, which are included in the WASA, to determine the general orientation, either restrictive or liberal, of these "Other" cases. It was felt that this modification, though necessarily imprecise, would reflect reality more accurately than a granting of zero points.

57. In consultation with the ICAO Secretariat, the WTO Secretariat has considered the following four capacity elements<sup>26</sup>:

A. Capacity element A refers to "a statement of general principles governing capacity. Statements of such principles are standard in Bermuda I-type agreements but some also appear in predetermination and free-determination agreements. For example, the statements may call for fair and equal opportunity to operate (or to compete), for airline capacity to be related to traffic requirements, and for each party and airline to take into consideration the interests of the other party and airline(s). Predetermination clauses often add a reference to equality and mutual benefit or equitable results."

B. Capacity element B indicates "the existence of a formula to control capacity between the territories of the two parties. It is often found in predetermination arrangements and may either be part of the clause itself or included in the route schedule. The formula envisages a specific division of capacity or refers to maximum or minimum frequencies."

E. Capacity feature E concerns the inclusion of a "statement of principle or principles which expressly exclude unilateral capacity controls. Although normally indicative of a free-determination arrangement, such principles also exist as reinforcements to Bermuda I regimes".

G. Capacity feature G indicates "a requirement to file capacity, frequencies, timetables and/or schedules for governmental approval. This requirement arises most frequently under predetermination and may, with other features, be indicative of its presence, but can also be found under the other types of capacity regime. It may be part of the capacity clause but is more frequently separate or in the route schedule. This element may include a time period and is considered to exist even if it relates only to increases in capacity."

58. The corresponding WASA coding is:

0 – Absence of capacity element A/B/E/G

1 – Presence of capacity element A/B/E/G

59. On the basis of these additional capacity codes, the "Other" cases have been re-classified in either "Other restrictive" or "Other liberal" categories. The working assumption used has been that "Other restrictive" regimes operate whenever elements A (i.e. the setting of general principles governing capacity), B (i.e. the existence of a formula to control capacity) or G (i.e. a requirement to file capacity) are coded as "1" and that "Other liberal" regimes are in operation whenever element E (i.e. exclusion of unilateral capacity controls) is coded as "1".

---

<sup>25</sup> Alternatively, two points could have been granted, in light of the fact that zero points would have corresponded to a pure predetermination regime, but if the terms of an ASA had been purely those of predetermination, ICAO would have coded them as such. The fact that the capacity regime has been coded as "Other" could be seen as indicating some element of openness in the provision, positioning it between predetermination and Bermuda I.

<sup>26</sup> All ASAs recorded by ICAO in the WASA 2005 edition that present an "Other" capacity regime include at least one of the four capacity elements considered.

60. In terms of weighting, the "Other restrictive" category has been considered as falling between predetermination and Bermuda I and hence been attributed a number of points halfway between those assigned to the two other categories, i.e. two, the average of zero and four. Following the same logic, the "Other liberal" category, which is placed between Bermuda I and free determination, has been given six points, halfway between four and eight.

61. In terms of graphical representation in the analysis by Contracting State, the "Other" category has not been identified separately. Chart 4 in the Contracting States' profiles assimilates the "Other" capacity clause to the "Undetermined" category. Separate representation of the "Other" category has been rendered impossible, within the time constraints faced by the Secretariat, by the additional coding involved in the identification of "Other restrictive" and "Other liberal" categories.

(vi) *Tariffs*

62. Tariff approval clauses are coded in the WASA database according to the type of tariff regime and the notification and filing procedures foreseen. For the purpose of the ALI, attention was given solely to the type of tariff approval clause in force, rather than the modalities thereof. ICAO codes five tariff approval regimes. These are:

1. Dual approval. The WASA Explanatory Notes state: "This method of "dual" or "double approval" requires the approval by both parties of tariffs or agreements on tariffs before those tariffs can take effect. [...] Approval by the aeronautical authorities may be given expressly or tacitly. Express approval is evidenced by the use of "must", "will" or "shall" and tacit approval is possible, for example, by "may give approval expressly" or by an indication that the tariff will be considered as approved if neither of the parties has notified or expressed disapproval within a defined period. Flexibility to change the period is sometimes included."

2. Country of origin. In the presence of this regime, a party "may disapprove tariffs only for originations in its own territory."

3. Dual disapproval. The definition in the WASA reads: "Under this method of "dual" or "double disapproval", tariffs become effective unless both aeronautical authorities disapprove them. As with the country of origin and the free pricing methods, the object is to limit governmental involvement and to increase tariff flexibility for the designated airlines."

4. Free pricing. The Explanatory Notes indicate: "In this method, tariffs shall not be subject to the approval of any party."

5. Zone pricing. In addition to the four stand-alone regimes listed above, the WASA database includes also this regime, which is found in a few bilateral agreements. It involves "a reference point or points around which various types of tariff control are agreed. The parties agree to approve tariffs falling within a specified range of prices and meeting corresponding conditions, though tariff filing may still be necessary. Outside of the zone, one or a combination of the above-mentioned regimes may apply."<sup>27</sup>

---

<sup>27</sup> In the bilaterals recorded in the WASA 2005 edition, there is always only one other regime applied outside the zone. In practice, in the WASA, zone pricing combines either free pricing and dual approval or free pricing and dual disapproval. No other combinations of tariff regimes are coded therein.

63. The corresponding codes in the WASA are as follows:

0 – Absence of a clause providing for a dual approval/country of origin/dual disapproval/free pricing/zone pricing tariff approval regime.

1 – Presence of a clause providing for a dual approval/country of origin/dual disapproval/free pricing/zone pricing tariff approval regime.

64. Aside from the "Zone pricing" category, the other four other regimes have been listed in increasing order of openness. The most restrictive is the dual approval regime, which requires the express acceptance of tariffs by both parties and has, accordingly, not given any points. The most liberal regime is that allowing the free setting of tariffs by airlines, i.e. free pricing regimes. These have been attributed the full eight points for the tariffs element.

65. Between these two extremes, there are two other stand-alone tariff regimes. First, the country of origin clause, which allows the country of departure to veto tariffs, was classed by experts as closer to a restrictive provision than a fully liberal clause and has therefore been attributed three points. Second, the dual disapproval regime, which requires express disapproval from both countries for tariffs to be ineffective, was judged to be fairly liberal, as it would be unusual for a tariff to be objectionable for the authorities of both Contracting States. It has therefore been attributed six points in the ALI.

66. For the purpose of weighting zone pricing, the Secretariat decided to use the average of the points for the applicable regimes. When zone pricing combines free pricing with dual approval, four points have been attributed (average of zero and eight), while when zone pricing couples free pricing with dual disapproval, seven points have been awarded (average of six and eight).

67. As with other features, where all of the tariff options are coded as "0", the most restrictive regime is presumed and as such no points are allocated.

(vii) *Withholding*

68. The WASA codes three possible withholding requirements, based on the following definitions:

1. Substantial ownership and effective control. This is described in the WASA as a condition "that substantial ownership and effective control be vested in the designating party or its nationals. However, other conditions, such as compliance with the laws and regulations of the grantor State, may also be specified. The withholding provision is considered to exist even if phrased implicitly, for example where a party agrees to grant the appropriate authorization subject to the substantial ownership and effective control criteria being met."

2. Community of interest. ICAO defines this as being present whenever "a party would accept a foreign designated airline to operate the agreed services under the condition that substantial ownership and effective control is vested: a) in one or more countries that are parties to the agreement or by any one or more of the parties themselves, i.e. a joint operating organization or a multinational carrier created by intergovernmental agreement; or b) in one or more countries that are not necessarily party to the agreement but are within a predefined group with a "community of interest".

3. Principal place of business. The WASA Explanatory Notes state that this clause indicates "a party's acceptance of a foreign airline if the carrier is incorporated in the designating party and its principal place of business or permanent residence is also in the designating party, including one incorporated and having its principal place of business in, and effectively controlled by the

designating party, which removes the substantial ownership requirement. Some agreements may also refer to the requirement of the airline holding a current Aircraft Operator's Certificate issued by the aeronautical authority of the other party."

69. The corresponding codes in the WASA are as follows:

0 – Absence of a clause providing for substantial ownership and effective control/community of interest/principal place of business.

1 – Presence of a clause providing for substantial ownership and effective control/community of interest/principal place of business.

70. As the most restrictive clause available, the criterion of substantial ownership and effective control by nationals of the designating party is attributed zero points. Assimilated to this, and in line with usual practice, is the case where all of the three requirements are coded as "0", which creates a presumption in favour of the most restrictive scenario. The most liberal clause coded is the principal place of business criterion, which is therefore awarded the full eight points. The community of interest requirement falls between these two regimes and, as such, is attributed four points.

71. There are instances where more than one withholding regime is coded in the WASA for the same bilateral. In these circumstances, account has been taken only of the most liberal of the possible regimes, and points attributed accordingly.

72. Table D2 summarizes the weighting of all the main variants of the seven market access features considered in the ALI.

**Table D2**  
**Standard Air Liberalisation Index weighting system**

<b>Features</b>	<b>Variants</b>	<b>Points</b>
1. Grant of rights		
a. Fifth freedom rights	Not granted Granted	0 6
b. Seventh freedom rights	Not granted Granted	0 6
c. Cabotage rights	Not granted Granted	0 6
2. Designation	Single Multiple	0 4
3. Withholding	Substantial ownership and effective control Community of interest Principal place of business	0 4 8
4. Capacity	Predetermination Other restrictive Bermuda I Other liberal Free determination	0 2 4 6 8
5. Tariffs	Dual approval Country of origin Dual disapproval Zone pricing Free pricing	0 3 6 4 or 7 8
6. Statistics	Exchanged Not exchanged	0 1
7. Cooperative arrangements	Not allowed Allowed	0 3
<b>Maximum total ALI</b>		<b>50</b>

Notes: The right-hand side of the third column indicates the maximum number of points attainable for each feature.

The points for zone pricing are attributed, respectively, to free pricing and dual approval and free pricing and dual disapproval.

Source: WTO Secretariat.

(d) Non-standard weighting systems

73. In addition to the "standard" ALI weighting system, the Secretariat has developed three additional ones, each giving comparably more weight to one specific market access feature, namely the granting of fifth freedom traffic rights, the withholding clause and the designation clause. These non-standard weighting systems aim to accommodate three specific geographical and economic situations that appear to be relatively frequent and that may influence the commercial importance of the different market access features of bilaterals.

74. The three situations and their associated weighting methods are explained below.

(i) *Fifth freedom traffic rights (5<sup>th</sup> +)*

75. For some Contracting States, fifth freedom may be more important than what is implied by the points attributed to it in the standard weighting system. The States' geographical location may, for

example, limit the scope of point-to-point traffic, or their remoteness from densely populated areas may make it difficult to generate sufficient demand to maintain regular services to points which can only be served by larger aircraft. For such States, it is essential to secure fifth freedom rights for their carriers, as these will allow their airlines to combine demand for a distant destination with that for an intermediate stop. In view of this, the weighting system has been altered to give more weight to fifth freedom traffic rights. The corresponding points in the "Fifth freedom plus" (or "5<sup>th</sup>+") ALI have been increased from six to 12. To keep the maximum total ALI points at 50, a proportionate amount of points was, as far as possible, deducted from each of the other market access feature (and the variants were adjusted accordingly). The resulting weighting system is shown in Table D3.

**Table D3**  
**5<sup>th</sup>+ Air Liberalisation Index weighting system**

<b>Features</b>	<b>Variants</b>	<b>Points</b>
1. Grant of rights		
<b>a. Fifth freedom rights</b>	Not granted	0
	<b>Granted</b>	<b>12</b>
b. Seventh freedom rights	Not granted	0
	Granted	5
c. Cabotage rights	Not granted	0
	Granted	5
2. Designation	Single	0
	Multiple	3.5
3. Withholding	Substantial ownership and effective control	0
	Community of interest	3.5
	Principal place of business	7
4. Capacity	Predetermination	0
	Other restrictive	1.5
	Bermuda I	3.5
	Other liberal	5
	Free determination	7
5. Tariffs	Dual approval	0
	Country of origin	2.5
	Dual disapproval	5
	Zone pricing	3.5 or 6
	Free pricing	7
6. Statistics	Exchanged	0
	Not exchanged	1
7. Cooperative arrangements	Not allowed	0
	Allowed	2.5
<b>Maximum total ALI</b>		<b>50</b>

Notes: The right-hand side of the third column indicates the maximum number of points attainable for each feature.

The points for zone pricing are attributed, respectively, to free pricing and dual approval and free pricing and dual disapproval.

The feature whose weight has been increased is in bold.

Source: WTO Secretariat.

(ii) *Withholding/ownership provisions (OWN+)*

76. Liberalization of withholding provisions is likely to be of particular importance to some States due to the ownership structure of their domestic airline. Where the only airline susceptible to

utilize the negotiated rights is either jointly owned by a community of States, or where substantive ownership is in foreign hands, greater emphasis will be placed on obtaining liberalized withholding/ownership provisions. Therefore, an adapted weighting system has been designed ("OWN+"), whereby the value given to a community of interest or a principal place of business clause is increased from four and eight points to seven and fourteen points, respectively. As far as possible, the values given to each of the other elements was reduced proportionately, as illustrated in Table D4.

**Table D4**  
**OWN+ Air Liberalisation Index weighting system**

<b>Features</b>	<b>Variants</b>	<b>Points</b>
1. Grant of rights		
a. Fifth freedom rights	Not granted Granted	0 5
b. Seventh freedom rights	Not granted Granted	0 5
c. Cabotage rights	Not granted Granted	0 5
2. Designation	Single Multiple	0 3.5
<b>3. Withholding</b>	Substantial ownership and effective control <b>Community of interest</b> <b>Principal place of business</b>	0 <b>7</b> <b>14</b>
4. Capacity	Predetermination Other restrictive Bermuda I Other liberal Free determination	0 1.5 3.5 5 7
5. Tariffs	Dual approval Country of origin Dual disapproval Zone pricing Free pricing	0 2.5 5 3.5 or 6 7
6. Statistics	Exchanged Not exchanged	0 1
7. Cooperative arrangements	Not allowed Allowed	0 2.5
<b>Maximum total ALI</b>		<b>50</b>

Notes: The right-hand side of the third column indicates the maximum number of points attainable for each feature.

The points for zone pricing are attributed, respectively, to free pricing and dual approval and free pricing and dual disapproval.

The feature whose weight has been increased is in bold.

Source: WTO Secretariat.

(iii) *Multiple designation (DES+)*

77. Countries with more than one operating scheduled airline are likely to be keenly interested in the right to designate more than one airline to fly on the agreed routes. A weighting system was therefore devised which attributes increased importance to the multi-designation clause ("DES+"). The points attributed for the inclusion of a multi-designation clause were consequently increased from four (in the standard weighting) to seven and a half, and, as far as possible, a proportionate number of

points was subtracted from each of the other market access features. The precise weights are outlined in Table D5.

**Table D5**  
**DES+ Air Liberalisation Index weighting system**

<b>Features</b>	<b>Variants</b>	<b>Points</b>
1. Grant of rights		
a. Fifth freedom rights	Not granted Granted	0 5.5
b. Seventh freedom rights	Not granted Granted	0 5.5
c. Cabotage rights	Not granted Granted	0 5.5
<b>2. Designation</b>	Single <b>Multiple</b>	0 <b>7.5</b>
3. Withholding	Substantial ownership and effective control Community of interest Principal place of business	0 3.5 7.5
4. Capacity	Predetermination Other restrictive Bermuda I Other liberal Free determination	0 1.5 3.5 5.5 7.5
5. Tariffs	Dual approval Country of origin Dual disapproval Zone pricing Free pricing	0 2.5 5.5 3.5 or 6.5 7.5
6. Statistics	Exchanged Not exchanged	0 1
7. Cooperative arrangements	Not allowed Allowed	0 2.5
<b>Maximum total ALI</b>		<b>50</b>

Notes: The right-hand side of the third column indicates the maximum number of points attainable for each feature.

The points for zone pricing are attributed, respectively, to free pricing and dual approval and free pricing and dual disapproval.

The feature whose weight has been increased is in bold.

Source: WTO Secretariat

78. In cases where zone pricing is combined with the double approval pricing clause, the number of points to be allocated (i.e. the average) would have been 3.75. However, in order to ensure uniformity of weighting across all features, this was rounded down to 3.5 points.<sup>28</sup> This "rounding-down" approach was used in general, with a view to maintaining the same relative weight between the market access features in the various formulae.

<sup>28</sup> It was also felt that, in light of the unavoidable arbitrariness involved in such a weighting mechanism, it would be preferable to keep ALI values as simple as possible. Two decimals were therefore avoided.

### 3. Types

79. In analyzing the results of the QUASAR methodology, the Secretariat noticed certain recurrent combinations of features. A more detailed examination revealed that the vast majority of WASA bilaterals can be re-grouped into one of seven "types", defined by the terms agreed for the principal market access features, plus two residual categories.

80. Table A3 in Part A contains the full explanation of the seven types identified, i.e. A to G, and details the relevant market access features. In light of their limited weight in the various kinds of ALI, clauses on the exchange of statistics and cooperative arrangements have not been taken into account in this context.

81. The two residual categories concern: first, instances where the ICAO coding is incomplete (type "i"), i.e. where either the withholding/ownership, tariff or capacity clauses are all coded as "0"; and, second, all other combinations of market access features not falling under any of the other types (type "o").

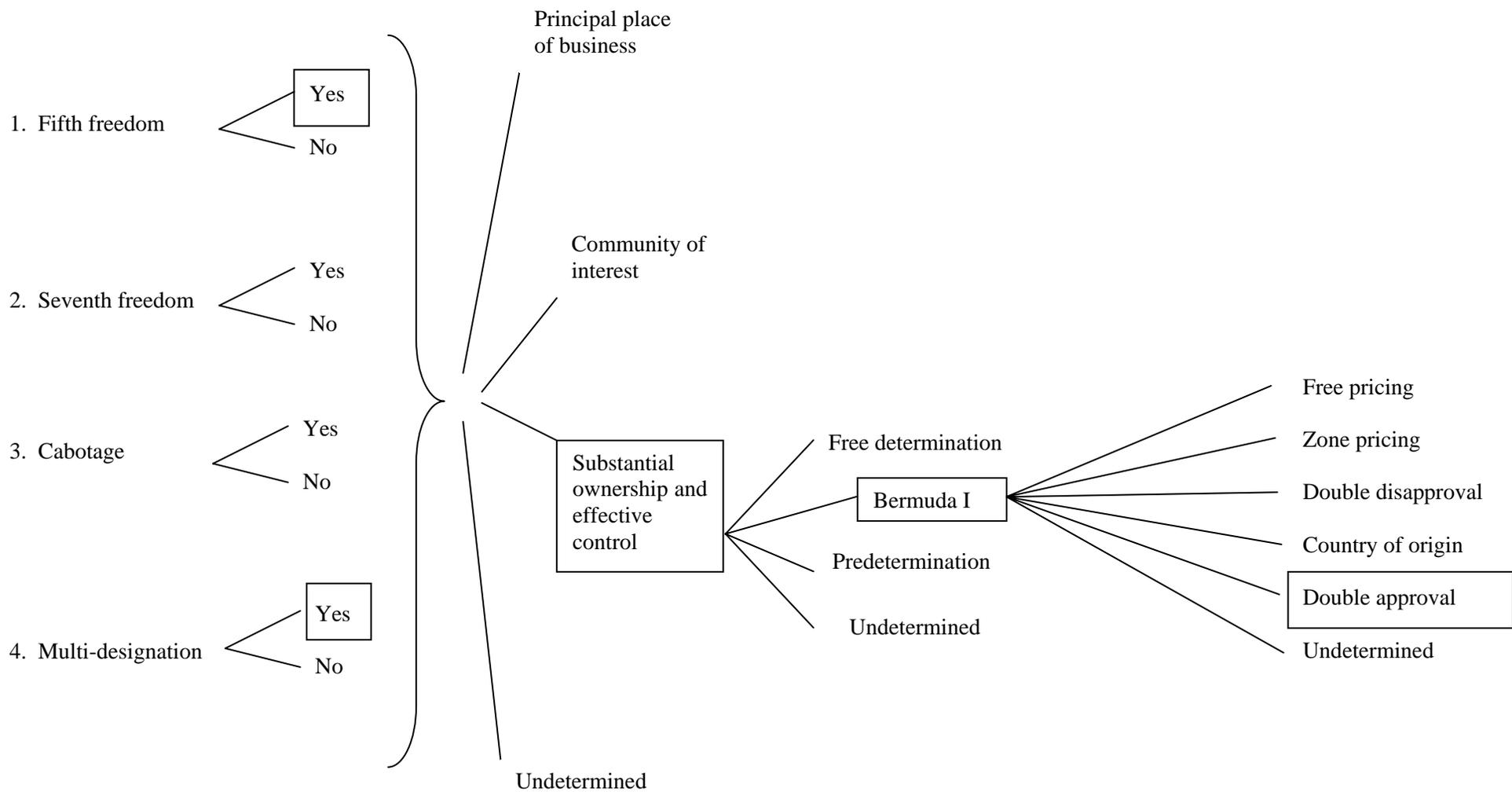
82. The recurrence of these seven types is remarkable in light of the fact that over 1500 types of ASAs are theoretically possible.<sup>29</sup> There are four relevant parameters (i.e. fifth freedom, seventh freedom, cabotage and multi-designation), which can be present or absent, that combine with another three parameters (i.e. withholding clause, capacity and tariff regimes), which can take one out of four (in the case of withholding and capacity) or six (in the case of tariffs) possible characteristics. Figure D1 illustrates the decision tree for one of the types identified, i.e. type F, but is representative of the many possible options.<sup>30</sup>

---

<sup>29</sup> To be exact, there are  $2^4 \times 4 \times 4 \times 6 = 1536$  possible combinations.

<sup>30</sup> For the sake of legibility, the characteristics of two parameters (i.e. capacity and tariff regimes) have been included only once in Figure D1, rather than at every node.

**Figure D1**  
**Possible combinations of the main market access features of Air Services Agreements**



Source: WTO Secretariat.

#### 4. Traffic data

83. The QUASAR methodology seeks to match regulatory regimes with traffic data. It is the first such attempt to quantify the degree of liberalization of the bilateral regime as recorded by ICAO in the WASA database.

84. Somewhat surprisingly, air passenger traffic statistics corresponding to the regulatory environment have been difficult to obtain. Different counting mechanisms, non-reporting and confidentiality issues complicated the compilation of such information.

85. In order to correctly assess the aviation market resulting from a given regulatory regime, to a bilateral between Contracting States A and B should be associated the number of passengers being flown between A and B by airlines of the two Contracting States in question (for third and fourth freedom traffic) and by airlines of third parties (for fifth and seventh freedom traffic).<sup>31</sup>

86. Amongst the various ICAO passenger traffic data series, On-Flight Origin Destination (OFOD) appeared at first sight well-suited to the QUASAR analysis. The OFOD data series shows the origin and destination of a passenger travelling on a specific flight number, i.e. on-flight origin and destination. Whenever a passenger begins and ends a journey on a flight with the same flight number, including if the aircraft makes an intermediate stop to pick up and drop off other passengers, this passenger will be counted as having travelled from origin to destination as determined by the flight number. The passenger's routing as shown in the data then corresponds exactly to the bilateral ASA that governs the particular air service. As an example, a passenger travelling on a British Airways flight from London to Sydney via Singapore will be counted as having travelled only between London and Sydney; this matches the regulatory regime under which this person's flight takes place, i.e. the granting of third freedom traffic rights in the ASA concluded between the UK and Australia.

87. Under OFOD, a passenger who makes a stop and changes aircraft is counted as travelling from the origin to the intermediate stop, and then from the intermediate place to his destination. As this journey takes place under two different bilaterals, the traffic data once again precisely match the regulatory environment. As a result, the OFOD series does not show the "true" origin and destination of the passenger: as soon as the person transfers to another flight, it makes use of another flight coupon and hence becomes another passenger. Also, with the OFOD data as reported, the routing taken, i.e. whether the passenger travelled on a non-stop flight or one with intermediate stops, is unknown. However, for the purpose of assigning traffic to bilaterals, this information is irrelevant, and OFOD appeared to be the best-suited data series for the Secretariat's analysis.

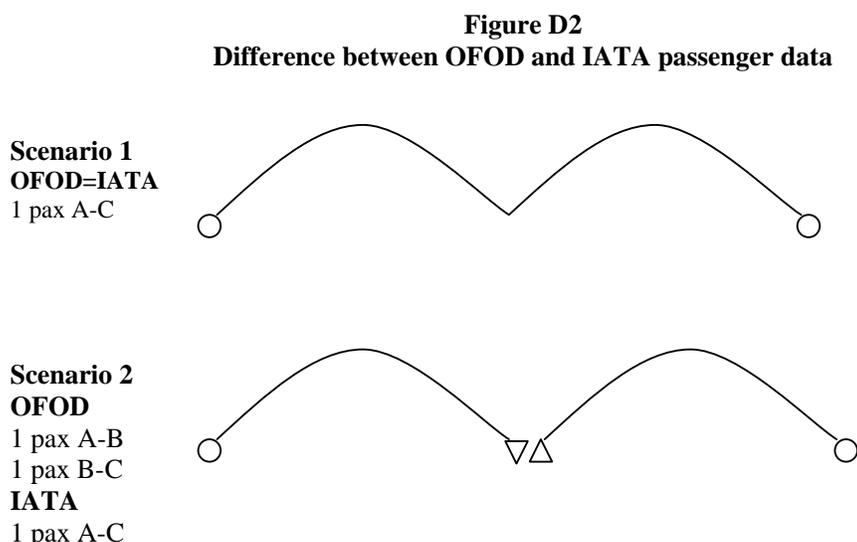
88. The information contained in the OFOD set, however, turned out not to be sufficiently complete to be of practical use. The publicly available OFOD data provided by ICAO, organized by city-pairs, are subject to two limitations: not all airlines report their OFOD traffic data, and the series is the only ICAO data collection subject to confidentiality restrictions. These restrictions are of two kinds. First, aggregated traffic for a city-pair cannot be shown unless ICAO has received data for two carriers from two different States. Second, there has to be a twelve-month delay between the end of the reporting period and when the data are made available to the public. As a result, ICAO estimates

---

<sup>31</sup> An important qualification in this regard is that not all passengers being flown between A and B by an airline of Party C are fifth freedom passengers from the point of view of the bilateral between A and B. If their initial origin (or ultimate destination) is in country A and their ultimate destination (or initial origin) is in country B, they represent fifth freedom passenger traffic. However, if their initial origin (or ultimate destination) is in country C and their ultimate destination (or initial origin) is in country A, and they are just transported via country B, they represent third/fourth freedom passenger traffic and are thus covered by the bilateral between A and C.

that only about a quarter of the data which it has at its disposal internally are released in the public OFOD database. In terms of the ASAs under examination in the QUASAR, OFOD statistics were only available for about 19 per cent.

89. The Secretariat consequently turned to IATA, which kindly provided estimates of global scheduled traffic based upon Billing Settlement Plans (BSPs) data calibrated to cover areas under-represented by IATA BSPs, such as airlines' direct sales, non-IATA airlines, etc. This data set represents actual origin and destination of passengers as determined by the ticket, rather than by on-flight data. In this regard, it is not ideal for the purpose of the QUASAR. The itinerary being flown under a given ticket may be governed by one or several bilaterals that do not necessarily correspond to the bilateral between the origin and destination countries of the ticket, which, moreover, may not even have concluded a bilateral ASA. A passenger travelling from the UK to Australia under a single reservation, with a stop and change of aircraft in Singapore, will be counted by IATA statistics as having travelled only from the UK to Australia; no traffic will be recorded as having taken place between the UK and Singapore and between Singapore and the Australia. Figure D2 illustrates the difference between the OFOD and the IATA data series.



Notes: The triangles indicate a stop and change of aircraft.

The flight between A and C is assumed to take place under a single ticket.

Source: WTO Secretariat

90. In Figure D2, the first scenario shows that a passenger travelling between A and C via B under a single ticket and the same flight number and not changing aircraft in B will be recorded in the same way under both OFOD and IATA statistics, i.e. as having travelled between A and C. In the second scenario, the fact that the passenger stops and changes aircraft in B is recorded differently under the two data series. OFOD will count one passenger between A and B and one between B and C, whereas under IATA statistics the passenger will be recorded as having travelled between A and C, given that this is the itinerary indicated on the ticket.

91. In spite of these limitations, the IATA data set represented the most complete traffic data set available to estimate the number of passengers carried between any two countries and is, therefore, the one that has been used by the Secretariat. The statistics employed are for the year 2005. For copyright reasons, the Secretariat has not been authorized to include exact traffic figures for bilateral relations, but has nevertheless been able to present this information in traffic ranges.

92. On the basis of these data, the Secretariat has been able to calculate the ALI weighted by traffic (i.e. WALI) of all Contracting States. It has also worked out the share of all – incoming and outgoing – international scheduled traffic accounted for by the WASA traffic, i.e. the traffic that takes place under the bilaterals recorded by ICAO in the WASA. In 2005, total international scheduled traffic<sup>32</sup> as registered by IATA, amounted to around 496 million passengers.<sup>33</sup> WASA traffic accounted for nearly 349 million passengers out of these 496, thus covering about 70 per cent of the traffic universe.

## 5. Additional indicators

93. To facilitate further research on the basis of the QUASAR methodology, the Secretariat has collected a series of additional indicators which might be of value in analysing bilateral ASAs. Given time and resource constraints, the Secretariat has not used this information in the present context, but stands ready to undertake further analysis if Members so wish.

94. The information collected is organised in two ways: by ICAO Contracting State and by ASA. With regard to Contracting States, Table 1 of the profiles in Part C contains data of a general economic and demographic nature, as well as trade and air transport statistics. Such information would allow for comparisons between the general economic and demographic circumstances of a State, core trade and trade policy features, as well as air transport market and policy regimes.<sup>34</sup>

95. As concerns ASAs, the data collected might be useful for future analyses of air traffic flows (or even of aviation policies) and their determinants. Such indicators, which have been obtained from the *Centre d'Études Prospectives et d'Informations Internationales* (CEPII)<sup>35</sup> reflect:

- the distance between the pair of Contracting States concerned<sup>36</sup>;
- whether they are contiguous;
- whether they share a common official language;
- whether they share a commonly spoken language<sup>37</sup>; and
- the existence of a historical tie.<sup>38</sup>

96. Such data are contained in Annex D-I, which lists all bilateral ASAs considered in the QUASAR ordered first by decreasing value of standard ALI and then by increasing distance.<sup>39</sup>

---

<sup>32</sup> In line with the exclusion of intra-EC ASAs from the QUASAR (see Part A of the present document), intra-EC traffic, amounting in 2005 to nearly 192 million passengers according to IATA statistics, has not been counted as international traffic.

<sup>33</sup> Total scheduled traffic in 2005 was 1,743 million passengers, from which 1,055 million domestic passengers and 192 million intra-EC passengers were subtracted.

<sup>34</sup> Preliminary analyses carried out by the Secretariat have, for instance, shown a very weak link between the level of GDP per capita of a country and its WASA traffic. This somewhat surprising result could reflect factors such as land area and population density. It nevertheless seems to be in line with the findings of a Boston Consulting Group study which looked at the relationship between the number of outbound long-haul trips and GDP per capita. The study found that the full impact of economic growth only starts to affect demand for long-haul air travel when GDP per capita reaches US\$ 15,000. (Financial Times, 27 July 2006).

<sup>35</sup> These data are available from: <http://www.cepii.fr/anglaisgraph/bdd/distances.htm>

<sup>36</sup> Distance data refer to the distance between the main city of the two Contracting States, calculated with the great circle formula, which uses data on latitudes and longitudes.

<sup>37</sup> This is defined in the CEPII data set as a language being spoken by at least 9 per cent of the population in both Contracting States.

<sup>38</sup> This is defined as the existence of a relationship in which one Contracting State has governed the other over a long period of time and has contributed to the current state of its institutions.

97. A list of all ASAs concluded by a given Contracting State is contained in Table 2 of the relevant profile. It also presents data on the distance between the pair of Contracting States concerned, as well as on the existence of direct air transportation services between them.<sup>40</sup> This information is drawn from summer 2006 IATA mileage data.

98. The mileage IATA information has also been used to identify, in Table 3 of the Contracting State profiles, "orphan services", i.e. direct air transport services which take place between the Contracting State in question and a number of countries or territories in the absence of any bilateral ASA recorded by ICAO in the WASA 2005.<sup>41</sup>

#### B. CONCLUSIONS – POSSIBLE REFINEMENTS TO QUASAR

99. The QUASAR methodology is only a first attempt to measure the degree of openness of bilateral Air Services Agreements and weight them by the traffic covered. In the course of its elaboration, the Secretariat has identified several possible ways in which the methodology could be refined. These include:

- Enlarging the sample of ASAs, in terms of sources (e.g. Aeroaccords database, UN Treaties series, web searches, complementary information provided by Members<sup>42</sup>), kinds of services covered (e.g. cargo and charters, in addition to scheduled traffic), and access to the full text of the agreements (by linking QUASAR to ICAO's DAGMAR and by complementing it).
- Creating a historical data set allowing for time series' regressions by incorporating past and future versions of the WASA database.<sup>43</sup>
- Establishing a systematic comparison of the QUASAR results with the characteristics and volume of traffic effectively flown (e.g. in terms of routes, fifth to ninth freedom traffic rights, designation, cooperative arrangements, withholding clauses) through the use of statistical data sets including capacity and passenger/kilometre data.
- Further developing the IT support side, e.g. by using SQL instead of Excel, and making QUASAR available online.

100. The Secretariat stands ready to further explore possible refinements, if Members so wish.

---

<sup>39</sup> The Contracting State filing the bilateral ASA with ICAO is identified as party A, its partner as party B.

<sup>40</sup> Direct services are services operated between two points by IATA member airlines under the same flight number.

<sup>41</sup> The terminology used for these countries and territories is drawn directly from the IATA mileage set. Included are also territories that have no autonomy regarding their air transport policy.

<sup>42</sup> Annex D-II contains a template for any Member wishing to provide the Secretariat with complementary information about ASAs it has concluded or amended, but which are not recorded as such in the WASA database.

<sup>43</sup> The WASA database is updated annually and sold in the form of five-year subscriptions.