The Inter-Island Transport System

Abstract

An adequate inter-island transport system is critical to the continued development of Tobago. The inter-island transport system has played an active role in making resources available to the different economic sectors. The degree by which this system has facilitated economic growth in Tobago is one of the questions under investigation.

Recently, both the Central Government of Trinidad and Tobago and the Tobago House of Assembly have taken initiatives to improve the inter-island transport system. Through the passenger fare subsidies, the purchase of two fast ferries and the leasing of a cargo vessel since 2005, passenger and cargo movements have increased significantly between the islands.

The paper examines the trends in the inter-island transport system and seeks to discuss the overall impact that it may have had on the economy of Tobago. The paper concludes that initiatives aimed at increasing the supply of transport services to the island can have a positive impact on the level of economic activity.

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This paper is an amended version of a study undertaken at the Division of Finance and Enterprise Development, Fiscal Policy Unit, as part of the Division's effort to examine financial and economic developments in Tobago. The findings, interpretations and conclusions expressed in this paper are entirely those of the author and not those of the Tobago House of Assembly. The author may be contacted at email: kevin.r.hope@gmail.com

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1.0 Introduction

The inter-island transport system has been a central topic of debate for policymakers in Trinidad and Tobago. An early account of this debate was found in the 1977 budget speech that alluded to the perennial inter-island transport problem as being its inadequacy to meet the growing demands of both islands.[1] Similarly, policy reports emanating from the Tobago House of Assembly have discussed the implications of the inter-island transport system with respect to the cost of living differential that existed between Tobago and Trinidad.[2]

In recent years, capital investments into the inter-island transport system by the government of Trinidad and Tobago witnessed an increase in the volume of passengers and the movement of cargo. The transport investments by central government coincide with specific targets outlined in Tobago's Comprehensive Economic Development Plan (CEDP)[3] that were aimed at maintaining an effective and reliable sea and air transportation system. The CEDP recognizes the importance of inter-island transport to all Tobagonians, the domestic economy and trade. It also recommended the need for reliable transportation data and indicators to assist in the planning and execution of transport policies.

The nature of the relationship between transport and economic development is documented for the more developed countries. Several studies examined how transport capacity improvement in the network of roads, bridges, airports, waterways and harbour contributed to increased economic activities in the geographic areas they served. The indicators of economic growth in these areas were measured by increases in output per capita, greater variety of goods and services available to the local economy and increases in the productivity and level of employment.

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[1] Republic of Trinidad and Tobago Budget Speeches 1957-1981, pp.781.Vol.II 1972-1981

[2] Policy Research and Development Institute 2004.*Economic and Social Development in Tobago 2003-2004*. Scarborough Tobago, Division of Finance and Planning 2006.*The Cost of Living Differential Between Tobago and Trinidad.* Tobago House of Assembly. Scarborough.

[3] The Comprehensive Economic Development Plan for Tobago (2006-2010) is a medium term strategic plan designed to bring Tobago in line with national development and Vision 20/20.

Several empirical studies of the impact of transport on the economy have sought to correlate the impact of investments in transport infrastructure with GDP growth. The pioneering paper by Aschauer (1989) paper raised the profile of this issue when he undertook an econometric analysis on the relationship between the stock of transport infrastructure and the level of economic output. He modelled transport infrastructure as an additional factor in the aggregate production function which has the effect both of increasing the level of economic activity and of enhancing the productivity of private capital. The study showed a relatively high elasticity of output of 0.4 to infrastructure endowment.

However, subsequent investigation of Aschauer study suggested that the results on the quantitative impact of transport infrastructure were exaggerated with an output elasticity of around 0.1 being a more likely estimate. Further, they found that it did not explicitly identify the way in which infrastructure impacted on GDP and that it was likely that the direction of causality could have ran from growth to infrastructure via derived demand (Lau and Sin, 1997).

Conversely, the World Bank 1994 World Development Report revealed a seemingly strong correlation between infrastructure per capita and GDP per capita (1990 PPP) for various countries, underscoring the importance of infrastructure investments to economic development. Similarly, Baum and Behnke (1997) found significant link between transport output and long run aggregate output in Germany. Using growth accounting approach they found that 38 percent of the growth in the German economy can be directly associated with the growth in transport and specifically with the growth in road transport. Although, the empirical studies produced varied and conflicting results on the issue, most of the literature suggests that transport investments and infrastructure contributes to growth.

The paper builds on the CEDP recommendation to provide reliable transportation data and indicators, by examining the trends in inter-island transport and to discuss the likely impact that it may have had on the Tobago economy. The paper is organized in the

following sections; Section 2 provides the theoretical underpinnings for inter-island transport and economic growth; Section 3 analyzes and discusses the trends in the inter island transport system and its impact on the Tobago economy and Section 4 concludes with a summary of the observations.

2.0 Theoretical Framework for Inter-island Transport and Economic Growth

The demand for inter-island travel is largely a derived demand, dependent on the demand for other goods and services. In terms of passenger demand, this may include the journeys that people take for business, education, leisure and the consumption opportunities such as shopping and tourism. The demand for cargo on the other hand, may arise from the purchases of goods and services by final users who require the delivery of the inputs to the place of production and, the distribution of products from the place of production to the final point of use. Therefore, as the economy grows and income rises, these various demands for transport are generally expected to increase.

The supply of inter-island transport services on the other hand, occurs through a combination of providing and using the infrastructure according to the mode of transport. In other words, an increase in the number of aircrafts and/or vessels on the network, an expansion of airport or the port all constitute an increase in the supply of the inter-island transport. Improvements in the operations and management of the inter-island service speak to an increase in the usage of the network.

To facilitate economic growth, inter-island transport must be affordable, accessible and reliable. With respect to affordable inter-island transport, the fare must be within the reach of the average Tobagonian. Accessibility on the other hand, is determined by the quantity of economic and social activities reached via the transport system and, reliability by the consistency in the scheduling of flights to meet the needs of the travelling public.

With gains in accessibility and reliability, the inter-island transportation system can contribute to an improvement in the production process and the distribution of goods and

services. These productivity gains when combined with private capital and labour can result in an increased level of economic activity in Tobago.

Consequently, inter-island transport must be viewed not only in the narrow sense of accommodating passenger and cargo traffic, but from the broad perspective of facilitating economic growth. From affecting the price of food and other consumer products for the average Tobagonian to providing access to the domestic tourism sector and international markets, inter-island transport is essential to the economic success of Tobago.

The thirty five (35) kilometres[4] separation of the two economies is bridged by a ferry service operated by the Port Authority of Trinidad and Tobago and, by an air link served by the national airline Caribbean Airlines.[5] Tobago's direct access to the rest of the world comes via its international airport at Crown Point.

3.0 Trends in Inter-island Transport

Data on the inter-island transport system and Tobago's economic performance were provided by Central Statistical Office of Trinidad and Tobago (CSO), Policy Research and Development Institute Tobago (PRDI), Port Authority of Trinidad and Tobago (PATT) and, the Airport Authority of Trinidad and Tobago (AATT). The comprehensiveness of this study is limited to the exploration of trends in passenger and cargo transport and how they related to economic activities in Tobago.

A series of indicators are employed in the analysis; measures of transport performance, transport intensity and transport investments. By definition, transport performance provides a measure of the overall demand for passenger (freight) transport and is calculated as the amount of transport for a given period multiplied by the average distance (*pkm* for passenger kilometer, *tkm* for ton kilometer). Transport intensity on the

[4] Trinidad and Tobago are separated by twenty-two miles

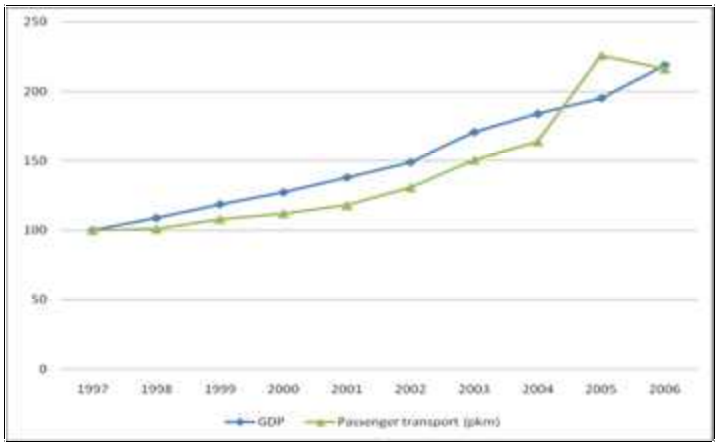
[5] Caribbean Airlines is a merger between the former national carrier British West Indian Airways (BWIA) and the domestic airline Tobago Express.

other hand, is a measure of the importance of transport to the economy and is given as the ratio of transport performance to GDP. Transport intensity increases when goods (passengers) growth is greater than GDP growth and vice versa (Peake 1994). Transport investment refers to capacity improvements to the existing transport network in terms of increased number of vessels (aircrafts) operating the route and improved management systems, techniques and pricing. Transport investments also take into account infrastructural development at the port and airport.

3.1 Passenger Transport

The ten (10) year period from 1997 to 2006, witnessed significant growth in passengers transported on the inter-island transport system. Total passenger transport doubled over the period, increasing from 657,212 passengers in 1997 to 1.42 million passengers in 2006.[6] The increase in passenger transport translated into an average annual growth rate of 10.5 percent and reflected in part, increases in demand for inter-island travel. Also, the 10.5 percent growth rate of passenger transport was proportionately higher than that of the 9.1 percent average annual GDP growth over the period of investigation.

Figure 1. Increase in GDP and passenger transport performance, Tobago 1997-2006



Source: Author's calculation, PATT

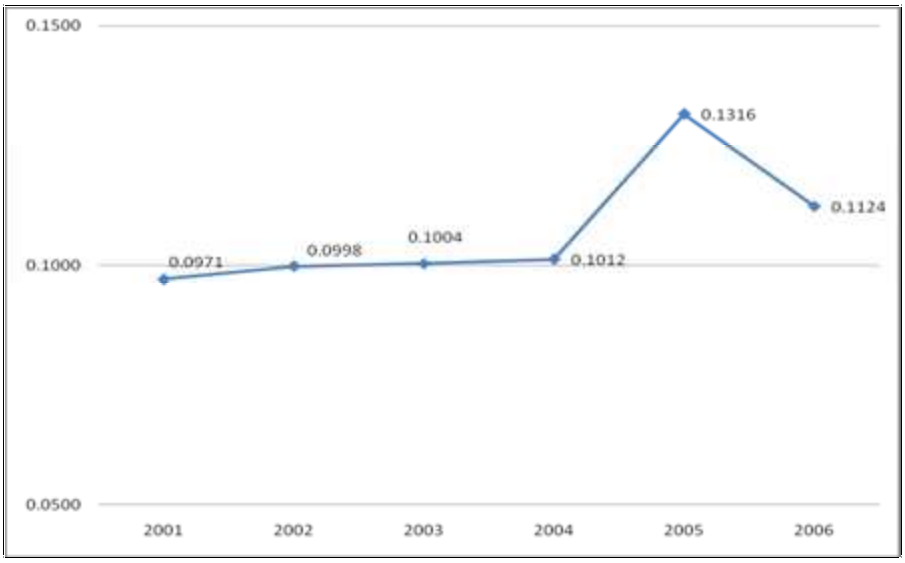
Figure 1 illustrates that there exist a close connection between growth in passenger transport and economic growth. Over the period 1997 to 2006, real GDP rose by 118

[6] See Appendix B for Table on Tobago's Passenger Transport 1997-2006

percent with similar increases in passenger transport by at least 116 percent. Further, the diagram shows that there were noticeable increases in passenger transport performance in the post 2002 period, particularly in 2005.

Passenger transport intensity for Tobago over the period 2001 to 2006 averaged 0.11, suggesting that passenger transport contributed to .11 percent of Tobago's GDP. Figure 2 shows an increase in passenger transport intensity for the period except for the year 2006.

Figure 2. Transport intensity in passenger transport, Tobago 2001 - 2006



Source: Author's calculation, PATT

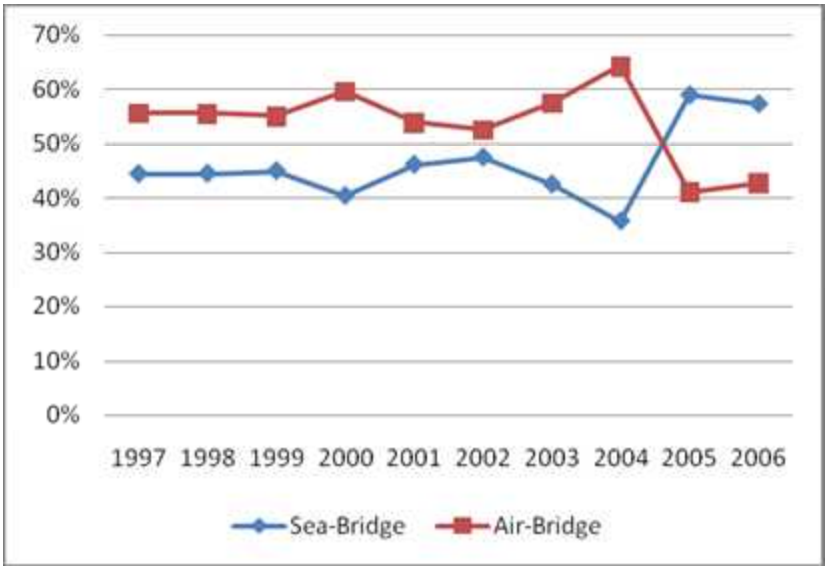
The increases in transport intensity and passenger transport performance in 2005 speak of a situation where the growth in passenger transport exceeded the growth in GDP. Further, the increasing level of passenger transport intensity in Tobago over the period 2001 to 2006, points to the island's structural makeup where the services sector, particularly tourism, is the more dominant of economic sectors and also more transport intensive.

A modal assessment of passenger transport for the period 1997 to 2006 showed that passenger transport on sea-bridge almost tripled, from 291,924 in 1997 to 813,644 in

2006.[7] The passengers transported on the ferry service over the period represented an excess of 4.5 million persons travelling between Trinidad and Tobago, at an average growth rate of 17 percent per annum. On the other hand, passengers transported on the air-bridge almost doubled from 365,288 in 1997 to 607,067 in 2006 representing an excess of 4.9 million persons transported via air between Trinidad and Tobago.

Figure 3 shows that in terms of the modal split in passenger transport over the period 1997 to 2006, three critical observations can be derived. First, a passenger transport shift away from a dominant air-bridge for most of the years (1997 to 2004) to the sea-bridge in the post-2005 period. In 2005, the sea-bridge accounted for 59 percent of total passenger transport from 36 percent in the previous in 2004, whereas the air-bridge fell to 41 percent in 2005 after a dominant 64 percent a year earlier. The shift in the dominant mode of transport may point to improvements in the supply of transport services via the wet leasing of two fast ferries in 2005 and changes in the demand for mode of inter-island transport.

Figure 3. Modal Split in Passenger Transport, Tobago 1997-2006



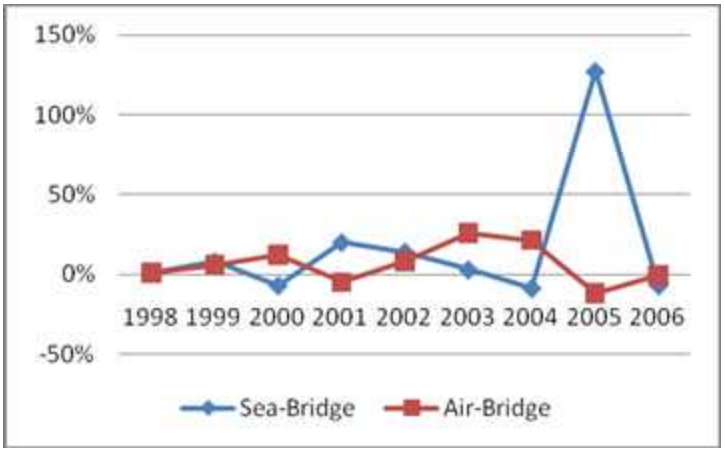
Source: CSO

Second, over the period 2000 to 2006 passengers substituted between the two modes of inter-island transport. In 2000, the decline in passenger transport on the sea bridge by

[7] See Appendix A passenger transport data for Tobago 1997 to 2006

13.2 percent witnessed a simultaneous increase of 12.3 percent on the air bridge. This substitution between modes of inter-island transport may be attributed to supply constraints on the sea bridge in 2000, where the Panorama was the only vessel operating the route for the majority of the year. Equally important, was the reduction in airfare from TT$300 to TT$200 for the commuters on the air bridge for the period 2002 to 2004. This in part, contributed to a 24 percent annual increase in passenger movement on the air bridge during the period of the reduction.

Figure 4: Passenger transport rates of growth by mode, Tobago 1998-2006



Source: CSO

Finally, passenger transport on the sea-bridge in 2005 marked a *new age in inter-island ferry transport*, registering a 120 percent passenger increase over 2004(see Figure 4). The increase can be attributed to the wet leasing of three vessels, the Sonia a conventional type ferry and two high-speed ferries, the Cat and the Lynx adding a combined carrying capacity of 2410 passengers and 667 cars to the previous *supply constrained* sea-bridge. Also the reduced travel time from five (5) hours to two and a half (2 ½) hours made both islands easily accessible to the other and the saving in *man-hours* for employers and/or business persons[8] may have increased the demand to travel onboard the sea-bridge. Consequently, the increases in passenger transport performance and passenger transport intensity in 2005 are largely the results of changes that were occurring on the sea-bridge,

[8] Prud'homme and Lee (1999) indicated that an increase in the speed at which workers can access the enterprises where they work (trade) contributes to cost-savings and the productivity of that area.

where improvements in transport capacity may have induced the increases in travel demand.

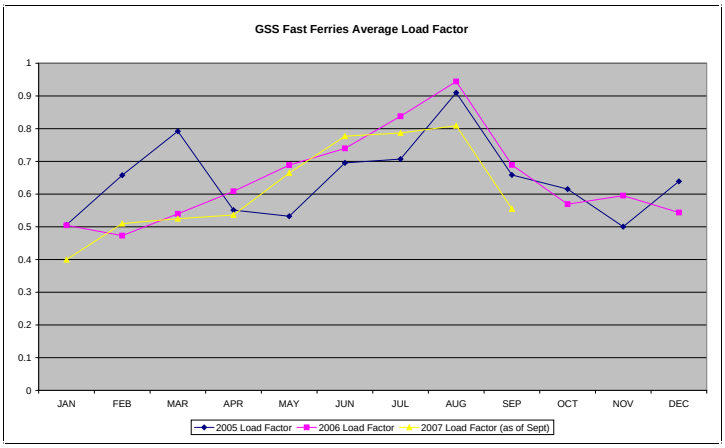
Table 1: Vehicles carried on the Ferry Service 2001-2006

YEAR	CARS	GOODS VEHICLES	HEAVY EQUIPMENT	MOTOR CYCLES	TOTAL
2001	23,493	10,725	14,401	261	48,880
2002	31,012	12,570	15,986	254	59,822
2003	31,640	14,233	19,115	271	65,259
2004	31,671	15,818	19,945	219	67,653
2005	78,053	36,129	21,735	221	136,138
2006	83,842	43,934	25,404	2,146	155,326

Source: Port Authority of Trinidad and Tobago – Scarborough Division

Coinciding with passenger transport was the increased volume of vehicles entering Tobago on the ferry system. Table 1 show that the increase in the movement of cars and goods vehicles quadrupled over the period 2001-2006. The movement of cars and goods vehicles provides a crude indicator of the level of labour flows, domestic tourism and growth in the distribution sector into Tobago. Similarly, the increase in heavy equipment, from 14,401 in 2001 to 25,404 in 2006 mirrored the increase in construction-related activities and infrastructure development.

Figure 5. Fast Ferries Average Passenger Load Factor January 2005 - September 2007

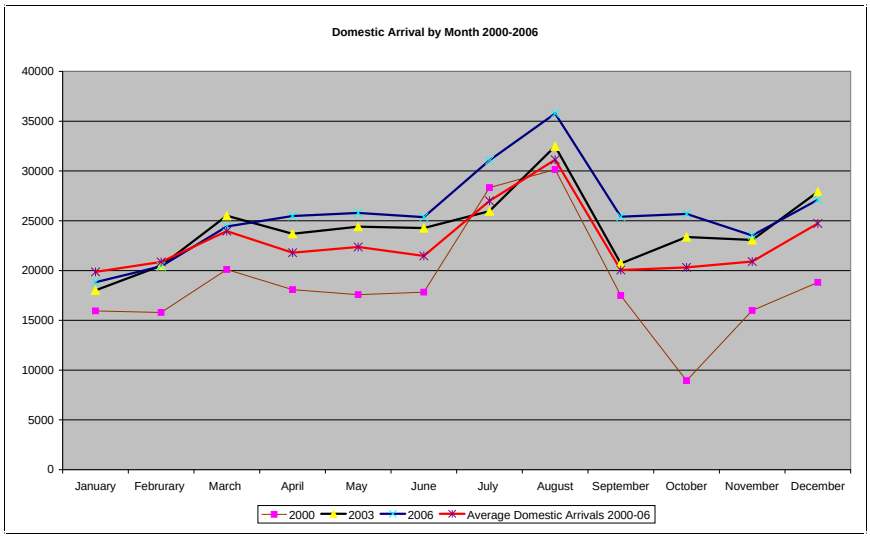


Source: Fiscal Policy Unit, PATT

Trends in terms of the seasonality of demand for inter-island passenger transport showed that both the fast ferries and the air-bridge registered their highest load factors and domestic arrivals into Tobago during the months of June to August. This period coincided with the school holidays in Trinidad and Tobago.

Figure 5 shows the fast ferries average passenger load factor (APLF)[9] for the period January 2005 to September 2007. Evidently, the months of June to August, particularly August, registered the highest APLF between a range of 80 to 95 percent and in the remaining months the service operated with spare capacity.

Figure 6. Monthly Domestic Arrivals - 2000-2006



Source: AATT

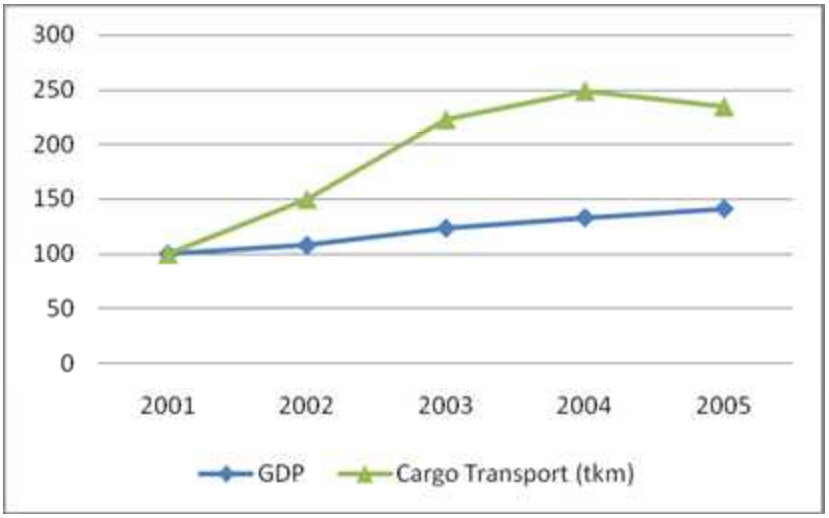
Domestic arrivals into Tobago offer some insight on the domestic tourist sector. Figure 6 shows the seasonality in domestic arrivals by air for the period 2000 to 2006 and showed that the months of July and August as the peak periods in domestic tourism followed by increases during December and March.

[9] The passenger load factor is a benchmark used in transportation analysis as a measure of capacity utilization. Although used in the airline industry, passenger load factor can apply to other modes of transport. In this case, the fast ferries average passenger load factor is defined as the ratio of average passenger load to total passenger capacity.

3.2 Cargo Transport

SACTRA (1999) postulated that the level of economic activity in a country plays a significant role in determining the movement of freight. In that, the increased volume of commodities moved as inputs into the production process and for consumption often reflects the level of absorption within an economy. Therefore, the demand for freight in Tobago can be viewed as a function of the activities in the key economic sectors such as tourism, distribution, construction and government services. The ferry service provides this essential link to the economic sectors through the supply of cargo to and from Tobago in the form of aggregate and building materials, containerized cargo, goods vehicles, trucks and heavy equipment.

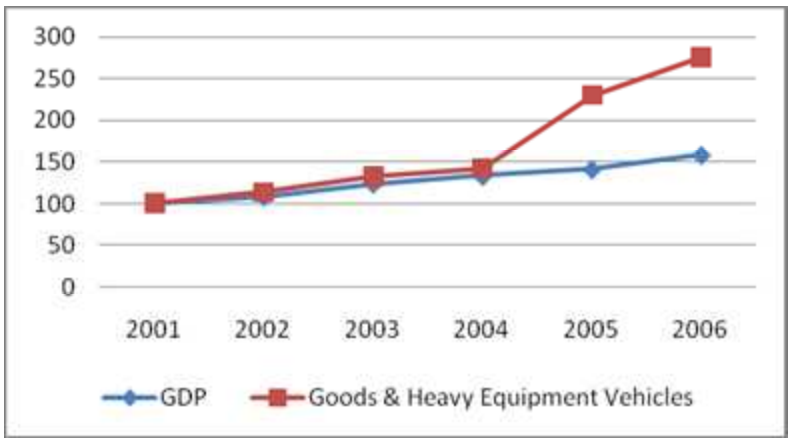
Figure 7. Increase in GDP and cargo transport performance, Tobago 2001-2005



Source: Author's calculation, PATT

Figure 7 shows that similar to passenger transport, cargo transport is increasing with the rise in GDP. GDP rose by 41 percent to that of a 135 percent increase in cargo transport between 2001 to 2005. The rate of growth in cargo transport over the period averaged 26 percent and was proportionately higher that average GDP growth of 9.7 percent.

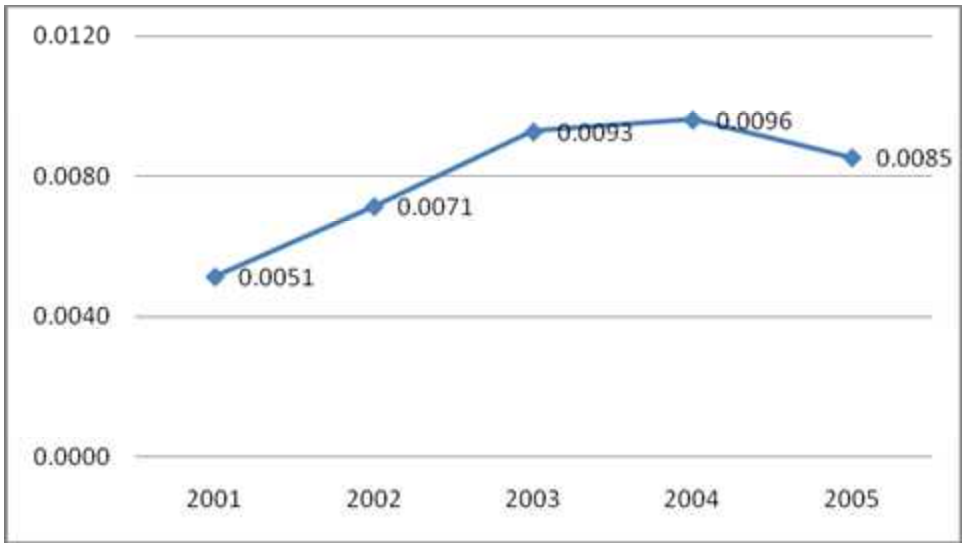
Figure 8. Increase in GDP, vehicles carried onboard sea-bridge, Tobago 2001-2006



Source: Author's calculation, PATT

Increases in cargo transport are also reflected in the volume of goods vehicle and heavy equipment carried onboard the ferry. As evident in figure 8, GDP and goods vehicles increased in tandem over the period 2001 to 2006 with an exponential increase of 90 percent in goods vehicle transported in the post-2005 period from 2004.

Figure 9. Cargo transport intensity, Tobago 2001-2006



Source: Author's calculation

Figure 9 shows an increase in cargo transport intensity for the period except for the year 2005.Cargo transport intensity averaged .008 over the period 2001 to 2005, highlighting that the cargo sector registered lower transport intensity to that of the passenger sector.

However, of importance is that the rate of growth in cargo transport has exceeded the rate of growth in GDP. This seems to suggest that the Distributive sector in Tobago may be expanding to meet the increases in demand for goods.

There exist two methods of shipping cargo to Tobago; cargo shipped via the ferry service and cargo shipped on separate cargo vessels intended for the local construction sector. The cargo vessels are separate and distinct from the dedicated cargo vessel operated under PATT, supplying the Tobago construction sector infrequently throughout the year with cement, lumber and other related materials.

Cargo onboard the ferry service was transported either in the form of containerized cargo measured in TEU[10] or reflected in the number of trucks and goods vehicles onboard the ferry. With respect to containerized cargo, the goods were shipped in 8' and 20' containers on flatbeds, which formed an integral part of shipping cargo via the sea-bridge. The types of goods shipped via this system were predominantly for the Distributive and Construction sectors ranging from food items and consumer durables to hardware materials.

Table 2. Cargo transport by Sea, Tobago 2001-2005

Year	Cargo Vessels (t)	Ferry Freight (t)	Total Cargo by Sea (t)	Goods & Heavy Equipment by Sea (volume)
2001	28,168	12,843	41,011	25,126
2002	46,762	14,778	61,540	28,556
2003	73,626	17,820	91,446	33,348
2004	83,828	18,307	102,135	35,763
2005	81,477	14,803	96,280	57,864
Total	313,861	78,551	392,412	249,995

Source: PATT

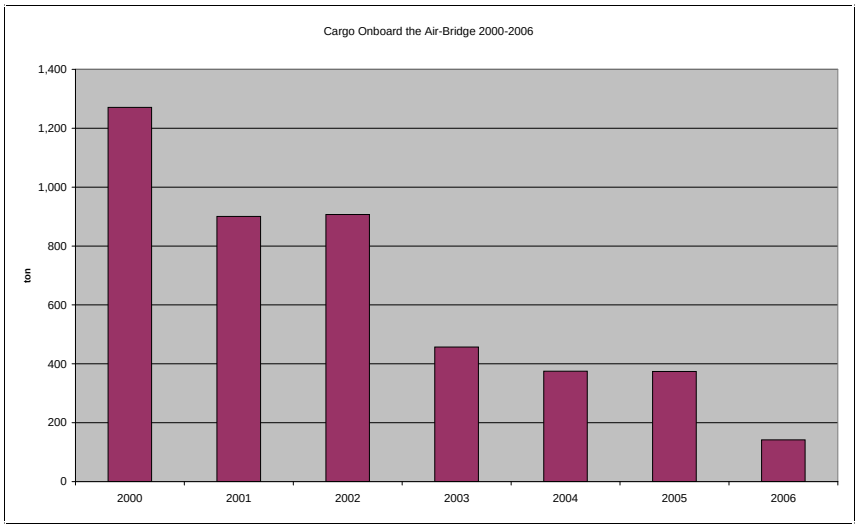
Table 2 shows the tonnage of cargo handled at the Port of Scarborough over the period 2001 to 2005. The tonnage of cargo handled over the period almost tripled, increasing

[10] TEU is defined as 20 ft equivalent, a measure of the volume of goods required to full a 20ft container.

from 28,168 tons in 2001 to 81,477 tons in 2005, or at an annual average growth of 33.6 percent. The general trend indicates that this growth in cargo was related to the construction of houses, commercial buildings and infrastructure projects undertaken by the private sector and the THA.

The volume of cargo transported on the ferry service grew at a moderate rate of 5 percent over the period with a decline in 2005. Over the period a total of 78,551 TEUs were moved, translating into a daily average of 44 TEUs. However, according to PATT (2006) the decline in cargo movement in 2005 was not a reflection of a reduction in the demand, but of the unavailability of flatbeds, the limited space at the ports to store the containers in Port of Spain and the increase in the use of trucks and goods vehicles to transport cargo.[11]

Figure 10: Cargo Onboard the Air-Bridge 2000-2006



Source: AATT

On the other hand, cargo transported on the air-bridge was in the form of mail and small packages, mainly to facilitate the national and international courier services. Figure 10 shows that there was a decline in cargo transported onboard the air-bridge over the period from a movement of 1270.9 tons in 2000 to 141.6 tons in 2006. This decline coincided with the change to smaller aircrafts of limited cargo-space to operate the domestic route and a greater emphasis on short-haul passenger travel.

[11] See Table 1, goods vehicles and heavy equipment were also loaded with cargo, intended for Tobago.

3.3 Inter-Island Transport Investment

Transportation investment is of particular importance in terms of facilitating domestic transactions and trade. Effective cargo and passenger movement depends mainly on transportation infrastructure. As a result, although construction of transport infrastructure is very expensive, particularly the construction of a port and/or airport, by facilitating goods and passenger movement, transportation infrastructure can foster economic development. Transportation infrastructure investment may affect economic development thorough four factors: decreasing production costs, affecting industrial location, enhancing regional productivity and lowering cost of inter-island trade (Lee Lem 2002).

Hazel (2002) in an earlier study on capital developments in Tobago highlighted that the infrastructural investments in the 1990s such as the Tobago Deep Water Harbour and the extension of the Crown Point Airport runaway contributed to the boom in construction of hotels and guesthouses in South-West Tobago. Increased public sector investments in this regard, were viewed as crowding in private sector investments on the island.

Therefore, an assessment of inter-island transport investment will provide some insight into the possible linkages between transport investment and economic growth in Tobago. This assessment is limited to transport investment in the operations of the ferry service owing to data limitations with respect to the air bridge.

The Port Authority Act of 1961 instituted a state monopoly under the management of PATT called the Government Shipping Service (GSS), which operated the inter-island ferry service. The Act stipulated that any deficit arising out of the operation of the service would be financed via government funding. The Central Government also financed the capital expenditure associated with expanding the service. Government funding can therefore be used as a proxy for transport investment in the ferry service.

Table 3: G.S.S. Revenue and Expenditure 2000-2005

PERIOD	REVENUE	EXPENDITURE	SURPLUS/(DEFICIT)	Gov't Funding	% Revenue Share of Expenditure	% Gov't Funding Share of Expenditure
2000	17,079,856	37,936,050	(20,856,194)	21,236,751	45	60
2001	19,749,255	57,739,276	(37,990,021)	13,750,000	34.2	23.8
2002	19,895,722	97,728,033	(77,832,311)	55,793,801	20.4	57.1
2003	20,914,635	46,309,232	(25,394,597)	27,805,712	45.2	60
2004	21,277,361	66,212,475	(44,935,114)	66,525,309	32.2	100.5
2005	39,200,126	158,817,271	(119,617,145)	199,698,132	24.7	125.7

Source: Port Authority of Trinidad and Tobago

Table 3 shows the performance of GSS revenue and expenditure for the period 2000 to 2005. Generally, the GSS operated a deficit budget over the period which was financed to a large extent by government funds. The deficit budget is reflected in the percentage share of revenue to expenditure generated over the period, recording an average annual share of 33.6 percent varying within the range of 20.4 to 45.2 percent. On the other hand, government funding share of expenditure was at an annual average of 71 percent, moving within a range of 23.8 percent to 125.7 percent. As a result, Central Government heavily subsidized the operations and maintenance of the ferry service over the period 2000 to 2005, except for the year 2001 where the share of revenue to expenditure was greater than the share of government funding to expenditure.

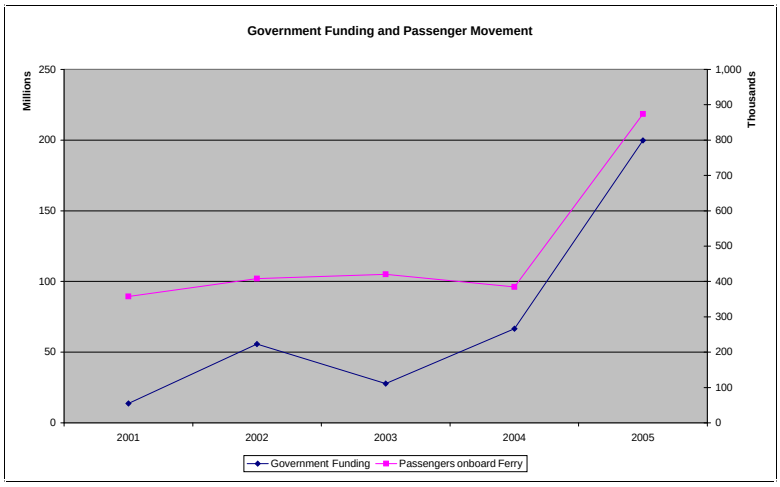
Further, Table 3 showed that extraordinary increases in GSS expenditure and government funding occurred in 2005. Both GSS expenditure and government funding grew at a rate of 140 percent and 200 percent respectively, in 2005 over the previous year. These increases were a direct result of Central Government policy to expand the ferry service by adding three vessels in 2005, the Sonia and two fast ferries the CAT and the Lynx at a collective wet leasing cost of US$71,000 per day.[12]

The expansion of the ferry service in 2005 witnessed a 120 percent increase in passenger movement and 101 percent in vehicle movement on the sea bridge. This suggests that

[12] According to PATT, the Sonia was wet-leased at a cost of US$24,000 per day, the CAT at US$25,000 per day and the Lynx at US$22,000 per day.

capital injections by Central Government via an expanded ferry service influence positively both passengers and vehicle movement. Coinciding with the expansion in ferry services was an increase in the passenger return fare from TT$50 to TT$100 for the fast ferries and to TT$75 for the conventional ferry. Economic theory suggest that an increase in the cost of transport to the passenger is expected to have downward pressure on the demand for ferry services, however, the gains in transport supply far outweighed that of the increase in cost since the cost for ferry travel (TT$100) was proportionately lower than that of the air bridge (TT$300).

Figure 11. Government Funding and Passenger Movement

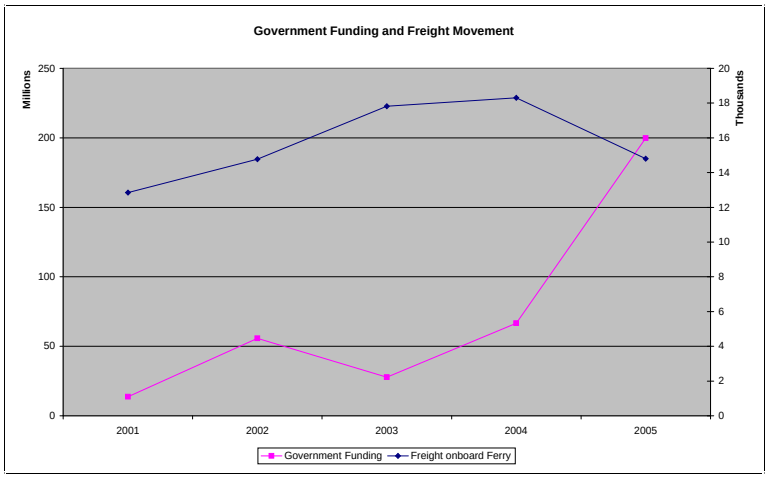


Source: PATT

Figure 11 shows that government funding and passenger movement over the period 2001 to 2005 moved in the same direction, thus supporting the view that increases in government funding contributed positively to an increase in passenger movement onboard the ferry service.

Figure 12 on the other hand, showed some divergence from the positive trend in government funding and freight movement in the period 2005. During 2001 to 2004 both government funding and freight movement were trending upward, however in 2005 freight declined by 19 percent against the significant increase in government funding by 200 percent.

Figure 12 Government Funding and Freight Movement



Source: PATT

The 19 percent decline in freight movement represents a reduction in the movement of containerized cargo and not a decline in the demand for goods and services. Instead, what occurred in 2005 to present has been an expansion in the ways cargo is shipped to Tobago. According to ***The Cost of Living Differential Between Tobago and Trinidad 2006*** report, this phenomenon was a possible shift by the authority to merge passenger travel and shipping together with the use of more goods vehicles and trucks as shown in Table 1. Consequently, an increase in the growth of goods vehicles and trucks by 128 percent and 9 percent respectively may have accounted for the 19 recorded.

3.4 Inter-Island Transport System and Tobago Economy

The debate surrounding the relationship between the inter-island transport system and Tobago economy focuses on the impact to households and local businesses, in addition to the key economic sectors on the island. ***The Cost of Living Differential Between Tobago and Trinidad 2006*** report alludes to Tobago's heavy dependence on imported goods and raw materials as inputs into its productive sectors. The commodity flows into these sectors also relies heavily on the sea-bridge as their major mode of inter-island transport and have a close relationship with cost of accessing the transport service.

Transport, as a factor in the production of goods and services represents a cost to individual businesses. The traditional view is that an improvement in the inter-island transport system will reduce the cost of transport to local businesses and, enable these businesses to sell their products more cheaply. The increase in the supply of transport services onboard the ferry service has contributed to an expansion in the distributive sectors and in some respect the lowering of prices to the consumer, particularly in grocery items.[13]

The Cost of Living Differential Between Tobago and Trinidad 2006 report indicated that improvements in the ferry service played an integral role in lowering the size of the cost of living differential between Tobago and Trinidad. The report attributed that an increase in the accessibility of both islands by the introduction of the fast ferries in 2005 is a key factor in the convergence of prices in grocery items. This view is supported by the data on the volume of freight, and the large increase in goods vehicles as shown in Table 1. Further, reports of lower rates of (year-on-year) inflation in Tobago over the February to May 2007 corroborated the findings that improvements in the ferry service have led *inter alia*, to a convergence in food prices and contributed in part to the lower rate of inflation.[14]

Table 4: Total Passenger and Cargo Movement and Tobago's Real GDP

YEAR	PASSENGER MOVEMENT	TOTAL CARGO MOVEMENT	TOBAGO REAL GDP ($TT Billion)
2001	774,658	41,011	1.6*
2003	989,355	91,446	1.7**
2006	1,420,711	99,208	2.0[15]
A.G.R	14%	22%	10%

Sources: AATT, PATT, Fiscal Policy Unit

Table 4 seeks to give some indication of how the Tobago economy and the demand for inter-island transport changed over time. Cargo movement across both modes of transport

[13] Division of Finance and Planning. 2006 *The Cost of Living Differential Between Tobago and Trinidad.* Tobago House of Assembly

[14] Division of Finance and Enterprise, Fiscal Policy Unit, Inflation Bulletins, February - May 2007.

[15] Tobago real GDP estimates were derived using the constant ratios method; assuming that Tobago's GDP represents 2.4 percent of national GDP as it was in 1997.

grew at a faster rate than passenger movement and the economy as a whole. Total cargo movement grew at an average of 22 percent per annum, followed by a 14 percent average annual growth in passenger movement and 10 percent average growth in Tobago's real GDP over the period 2001 to 2006.

Two other indicators that suggest that the demand for inter-island transport has increased can be found in the level of employment on the island and the growth in personal income taxes in Tobago even with the general reduction in the rate of personal income taxes[16]. According to data from CSO, persons with jobs in Tobago rose by 30.6 percent over a seven-year period 2000 to 2006, while Personal Income taxes rose by 71 percent during the period 2001 to 2005. Both these indicators support the view that personal incomes in Tobago have been increasing thus stimulating demand for goods and services.

The tourism sector is a key economic driver in Tobago, which generates employment and attracts foreign exchange. According to the World Travel and Tourism Council, in 2005 the tourism sector in Tobago was estimated to account for 46 percent of the island's GDP and 56.8 percent of total employment. Coinciding with tourism's contribution to the economy in 2005 was the expansion of the sea-bridge and the promotion of festival tourism on the island. The introduction of the Plymouth Jazz Festival[17] in 2005 generated expenditures of $20 million to over $32 million in 2007. This three-day event attracted 33,000 attendees in 2007 of which 70 percent came from Trinidad. This flow of domestic arrivals contributed to the estimated $74.6 million economic impact on the island in 2007.[18]

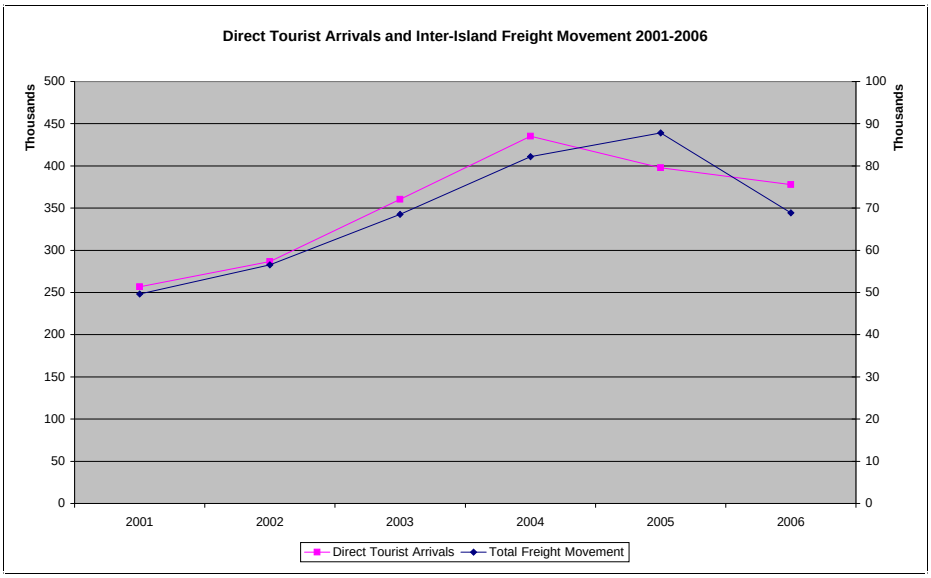
Given the transitory tourist population, as well as the domestic demand for goods and services, aggregate demand is expected to increase with an increase in direct tourist arrivals. This increased demand for goods puts pressure on the distributive sector to

[16] Tobago House of Assembly 2008 Budget Speech, Division of Finance and Enterprise Development, June 2007
[17] Formerly called the Tobago International Gourmet Jazz Festival. Tobago News, February 24, 2006.
[18] PRDI 2007, *Tobago Jazz Festival - Economic Impact Assessment Model*. Tobago House of Assembly, Scarborough.

increase their commodity inflows, which if left unattended can force the fragile price structures upward in Tobago.

Figure 13 shows that both freight movement and direct tourist arrivals move in the same direction, which underscores the view that the Tobago economy is driven largely by tourism and that the demand for goods from the distributive sector increases with tourist arrivals.[19]

Figure 13. Direct Tourist Arrivals and Inter-island Freight Movement 2001-2006



Sources: AATT, PATT

In terms of relationship between the construction sector and the inter-island transport system, Table 2 gives an indication of the robustness in the construction sector where the tonnage of construction-related cargo grew at an annual rate of 33.6 percent. This growth in cargo handled is a crude indicator of the demand for building materials and aggregate. Unlike the convergences in the prices of grocery items, *The Cost of Living Differential Between Tobago and Trinidad 2006* report showed that prices of building materials diverged at an average 20 percent differential between Tobago and Trinidad in 2004 and 2005. This divergence was attributed to the robust construction sector, the limited number

[19] Figure 13 is an addition to the analysis on Direct Tourist Arrivals in Tobago and Inter-island Freight Movement used in the Comprehensive Economic Development Plan for Tobago 2006-2010. June 2005. pp.46

of containers available at the port to ship materials and the consequent expenses incurred by shipping the materials via trucks.[20]

4.0 Conclusion

The aim of this paper was to examine the trends in the inter-island transport system and to discuss the likely impact that the system may have on the economy of Tobago. The study began with an overview of the theoretical underpinnings between transportation and economic growth. Subsequently an examination of the trends in passenger movements, cargo movements and then trends in the transport investment were undertaken. Finally, a discussion on the relationship between inter-island transport and the key economic sectors in Tobago was undertaken.

Seven (7) observations were derived from the exercise. **First**, total passenger growth on the inter-island transport system reflects to an extent, the increased demand for inter-island travel due to increases in personal income and employment over the period. This observation is pronounced in the pre-2005 period; where amid capacity constraints on the sea bridge commuters opted for the relatively more expensive mode of inter-island transport on the air bridge thus indicating a willingness to absorb the increase in relative cost.

Second, the expansion of the ferry service in 2005 coincided with a *23 percent shift* in passenger movement away from the air bridge to passengers commuting on the sea bridge, to become the dominant mode of passenger travel with a *percentage share of 59 percent.* Another feature of this increase in transport improvement was the reduction in cost associated with travel time, with the travel time reduced by half from 5 hours to 2 1/2 hours.

Third, space constraints at Scarborough Port and limited containers compounded the problem in cargo movement onboard the ferry service. These constraints, coincided with

[20] Fiscal Policy Unit, 2007 Bulletin on Price Differentials, corroborated the findings.

an increasing domestic demand depicted by the *growth in real GDP, rising incomes* and *increases in the number of persons employed* to place upward pressure on prices.

Fourth, a positive relationship existed between increases in government funding and passenger and vehicular growth onboard the ferries even in light of an increase in passenger fare in 2005.

Fifth, the relationship between freight movement and government funding was a weak one. Instead, the demand for goods and services arising from tourism activity in Tobago seem to determine largely the movement in freight shown by an almost identical pattern in their trends in Figure 6.

Sixth, the increase in the supply of transport services onboard the ferry has contributed in part to the convergence in the prices of grocery items and Tobago's lower rate of inflation than the national index. The prices in building materials on the other hand, diverged at an average of 20 percent a consequence of the demands in the construction sector and related supply-constraints.

Finally, increases in tourist arrival contribute to the growth in real GDP, personal income and employment in Tobago, thus stimulating the demand for and supply of freight to the island.

The theoretical and descriptive analyses of inter-island transport suggest that there are strong linkages between economic growth in Tobago and the growth in passenger and cargo transport. However, in planning transportation policy for both islands, the need exist for increased collection of transport data and more empirical investigations of the relationship between transport investment and economic growth. The paper reasonable conclude that economic prosperity in Tobago is linked to improvements in transport services.

Appendix A

A1. Passenger Movement on Inter-Island Transport System 1997-2006

	Ferry passengers	Air passengers	Total passengers	Ferry % of Total	Air % of Total	GDP growth	Total Passenger Growth
1997	291,924	365,288	657,212	44	56	-	-
1998	295,234	368,531	663,765	44	56	8.83	1.00
1999	319,240	390,987	710,227	45	55	8.98	7.00
2000	297,498	439,053	736,551	40	60	7.25	3.71
2001	357,358	417,300	774,658	46	54	8.45	5.17
2002	408,114	451,506	859,620	47	53	7.94	10.97
2003	420,460	568,895	989,355	42	58	14.44	15.09
2004	384,393	691,087	1,075,480	36	64	7.76	8.71
2005	874,011	609,602	1,483,613	59	41	6.13	37.95
2006	813,644	607,067	1,420,711	57	43	12.17	(4.24)
Average Annual Growth						9.1	10.5

Source: PATT, AATT, Author calculations

A. 2. Passenger Movement Index 1997-2006

Passenger Movement Index

	Sea bridge	Air bridge
1997	100.0	100.0
1998	101.1	100.9
1999	109.4	107.0
2000	101.9	120.2
2001	122.4	114.2
2002	139.8	123.6
2003	144.0	155.7
2004	131.7	189.2
2005	299.4	166.9
2006	278.7	166.2

Source: Fiscal Policy Unit

A.3. Ferry Service Statistics 1997-2006

Year	No. of Passengers	No. of Trips	No. of Vehicles
1997	291,924	794	35,315
1998	295,234	875	38,123
1999	319,240	659	39,124
2000	297,498	660	37,412
2001	357,358	712	48,880
2002	408,114	975	59,822
2003	420,460	1,094	65,259
2004	384,393	1,127	67,194
2005	874,011	2,298	141,523
2006	813,644		155,326

Source: PATT

A.4. Domestic Arrival and Departure 1992 -2006

YEARS	PASSENGERS:			AIRCRAFT No of Trips		
	Piarco to Crown Point	Crown Point to Piarco	Total	Piarco to Crown Point	Crown Point to Piarco	Total
1992	183,951	174,045	357,996	1,560	1,785	3,345
1993	130,654	140,667	271,321	4,219	4,395	8,614
1994	139,318	133,126	272,444	4,555	4,521	9,076
1995	148,759	148,531	297,290	4,732	4,763	9,495
1996	175,182	163,457	338,639	4,677	4,620	9,297
1997	187,785	177,503	365,288	4,533	4,519	9,052
1998	189,328	179,203	368,531	4,601	4,590	9,191
1999	202,413	188,574	390,987	4,154	4,144	8,298
2000	225,038	214,015	439,053	4,109	4,028	8,137
2001	207,116	210,184	417,300	3,513	3,855	7,368
2002	228,131	223,375	451,506	5,269	5,531	10,800
2003	289,872	279,023	568,895	6,147	6,108	12,255
2004	348,690	342,397	691,087	7,919	7,919	15,838
2005	309,883	299,719	609,602	7,805	7,743	15,548
2006	308,849	298,218	607,067	7,114	7,126	14,240

Source: AATT, Crown Point International

A.5. Fast Ferries Passenger Load Factor Statistics 2005 - September 2007

2005	Average Load Factor	THE CAT (Passenger Capacity 850)	THE LYNX (Passenger Capacity 720)	T&T EXPRESS (Passenger Capacity 800)	T&T SPIRIT (Passenger Capacity 800)
JAN	**51%**	51%	---	---	---
FEB	**66%**	66%	---	---	---
MAR	**79%**	79%	---	---	---
APR	**55%**	55%	---	---	---
MAY	**53%**	---	53%	---	---
JUN	**70%**	---	70%	---	---
JUL	**71%**	---	71%	---	---
AUG	**91%**	---	91%	---	---
SEP	**66%**	---	66%	---	---
OCT	**62%**	59%	64%	---	---
NOV	**50%**	60%	40%	---	---
DEC	**64%**	67%	61%	---	---
2006					
JAN	**50%**	46%	55%	---	---
FEB	**47%**	42%	53%	---	---
MAR	**54%**	53%	55%	---	---
APR	**61%**	55%	67%	---	---
MAY	**69%**	---	69%	---	---
JUN	**74%**	---	74%	---	---
JUL	**84%**	---	84%	---	---
AUG	**94%**	---	94%	---	---
SEP	**69%**	---	69%	---	---
OCT	**57%**	59%	66%	---	---
NOV	**60%**	60%	---	---	---
DEC	**54%**	65%	---	44%	---
2007					
JAN	**40%**	44%	---	36%	---
FEB	**51%**	51%	---	51%	---
MAR	**52%**	52%	---	53%	---
APR	**54%**	51%	---	57%	---
MAY	**66%**	57%	---	76%	---
JUN	**78%**	---	---	78%	---
JUL	**79%**	---	---	79%	78%
AUG	**81%**	---	---	76%	86%
SEP	**55%**	---	---	50%	61%

Source: PATT, Fiscal Policy Unit

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