The Role of the Airport in Growing World Cities

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INTRODUCTION

In recent decades cities have reached beyond their historical areas of influence locally and regionally, expanding to be a part of a global system within which they are the critical nodes. The concept of a world city expresses this new city form, where interactions occur on a worldwide scale between the most prominent urban centers on the planet. Interest in the topic has resulted in a variety of ranking systems that attempt to classify world cities under a number of variables. In popular culture, the desire to rank the world cities has resulted in lists such as that produced by the magazine *Foreign Policy* (Kearney, 2010), but these lists often do not publish their methodologies, prompting critique from the academic field. Comparisons with more detailed processes often include factors such as the size of economy, political systems, and cultural factors, such as that produced by Globalization and World Cities (GaWC, 2008). What is desired is a deeper understanding on how to compare world cities through empirical studies.

To delve more deeply into understanding world cities, methodologies on how the system interacts need to be created using measures that are reasonable and accepted. Between world cities, information must pass for business and socialization to occur. In the 21st century, information exchange occurs through communication modes, such as the internet, and through the movement of people between places. On a global scale, this latter exchange is primarily achieved by air travel. This study examines the connections world cities have with each other through their airports, and how this relates to the world network economy. As a case study to this question, Atlanta Hartsfield-Jackson international airport is examined to evaluate to what degree airports play a role in the connectivity of a minor world city.

LITERATURE REVIEW

The concept of a world city has evolved in the past two decades from a strict look at where the command centers of business are located, into a closer examination of flows as they relate to knowledge economies and service production (Derudder & Witlox, 2005). The credit for such a shift is given to Saskia Sassen, whose seminal book changed the field to focus on advanced producer service firms who made use of the cities with strong knowledge industry sectors (Sassen, 1991). The network of world cities is formed by the connections these service agglomerations have with each other across the globe, where cities reach beyond their local sphere of influence and interactions occur on a worldwide scale between the most prominent urban centers on the planet. To be a world city, thus, a city needed a strong knowledge economy that could ensure participation in the network of information and people flows.

The network of world cities is formed by the connections these service agglomerations have with each other across the globe. To be a world city, thus, a city needs a strong knowledge economy that can ensure participation in the network of information and people flows. The high concentration of the knowledge workforce in these cities and surrounding regions causes increased interaction and transfer of knowledge, an advantageous resource for industries looking to reduce the cost of searching for and using skilled high-tech labor (van Geenhuizen & Doornbos, 2008). For knowledge workers to reach their full potential, however, they require access to other knowledge centers around the world. Facilitating this need are international airports, where knowledge workers are able to travel to visit other knowledge industries, interact with each other in transit, and attend conferences near airports. Business firms have already recognized the importance of being near a busy hub airport, given a strong correlation between professional employment in a metropolitan area and the number of flights

per day at the airport (Fik, Ivy, & Malecki, 1995). It has been shown statistically that the causal factor in this relationship is the airport (Button & Lall, 1999), with the volume of traffic leading to increased number of jobs in the knowledge sector, particularly high-technology businesses. Access to the airport thus ends up being a large influencing factor in being able to participate in the world city network (van Geenhuizen & Doornbos, 2008).

With the importance of the airport established, the manner of examining world cities is done through measuring the air passenger flows between the world city network as a surrogate measure of connectivity. Prior to Sassen's work (1991), the measure of a world city in the global network was measured by the number of international firms which had headquarters or branch offices within a city, an idea which became defunct due to its static nature. The shift to look at the flows within the world network changed the field's direction of research, particularly toward the level of air travel. Keeling's (1995) study was the first to recognize that the importance of a city could be evaluated by its airport infrastructure, acknowledging that face-to-face communication is still necessary for the knowledge economy and airports are the manifestation of the interface between cities. This approach using infrastructure, particularly airports, to conduct empirical research on the topic "recognizes that well-connected cities are typified by the presence of vast enabling infrastructures" (Derudder and Witlox, 2008, p. 307). Under this assumption, the most important world cities would have the world's most important airports, a testable hypothesis using already collected airline data.

Determining how to measure the importance of a world city through an analysis of its airport has been a contested issue (Derudder & Witlox, 2005; 2008). To judge a city's connectivity, air flows between world airports is necessary. Some issues arise though when using most data sources. First, most airport flow data comes in the form of segment data, as opposed to

market data, a problem in an age of hub-and-spoke networks in the airline industry. To exemplify this issue, a trip from Tokyo to Miami may be routed through Los Angeles, resulting in a market flow between the origin and destination, but also in two segment flows: one from Tokyo to Los Angeles and from Los Angeles to Miami. The trend has been to report the latter, mostly due to ease of collecting, causing an uptick in many analyses for airports that serve as airline hubs (Derudder & Witlox, 2005). In addition, sources of worldwide data flows focus on international flows only, and flows internal to a nation are disregarded. This results in a negligence to properly attribute importance to two world cities in the same country (Derudder & Witlox, 2008), such as flows from Shanghai to Beijing. Derudder and Witlox (2008) also point out that airport flows do not solely capture the importance of the world city knowledge network, but encompass many types of traffic, notably tourism. High passenger flows to Las Vegas therefore may insinuate world city status, ut the true nature of its prominence is likely not its knowledge network connection, but instead reflective of its role as a tourist destination.

Using flows between cities, once an acceptable database has been constructed, geographers have created lists of world cities that show connections as well as importance. Demonstrating connectivity, Derudder and Witlox (2005) compile a list of the world's most important economic cities and the flows between them. They rank the cities by the number of passengers traveling in a given time period and make note of the pairs of cities which have the largest volumes of flows. This attribute comparison allows them to pick out which cities are most connected on the worldwide network, and thus which are the top world cities. This also can include a precursor regional component that helps in establishing connections amongst less prominent world cities that dominate a cluster (Smith and Timberlake, 1998; Witlox et al., 2004). A clique analysis further helps define these connections to draw out hierarchal tendencies (Shin

& Timberlake, 2000). In another method, cluster analyses using various centrality measures allowed for both a hierarchy and network display of the world cities (Choi, Barnett, & Chon, 2006). Incorporating time into the analysis by looking at the flows between world cities over time allows a further understanding into how world cities have changed in prominence due to historic events and growth (Smith and Timberlake, 2001; 2002).

The role of the airport is not solely as an entry and exit point. City's that look to make use of this information exchange point can develop knowledge systems within the city that harness the power of being connected in the world city network. The idea of an airport knowledge precinct has arisen in response to the airport's role as a tool for communication (Yigitcanlar, Martinez-Fernandez, Searle, Baker, & Velibeyoglu), an area near to and associated with the airport that harnesses knowledge production and plays on its strengths. World cities are now looking to boost their economic productiveness and role on the world stage by "diversif[ying] their property portfolio to attract knowledge-intensive industries to cluster around" (Yigitcanlar et al., 2008, p. 460). The airport is primed to play an increasingly larger role in the connectivity of the world city.

CASE STUDY

Atlanta may not be comparable to the top world cities, such as New York, Tokyo, or London, in terms of worldwide presence, financial systems, or cultural influence, but it still has established itself a global bearing that places it amongst peers such as Melbourne, Barcelona, Manila, New Delhi, and Dubai (GaWC, 2008). All of these cities belong to the GaWC classification of *Beta+* world cities. The distinguishing aspect of Atlanta that sets it apart from other *Beta+* cities is its presence in the aviation sector. Atlanta is home to Hartsfield-Jackson International Airport

(ATL), the largest airport by volume of passengers in the world (Airports Council International, 2010). This reputation as the world's busiest airport has primed the city to raise its profile on the worldwide stage. The growth of the Atlanta airport can be attributed to Delta Airlines and AirTran Airways which have established hubs at ATL. Hubbing increases the importance of a city's airport, while simultaneously creating familiarity of the city for those traversing the air network. It is already acknowledged that due to the nature of airline hubbing, "a number of secondary cities [are] rapidly gaining prominence in [the] new polycentric structure" (Derudder & Witlox, 2008) of the world city network. If future development targets the Atlanta airport, specifically in the form of an airport knowledge precinct, Atlanta could rapidly increase its functional importance.

Methodology

To understand Atlanta's current position in the world city network, as compared to other U.S. world cities, the volume of air travel to and from Atlanta with other international world cities is compared with four cities in the U.S. that show up prominently on many world city lists: New York (*Alpha*++), Chicago (*Alpha*), Los Angeles (*Alpha*-), and Miami (*Beta*-). The goal is to assess each city's connectivity and volume of traffic with each other, assumed to be a domestic network of U.S. world cities, and internationally with the global market. The five cities are compared in terms of passenger volume, number of international connections, and the regions and cities of the world with which they are most closely tied. The patterns of Atlanta will be assessed as to what degree Atlanta's linkages reflect the broader understanding of accepted world cities.

Study Airports

Many world cities have more than one airport serving the population, often distributed throughout the metropolitan region to provide access to a large dispersed population. In this study, each U.S. world city's airport network is established to be all large, medium, and small hub airports as defined in the National Plan of Integrated Airport Systems (NPIAS), a list of all U.S. airports. Atlanta is different from the other U.S. world cities in the study in that it is the only city with only one major airport, as seen in Table 1.

Table 1: Airports Used in Case Study for each U.S. World City

City	Airports
Atlanta	ATL – Hartsfield-Jackson Atlanta International Airport
Chicago	MDW - Chicago Midway International Airport
	ORD – Chicago O'Hare International Airport
Los Angeles	BUR – Bob Hope Airport (Burbank, CA)
	LAX – Los Angeles International Airport
	LGB – Long Beach Airport
	ONT – LA/Ontario International Airport
	SNA – John Wayne Airport (Orange County, CA)
Miami	FLL – Fort Lauderdale - Hollywood International Airport
	MIA – Miami International Airport
	PBI – Palm Beach International Airport
New York	EWR - Newark Liberty International Airport
	JFK – John F. Kennedy International Airport
	LGA – LaGuardia Airport

Data Source

Domestic and international airline data is used to compare the volumes that have occurred from 1990 to 2008. The data used in this study comes from the Air Carrier Statistics database. The database is also known as the T-100 data bank due to the name of the form which U.S. air carriers fill out to report the data. Data are reported monthly and are collected by the Office of Airline Information, part of the Bureau of Transportation Statistics (BTS), which itself is a part

of the Research and Innovative Technology Administration of the U.S. Department of Transportation. The data are compiled and reported as a complete data set of all air travel occurring within, to, and from the United States, listed by origin-destination pairings.

Two sets of data, domestic and international, were acquired from the BTS website. Both of these datasets are market data, as opposed to the alternatively available segment data. Segment data breaks trips into links, such that a trip involving one connection is considered to consist of two segments. The market data set, on the other hand, would consider this one trip. Hub airports thus are overrepresented in the segment data set. The reason for choosing market data is that it allows analysis on the actual origin and destination of travelers' trips. In this analysis, there is no desire to capture the effect of hub airports, and market data removes the bias that exists for hubs in the segmented data.

International Market Airports

All of the international airports in the T-100 dataset are listed by airport code, city name, and country. In order to convert the data into a form usable for this study, each airport was geolocated into one of seven world regions: Africa, Asia, Europe, Middle East, North America and Caribbean, Oceania, and South America. In addition, all of the international airports in the database are aggregated by city, such that all cities with multiple airports have all their flows summed together. For example, London's four airports' passenger flows in the database (Heathrow, Gatwick, Stansted, Luton) are all summed together to form one passenger flow for the city of London, similar to what is done for the U.S. world cities.

Results

Atlanta's airport is unique because it is the largest airport by passenger volume in the world, but not one of the most recognized world cities. Its hub status brings about a large volume of through passengers, so ATL's reputation is skewed such that relatively few passengers originate or end their trip in Atlanta. The market dataset used in this study allows for a clear look into Atlanta's passenger connection because the aggregated data is not affected by multi-segment trips.

World Cities in the U.S. Network

The U.S. world cities are significant nodes encompassing a large part of the aviation market. The five cities in the study set between 1990 and 2008 made up at least one trip endpoint for 47% of all trips (6.0 out of 12.7 billion trips). The ability of five cities to dominate a market of hundreds gives proof to the importance of the world cities in a national context. The connection that world cities have with each other is important as well, as the ties between world cities are the definition of the global city network. Flows among the five cities in the study and between the five cities and the global market make up 15% of all flows during the study period, just over 1.9 billion passenger trips. Looking specifically at the domestic component, as seen in Table 2, it is seen that the five world cities differ in propensity to travel between one another.

Table 2: Domestic World Cities Origin-Destination Flows

	Atlanta	Chicago	Los Angeles	Miami	New York	Domestic World City Total
Atlanta		40	31	78	67	***216***
Chicago	40		67	38	80	***225***
Los Angeles	31	67		18	70	***187***
Miami	78	38	18		133	***266***
New York	67	80	70	133		***350***

Note: All flows in millions of passenger trips

New York has the greatest flow between the five world cities, with over 350 million passenger trips between the city set. Atlanta has the fourth largest volume of the five, with 216 million passenger trips, topping only Los Angeles. Atlanta's greatest flow is with Miami, with 78 million trips, followed closely by Atlanta's flows with New York, 67 million. Atlanta's tie with Los Angeles and Chicago are weaker, indicating the Atlanta's world city connectivity, domestically, is eastward focused. It is also noteworthy that all cities have their strongest connectivity with New York, attesting to New York's status as one of the most important world cities.

Growth of Flows

An important measure of world cities' aviation connections is how they have shifted over time. Although U.S. cities' airports are not amongst the world's fastest growing airports (Airports Council International, 2010), of which the majority of the top 25 are found in China, the U.S. world city aviation flows are still growing. Using the volume of passengers moving between the U.S. domestic world city set and the global market, a comparison over time is able to show which U.S. world cities are becoming increasingly important in aviation. As seen in Figure 1, the general trend of growth and decline has been similar for the U.S. world cities, but there is a disparity amongst those which are making bigger gains. It is clear that Atlanta has been growing faster in terms of relative growth than the other world cities in the study set. Atlanta is the only city which has more than doubled its passenger volume since 1990, while all other cities have only gained between 50 and 75%. Atlanta has rebounded the quickest of the five cities in the post-9/11 period, and during this past decade only New York has kept pace with the rate of Atlanta's growth, despite New York's long lull after the terrorist attacks.

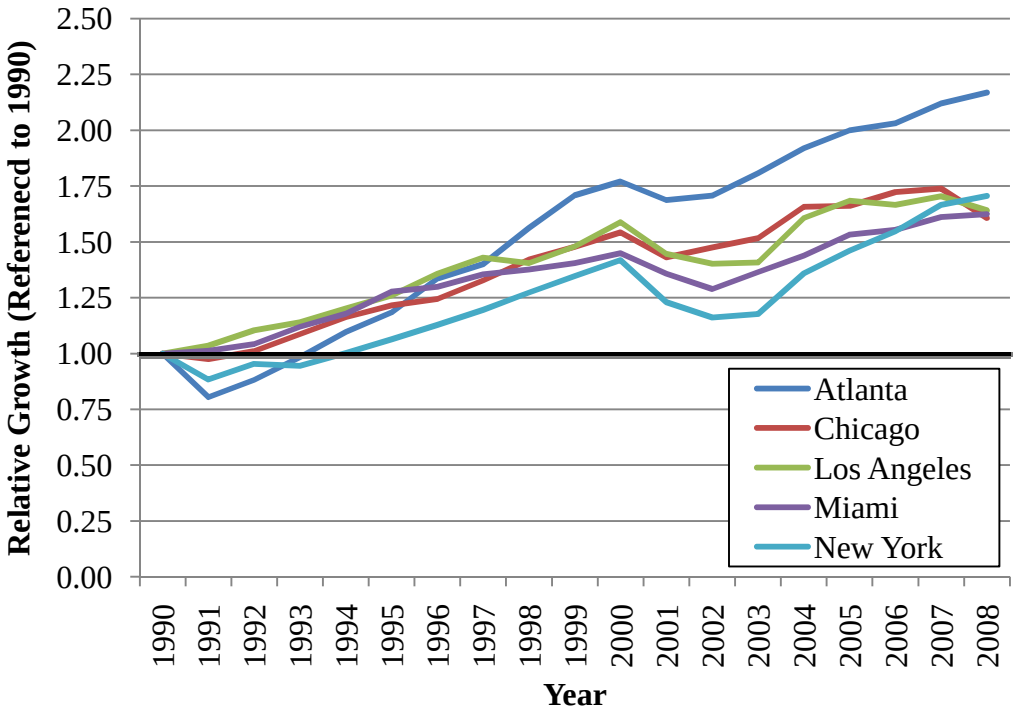

Figure 1: Relative Passenger Air Travel Growth in Domestic World Cities

International Connections

To emphasize the importance of the U.S. world cities in relation to the global market, attention must be given to the level of international traffic passing though these cities. The international component of the U.S. world city set makes up 56% of all international flows moving to and from the U.S. Such dominance over the global market by a few cities is indicative that these cities have connections internationally that power the nation's worldwide presence. They are the centers for the market, the places where knowledge economies tie in to American soil.

The U.S. world cities have a varied array of connections to the regions of the world. It is clear that Europe and the North America and Caribbean regions have the greatest connections to the U.S. world cities, as seen in Table 3, with North America and Caribbean region just topping Europe. It is not surprising that the U.S. world cities are most connected to the region within

which they are located. Each of the U.S. world cities has a specialized network of market connections, such that each U.S. world city also has some regions of the world with which it is has a minor connection. Atlanta for example is connected well to Europe and the North American and Caribbean region, but has near non-existent flows to Oceania, Middle East, and Africa. Los Angeles, the only U.S. world city in the set on the Pacific Coast, has strong ties to Oceania and Asia, while weak with the Middle East and Africa. Miami is strong with South America and weak to Africa, Asia, and Oceania. This is indicative that U.S. world cities, despite having global presences, have air connections that reflect their spatial location within the continent, as well as airline market strategies.

Table 3: Domestic World Cities Flows to International Regions

	Africa	**Asia**	**Europe**	**Middle East**	**North America and Caribbean**	**Oceania**	**South America**	**Inter-national Total**
Atlanta	1.6	4.0	47.0	0.7	38.2	< 0.1	6.9	***98.4***
Chicago	< 0.1	20.7	73.7	2.2	60.8	0.4	1.9	***159.6***
Los Angeles	0.1	84.2	50.6	1.0	88.9	31.9	5.3	***262.0***
Miami	0.6	0.4	42.4	0.6	162.1	< 0.1	82.6	***288.6***
New York	7.5	41.9	246.5	24.1	124.0	0.9	27.0	***472.0***
TOTAL	9.8	151.1	460.2	28.6	474.0	33.2	123.6	***1280.5***

Note: All flows in millions of passenger trips

The notion that U.S. world cities target particular world regions with which to have strong air connections gains clout when examining each world region individually. Each region of the world with one exception (North America and Caribbean), has a dominant U.S. world city with which it has its greatest ties. Africa, Europe, the Middle East are linked to New York, Asia and Oceania to Los Angeles, and South America to Miami. Businesses making decisions with

this information in hand, would certainly know where it is best to locate services that have a geographical tendency to a certain region of the world.

Atlanta as a world city is not prominent amongst the set of U.S. world cities. In terms of rankings, its best connections are that it is has the second highest Africa connection and is third highest in the South America market. It is last amongst all five cities in terms of international passenger traffic. Atlanta still has ground to catch up against other world cities in the U.S. in terms of volume.

The level of connectivity to the worldwide market can be measured by the presence of air travel between a city pair. Table 4 displays each U.S. cities' level of connectivity, both frequency and proportion of city pairs, for different levels of passenger flows. In the largest global markets, those with over ten million passenger trip pairs with the five U.S. world cities, nearly all international world cities are connected to each of the U.S. world cities. For city pairs with a lower level of flow, each U.S. world city is connected to a smaller proportion of the international market. Atlanta, for example, is connected to 97% of all international cities with over 10 million U.S. trips, but only 86% of all cities with over 1 million trips, 66% of the over 100 thousand trip group, and overall has connections with 31% of international cities in the database. It is seen that Atlanta falls behind the other four cities in terms of its connectivity to the global market.

Table 4: U.S. World Cities International Connectivity

	Total Number of Connected Cities					
Cities with … trips	**U.S.[1]**	**Atlanta**	**Chicago**	**Los Angeles**	**Miami**	**New York City**
> 10 mil.	37	36 (97%)	37 (100%)	36 (97%)	35 (95%)	37 (100%)
> 1 mil.	126	108 (86%)	115 (91%)	119 (94%)	114 (90%)	125 (99%)
> 100k	211	140 (66%)	154 (73%)	160 (76%)	165 (78%)	189 (90%)
All	618	191 (31%)	217 (35%)	263 (43%)	339 (55%)	401 (65%)

[1] *Consists of only the five world cities in study.*

International City Pairs and Atlanta

Atlanta's level of connectivity to world cities is assessed on a city-by-city basis. In doing this part of the study, all cities which serve primarily tourism purposes and are not commonly understood as being part of the knowledge economy are removed from the dataset, such as Cancun, Mexico; Montego Bay Jamaica; and the Grand Cayman Islands. Table 5 provides a side-by-side comparison of the top ten cities connected to the five U.S. world cities in the study and the top ten cities connected to Atlanta. What is most apparent is the absence of Tokyo and Seoul from the Atlanta list, indicative of the small connection Atlanta has with this region of the world as compared to other U.S. world cities. Instead, two European cities – Manchester and Zurich – appear on the list. Overall, though, the top world cities are the same for Atlanta as they are for the major U.S. world cities.

Table 5: Top Ten World Cities by Passenger Volume: Comparison of U.S. World Cities and Atlanta

U.S. World Cities Top 10	**Atlanta Top 10**
London, United Kingdom	London, United Kingdom
Toronto, Canada	Frankfurt, Germany
Paris, France	Paris, France
Tokyo, Japan	Toronto, Canada
Frankfurt, Germany	Mexico City, Mexico
Mexico City, Mexico	Amsterdam, Netherlands
Montreal, Canada	Nassau, Bahamas
Amsterdam, Netherlands	Zurich, Switzerland
Seoul, South Korea	Manchester, United Kingdom
Nassau, Bahamas	Montreal, Canada

The U.S. world city list in general favors world cities in the North American and Caribbean region. Within the top 50 most connected world cities to U.S. world cities, five show up that are not even on the top 150 of all world cities by passenger flows (Witlox, Vereecken, &

Derudder, 2008), all of which are in the Caribbean basin: Kingston, Jamaica; Port-au-Prince, Haiti; Panama City, Panama; Hamilton, Bermuda; and Port of Spain, Trinidad and Tobago. This shows the propensity for U.S. world cities to be tied more closely to world cities in their vicinity, over some more prolific world cities on the global scene.

There are over fifteen world cities amongst the top 50 connected cities to Atlanta that are not amongst the top 50 in the U.S. These include Stuttgart, Berlin, and Hamburg, Germany; Johannesburg and Cape Town, South Africa; Barcelona, Spain; Monterrey Mexico; and Moscow, Russia. Many of these cities likely have high connections with Atlanta because of the airlines' decisions to have direct flights to and from Atlanta city. Delta's effect on Atlanta's target markets, for example, should not be downplayed. In addition, though, Atlanta has closer ties heading east than heading west. Thus many Asian cities that are highly connected to other U.S. world cities, do not show up highly for Atlanta, such as Hong Kong, Sydney, and Singapore.

SUMMARY AND DISCUSSION

Atlanta has the basis for being a world city, but it still lags behind the other U.S. world cities in the study in many areas. Most indicative of Atlanta's smaller presence is its low frequency and volume of air travel between it and other world cities. Atlanta also has fewer connections to other international cities than its domestic counterparts. Despite ATL's reputation as a large airport, Atlanta's primary role is as a transfer hub for Delta and AirTran flights, and serves a relatively smaller set of passengers traveling to and from the city. Although this is indicative of future growth, Atlanta has yet to see the passenger volumes of other U.S. world cities. Overall, Atlanta is a minor world city that is primed to grow.

Atlanta has yet to overcome the “gravity model” nature of air travel, a barrier which the greatest world cities risen above. This line of thinking describes cities that are geographically close to one another to have higher flows due in part to their physical proximity. Interactions thus increase when distance decreases. Breaking beyond this spatially dependent nature requires establishing strong roles in world cities, regardless of geography. Currently Atlanta as a world city has a presence in its own region, North America and Caribbean, and Europe, but this is the general case for all U.S. world cities. Atlanta is already connected to the majority of the top world cities by air flows, so making connections with the Tokyos, Londons, and Parises of the world is not the issue. Making a niche elsewhere, such as increasing interactions with Asia and the Middle East, and increasing flows to less significant world cities in general will help to raise Atlanta’s status as a world city.

In order for a world city like Atlanta to increase its presence through the use of its airport infrastructure, there must be supporting industries to warrant traveling to and from the city. If Atlanta were to further develop its presence in international markets, it could become a greater world city. Luckily for Atlanta, air travel growth has been strong for the past two decades, much greater than other U.S. world cities, indicating that the city is moving in a positive direction. The hubbing nature of Atlanta is a positive characteristic, because it creates the possibility of centralized services for businesses in the knowledge sector. Capturing this could involve developing knowledge precincts near to the airport. Atlanta is already in the process of planning and building the Atlanta Aerotropolis (Coffee, 2009), which will be oriented towards the airport’s new international terminal. Such development is the key part of a strategy to make Atlanta a more important world city and a larger player in the knowledge economy. City and

regional governments can play a large role in promoting and growing developments that work with and prosper upon the airport's success.

Future Considerations

The use of airport flows as a measure of connectivity has been well regarded in world city relational literature; however this can create some issues in drawing proper conclusions. In this study, it is seen that U.S. world cities each appear to have specialties in terms of international markets, while maintaining close ties to their home region (North America and Caribbean) and Europe. This is a downfall of using airport flows as a measurement of connectivity, because air travel interactions between cities and regions of the world can be influenced heavily by airline strategies. For example, an airport in a given city that has an airline which is focused heavily on the Middle East, will have a very high level of passenger activity between the city and the Middle East. As represented by air flows, the relationship of a city to world cities in an international region is not a product of two cities' interacting in the knowledge economy, but the effect of an airline providing an easy direct connection. Certainly direct flights play a role in developing a relationship between two world cities, but the use air flows can over represent particular markets.

This study also reveals an issue with using the T-100 dataset. Despite using a market dataset to capture the true origin and destination of passenger trips, the true pairs of cities between which a passenger travels are often lost in the data reporting. The T-100 dataset is created by international and domestic airlines reporting the flows between international cities and U.S. cities. If a ticket has several segments on different international airlines, only the segment which is connected to the U.S. is reported by the international airline. This under represents

international cities which do not have direct connections with the U.S. world cities. It is difficult to believe that between 1990 and 2008 only eleven passengers traveled from the five U.S. cities in the study to Tianjin, China or 45 passengers to Macau. Certainly, the most important world cities will show up as prominent in the database because of good reporting of direct connections (they did in this study), but there is still more to be desired from the dataset. What the T-100 dataset is well suited for, though, is complementing trips between domestic world cities to a larger worldwide database such as that of the International Civil Aviation Organization, so that connections internal to the U.S. are represented.

A final suggestion for future study is to expand the set of U.S. world cities that are analyzed. The GaWC ranking system includes many U.S. cities in the list, including some that are considered greater world cities than Atlanta and Miami, the latter which was chosen due to its prominent international connection to South America. A future study could expand the number of U.S. cities analyzed, and stratify them based on their GaWC ranking. Different categories of world cities could be compared as an aggregated set in addition to city-by-city analysis. An expanded study would provide further insight into how one’s status as a world city affects connections worldwide.

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