Advances in Airline Economics
Volume 10

Airlines and Developing Countries

Edited by
Kenneth Button

AIRLINES AND DEVELOPING COUNTRIES

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ADVANCES IN AIRLINE ECONOMICS VOLUME 10

AIRLINES AND DEVELOPING COUNTRIES

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PREFACE

The links between transportation and economic development are complex and far from being fully understood. This is as true for airlines as other modes. This collection of original papers offers both general observations on the economics linking airlines and economic development, together with some more micro-analysis of particular issues. It contains not only technical analyses but also interdisciplinary studies linking economics with a broad range of geographical, management, and political disciplines. It has been increasingly recognized that the essentially engineering approach to human behavior underlying neoclassical economics, with its focus on the motivations and actions of *homo economicus*, is too limited to fully understand how markets function. Indeed, many of the more recent contributions dealing with airlines and developing countries have been published outside of the mainstream economic journals.

I would like to thank the contributors for the time and effort they have put into drafting their chapters and hope they prove interesting and insightful to readers.

Kenneth Button, Editor

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INTRODUCTION

Kenneth Button

1.1 INTRODUCTION

> In countries where internal distances are great, where producing and consuming centers are widely scattered, where terrain and climatic problems are exceptionally hostile, and where the flow of traffic is often too thin to justify investment in road or rail systems – in such countries air transportation has shown itself capable of speeding up the development process with a relatively modest drain on precious capital resources. Heymann (1962)

The populations of large parts of the globe exist on low incomes and poor, limited diets, are prone to a plethora of diseases, and live under fear of political persecution. Other countries, although wealthier, continually fail to achieve their full economic potential and often exhibit significant inequalities in well-being. Yet another group of nations, often because of political reversals, have attained relatively high levels of material development but have stagnated or slipped back down the economic ladder. Although many of these nations are geographically concentrated (*The Economist*, for example, called Africa the "Hopeless continent" in 2000), they represent a diverse range of countries and, in general, have in common poorly performing and inadequate airline services.

Air transportation is the newest mode of mass transportation. Commercial, scheduled airline services of any consequences only began in the 1920s, and then they mainly focused on mail services. Passenger services followed in the 1930s, basically making use of spare capacity on planes left unfilled by mail. Further progress was then slow, and cargo services in particular were held back by the technology of the time. Air transportation only really began to be a serious mode in the 1950s, after major technological advances in avionics and air navigation system had been made during the Second World War.

The immediate postwar period saw institutional changes, both within national markets and relating to trade in air services between them, that offered a framework within which scheduled services could operate. The interwar period also saw the gradual emergence of thinking about the role that higher income countries could play in fostering the growth of commercial aviation in developing

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countries and the economic instruments for achieving this. Air transportation remained expensive both as a passenger and cargo mode until the 1980s when institutional reforms, interacting with for technical advances and innovative operational developments, reduced costs and improved the reliability of air transportation.

Despite increasing amounts of research, however, there are still gaps in our understanding of air transportation markets and their wider implications for economies. Air transportation, we know, is a major mode for medium and long-distance travel and an important element in commodity supply chains. Our understanding of these facts and economic development is, however, still only partial even for more advanced nations. We do know that it can be important in many contexts, and even vital in some, but research is still ongoing in many aspects of these linkages. This collection of original papers is designed to be a bookmark establishing how complete our current economic knowledge of air transportation in developing countries is and to offer a basis for refining paths along which research on the topic may most usefully be pursued.

1.2 THE ROLE OF AIR TRANSPORTATION IN SOCIETY

Air transportation was initially and, to a large extent, still is a mode used by citizens and businesses of wealthier countries. Many of the services to poorer, developing nations are there to serve the demands of citizens of the richer ones and to enhance the efficiency of the latter's industries. They allow, for example, relatively affluent sun-seeking tourists to visit lower income countries with more attractive climates and bring exotic foods to the latter's consumer back home. But there is a lack of a significant number of large air transportation markets both within and between developing economies as is clearly seen in the statistics. Africa, for example, where many of the developing nations are located, amounts to about 17% of the global population, but only for about 2% of air transportation. North America, in contrast, accounts for some 25% of air transportation but accommodates under 5% of the world population.

Differences in national incomes are, almost by definition, one of the reasons for this. But there are also other issues involving geography, political attitudes, "efficiency," and market structures, besides a plethora of local peculiarities, that play a role. But while general correlations concerning links between economic development and air transportation networks are easy to highlight, quantification of many other factors is inevitably difficult, and causality often remains unclear. The latter is not just an airlines issue. This is a chicken-and-egg problem that extends across all transportation modes and many other forms of economic input (Redding & Turner, 2015). Regions with high air transport needs are likely to receive investments for air transportation infrastructure. The new construction of airports is thus endogenous and not exogenous.

Added to this is a sort of crowding-out effect. The problem arises as to whether a new transportation facility in an area generates a net economic gain, or whether it represents a transfer of air traffic and economics benefits from other

geographical areas. Many micro aviation impact studies are de facto gross assessments in that they do not embrace losses in other markets that lose business. In contrast, large scale regional, international, and, almost tautologically, global studies avoid these types of problems because there are no external spillover effects involved (Prost & Thisse, 2019). But it is often the local effects that most affect developing countries where the relative opportunity costs of investing in transportation are generally the greatest and, because of more limited national transportation infrastructure systems, network economies are the most limited.

Air transportation, besides its direct role in the economies of countries, has also increasingly taken on a socioeconomic role as an indicator of a nation's state of development. Being considered as a developed country, or at least progressing to being one, is often seen as a matter of image and its architecture. In medieval times the presence of a cathedral or other religious building, or of a palace, conveyed the impression of stability, influence, and affluence.

In more recent times, during what is sometimes called the "steam-engineering age," a magnificent railway station highlighted the centrality of a city or nation in commerce and trade. More recently, airports have increasingly fulfilled this role; they have become iconographic spatial features of both the opportunities and the vulnerabilities of contemporary globalization. The site and sound of jet aircraft, although inevitably annoying to nearby residents, is an indicator of modernity. Whether these structures have ever provided the material economic benefits of the order anticipated is uncertain, but they often are the first impressions of a country to visitors.

The answer to the causality and related questions, if they arise, depends very much on how one looks at it. Transportation economists tend to take a country's economic and social situation and factors as determining their demand for transportation. They use gravity models, for example, to assess flows of goods and people between points in, say, a national network of cities. The features of the cities influence the movements between them. In contrast, regional economists are more included to look at accesses to a location as a factor influencing its economic performance. The time frame of analysis is also important. Economic development is usually an extended process and there is a tendency in time series analysis to treat it as relatively fixed in the short term whereas air transportation investments or regulatory reforms can be introduced quite rapidly.

This collection of papers presented here, however, is not all about these issues of causality. It also contains examinations of more micro- and micro-micro-economic issues concerning the specific structures of airline industries and the ways managers of airlines providing services in developing countries. It is thus also about what is often called "industrial organization" rather than about macrodevelopment economics. Put another way, it is not directly about the role that airlines may or not play in the economic development process (however defined), although this is at the core in some of the chapters. It is as much about the airlines and airline markets and the ways these markets are regulated by the authorities.

1.3 WHAT ARE DEVELOPING COUNTRIES?

It should be said early on that the notion of a "developing country" is a slippery one. The term itself and has changed several times. For example, expressions like low- and middle-income countries are often used interchangeably with developing nations, but they can put an excessive emphasis on short-term economic parameters. The general idea that developing countries are those whose standard of living, income, economic and industrial development remain more or less below average is often used as a rule of thumb, but is rather imprecise for analytics purposes – e.g., how do you define standard of living?

In practice, the World Bank uses gross national product per capita to distinguish between high-, upper-middle, lower-middle, and low-income countries.[1] Within these are subdivisions of less developed countries, such as those that are landlocked and those that are small island developing states, and these are treated separately. The descriptors "Global South" (which ironically is mostly in the northern hemisphere), "periphery," or "Fourth World" are also used as an alternative term. Countries on the other end of the spectrum are usually referred to as high-income countries, first-world, or developed countries. The problem with these and similar divisions are that they are essentially static whereas "developing" inherently means changing, getting better in some way. The United Nations does determine which countries it deems among the least developed countries, but no explanation of why is given.

A more holistic approach is to define developing countries as nations with less technologically advanced industrial bases and a low human development index (HDI) relative to other nations. The HDI is, however, a largely statistic composite index of life expectancy, education (mean years of schooling completed and expected years of schooling upon entering the education system), and per capita income indicators, which are used to rank countries into the four tiers of human development outlined above. A country scores a higher HDI when the lifespan is longer, the education level is higher, and the gross national incomeper capita is higher. But there are also other indices. The human capital index (HCI), for example, measures which countries are best in mobilizing the economic and professional potential of its citizens. The index measures how much capital each country loses through lack of education and health. Added to this, there is the human assets index (HAI). This is a composite index of education and health used by UN Capital Development Fund (UNCAP) in public and private finance work for the poor in the world's 46 least developed countries. The UNCAP has also developed human poverty index which combines metrics of education, life expectancy, rates of absolute poverty, and access to health care and safe drinking water. There are also others.

Problems with these indices extend beyond just measurement of their elements to issues involving deciding on the weight that should be put on each. As a result, there are several indices of economic development regularly produced by the like of the World Bank, United Nations, and International Monetary Fund (IMF). For purposes of this collection of papers, however, we adopt a position akin to that espoused by US Supreme Court justice Potter Stewart who, when

commenting on defining pornography, said, "I know it when I see it." Basically, we take the position that "We know a developing country when we see it."

But for pedagogic ease, just one indicator is taken here – following the IMF approach of focusing on a nation's gross domestic product (GDP) per capita is used. Taking its cut-off point, the IMF classified 152 countries as developing economies in 2016 with a combined population of around 6.61 billion. At 85.2% of the inhabitants of the planet, this is a considerable proportion of the world's population! It includes the whole of Central and South America, Africa in its entirety, almost all Asian countries, and numerous other island states. Table 1.1 offers an alphabetical listing of a selection of 70 developing countries as defined by the IMF. It shows their populations levels and their GDP per person as well as two commonly used matrices of social welfare. They are randomly selected only for pedagogic purposes.

The IMF list is clearly long and many of the nations included probably do not see them as undeveloped. But it does emphasize the diversity of countries that major international institutions see as in a potential need of economic development aid. The countries range from small island states, to subcontinents, to semideserted landlocked nations, to those rich in natural resources that are still to use these to the benefit of their larger populations. Although there appears some correlation between the countries' per capita GDPs and their HDI and HAI, the relationships are far from 100%. The full IMF list of developing countries contains national per capita incomes varying between $240 per annum and $58,000, but these, again, are not well correlated with the broader development indices.

Explanations for the development variations between nations are numerous and complex. Details of geography are omitted from the list national characteristics, but distances between population centers and nature of a country affect the market for airline services. The population of a country, as well as is its per capita income, is important because generally a higher aggregate resource base provides a more financial upon which to fund infrastructure together with a larger aggregate middle-class who tend to be those who fly. Small island nations often rely heavily upon international tourism as the mainstay of their economies. But tourism, in turn, is often reliant on foreign airlines to bring the tourists. This can considerably reduce the net foreign exchange earned by these countries.

1.4 GOALS AND AIMS OF THE COLLECTION

One of the aims of the collection is to consider the relative merits of letting market forces direct the development of airlines in developing countries as opposed to governments' owning and minutely regulating their economic behavior. While globally there has been liberalization of many airline markets from about 1980 or so, following 25 years or so of state ownership and economic controls of prices, developing countries have generally lagged in this process (Lubbe & Shornikova, 2018).

The amount of research conducted and literature published on the airline fleets of developing countries is expanding but still relatively limited. The relatively

Table 1.1. Alphabetical List of 70 of the IMF's Low-Income Countries in 2016 With Various Descriptive Indices.

Country	Population	GDP per Capita ($)	Human Development Index	Human Asset Index
Afghanistan	38.9	500	0.511	42.0
Albania	2.8	5,210	0.795	
Angola	32.9	2,230	0.581	52.0
Armenia	3.0	4,220	0.776	94.6
Azerbaijan	10.1	4,450	0.756	93.0
Benin	12.1	1,280	0.545	49.4
Bolivia	11.7	3,200	0.718	88.5
Botswana	2.4	6,640	0.735	83.1
Brazil	212.6	7,850	0.765	95.9
Burkina Faso	20.9	790	0.452	56.0
Burma	54.4	1,260	0.583	73.9
Cambodia	16.7	1,490	0.594	74.3
Cameroon	26.5	1,500	0.563	61.2
Cape Verde	0.6	3,060	0.665	91.2
Central African Republic	4.8	510	0.397	27.4
Colombia	50.9	5,780	0.767	93.9
Comoros	0.9	1,450	0.554	67.2
Dominican Republic	10.8	7,260	0.756	90.9
Ecuador	17.6	5,530	0.759	90.3
El Salvador	6.5	3,650	0.673	88.2
Equatorial Guinea	1.4	5,810	0.592	67.1
Ethiopia	115.0	890	0.485	55.3
Georgia	3.7	4,290	0.812	98.4
Guatemala	16.9	4,490	0.663	69.3
Guinea	13.1	1,020	0.477	39.8
Haiti	11.4	1,250	0.510	66.2
Honduras	9.9	2,200	0.634	83.4
India	1,380.0	1,900	0.645	74.3
Iran	84.0	2,870	0.783	91.4
Ivory Coast	26.4	2,280	0.538	53.0
Jordan	10.2	4,310	0.729	90.4
Kenya	53.8	1,760	0.601	73.2
Kyrgyzstan	6.6	1,160	0.697	94.5
Laos	7.3	2,480	0.613	72.8
Lebanon	6.8	5,510	0.744	88.2
Liberia	5.1	530	0.480	45.2
Libya	6.9	4,850	0.724	83.6
Madagascar	27.7	480	0.528	60.7
Malawi	19.1	580	0.483	55.5
Mauritania	4.6	1,640	0.546	54.1
Morocco	36.9	2,980	0.686	83.1

Table 1.1. *(Continued)*

Country	Population	GDP per Capita ($)	Human Development Index	Human Asset Index
Mozambique	31.3	460	0.456	53.9
Niger	24.2	540	0.394	35.6
Nigeria	206.1	2,000	0.539	43.5
Pakistan	220.9	1,280	0.557	57.6
Papua New Guinea	8.9	2,660	0.555	53.5
Paraguay	7.1	5,140	0.728	90.7
Peru	33.0	6,010	0.777	92.7
Philippines	109.6	3,430	0.718	84.3
Republic of the Congo	5.5	1,830	0.574	68.7
Rwanda	13.0	780	0.543	67.6
Sierra Leone	8.0	490	0.452	41.7
Solomon Islands	0.7	2,300	0.567	73.8
Somalia	15.9	310		24.3
South Africa	59.3	5,410	0.709	86.2
Sri Lanka	21.9	3,720	0.782	93.2
Sudan	43.8	650	0.510	61.9
Syria	17.5	1,820	0.567	77.2
Tanzania	59.7	1,080	0.529	61.1
Thailand	69.8	7,050	0.777	94.0
Tonga	0.1	5,000	0.725	98.4
Tunisia	11.8	3,100	0.740	90.8
Turkey	84.3	9,050	0.820	97.1
Turkmenistan	6.0	7,220	0.715	92.4
Uganda	45.7	800	0.544	57.8
Ukraine	44.1	3,540	0.779	
Vietnam	97.3	2,660	0.704	88.0
Yemen	29.8	940	0.470	57.7
Zambia	18.4	1,190	0.584	67.1
Zimbabwe	14.9	1,090	0.571	70.4

Source: Adapted from International Monetary Fund's World Economic Outlook Database, 2018.

small scale of these airlines and markets that they serve can be seen as one reason for this, but limited data sources and other research priorities have also played their parts. The nature of economies of the developing states has also often focused the attentions of policymakers elsewhere, including those of the international agencies such as the World Bank. But all these and many others affecting the economics and political Third World airlines have been changing.

This collection is specifically about airlines providing scheduled services and says little about charter services, although the latter is often important, for example, in thin local markets or where there are significant seasonal peaks in

demand, e.g., taking pilgrims to the Hajj to the holy city of Mecca. Further, there is neither any substantive discussion of air transportation infrastructure, basically airports and air navigation services, nor of the airframe and aeroengine manufacturing markets that provide operational equipment. All these latter things are very important to both the success of airline operations and their implications for developing countries. But boundaries have to be drawn.

The assembled papers are based around the common theme that airline markets in developing countries are often different from those found in First-World countries. Some of these differences are the products of physical geographical distinctions – e.g., most of the large desert and remaining tropical forest areas of the globe are in developing countries. Many are landlocked with their own particular transportation issues (Arvis et al., 2010). But others result from the basic fact that stages in economic development themselves can affect the ways airline markets work. The political orientation of countries, and the institutional regimes that result, is also important. One of the aims here is to offer greater clarification of the effects of economic policies and of market forces in the provision of airline services in developing countries as opposed to the effects of natural geographical differences.

It is well established that official attitudes to airlines affect the level and nature of the supply of services that airlines offer and the way the services interact with economic development processes. But in addition to the direct aviation policies of developing countries affecting the supply of scheduled air services, there have also been less direct changes on the demand side. These have, for example, taken the formation of what are often generically called "common markets" and include the formations of the Association of Southeast Asian Nations (ASEAN), the Common Market for Eastern and Southern Africa (COMESA), and Mercosur in South America (Laplace et al., 2019) These free trades both directly affect the patterns of demands for air transportation as trade between members expands at the expense of external trade and indirectly influence demand as the economies of the regions grow.

1.5 THE CHAPTERS AND APPROACHES

No collection of papers ever provides a comprehensive coverage; even "handbooks" and "encyclopedias" are partial and selective. This collection is designed to offer a portfolio of snapshots of where research is being undertaken regarding airlines in developing countries and to provide some of the findings of this work. There is a broad structure to the volume in the sense that it mainly moves from the macro to the micro, or more accurately the meso, in the sense that general issues involving airlines in developing countries are considered initially before moving onto the specifics of particular regions.

One important topic that is not addressed in any great depth is matter of airline activities and the environment. Matters of climate change are global in their nature and, although airlines contribute 2–3% of CO_2 emissions (Gosling & Humpe, 2020), this is topic that should really be treated in a holistic manner