1994

Port Development at Port Canaveral, Florida

Sergio A. Cartaya
University of Rhode Island

PORT DEVELOPMENT AT PORT CANAVERAL, FLORIDA

BY

SERGIO A. CARTAYA

MAJOR RESEARCH PAPER SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE DEGREE OF

MASTERS

IN

MARINE AFFAIRS

UNIVERSITY OF RHODE ISLAND

1994

MASTERS IN MARINE AFFAIRS

OF

SERGIO A. CARTAYA

APPROVED:

MAJOR PROFESSOR 

UNIVERSITY OF RHODE ISLAND

1994

ABSTRACT

The restrictions and goals influencing port development today, differ from those that prompted development in the very recent past. In the 1960s, innovations in the transport of cargo and passengers drastically changed maritime transport. In the 1970s, a new awareness of the environment demanded, and through the decade implemented, new changes in costal development. Port development today is no longer a transaction between the port authority and the Army Corps of Engineers, new federal agencies, with strict developmental guidelines, and the general public are now involved. The outcome of this new way of doing business has been that the lead-time between the decision process to develop and the actual completion of the project has increased dramatically; in some instances, this long lead-time has been the cause for a port authority to abandon the development project. The hypothesis of this research is that port development at Port Canaveral has been successful in spite of the modern developmental regime. It is further hypothesized that the nexus of this success lies with the management structure of the Port and the "broad-front" approach to port development undertaken by the Canaveral Port Authority. Port-research findings are that the results of this study, support the hypotheses.

ACKNOWLEDGEMENTS

I wish to thank my major professor, Dr. Bruce Marti, for his support and encouragement throughout my Graduate education. Like-wise, I owe special thanks to Mr. Charles Agostinelli and Mr. Louis Perez, of the Port Canaveral Port Authority, for their contribution and especially, for the time they took off from their pressing duties, to answer the numerous questions I put to them. Finally, thank you Deb, Tricia, Heineken, Jameson, family and friends, who encouraged, helped and at least, graciously tolerated the impositions I placed on them while writing this paper.

TABLE OF CONTENTS

PAGE

LIST OF TABLES

LIST OF FIGURES

PAGE

CHAPTER ONE

INTRODUCTION

Statement of Problem

The focus of this research paper is to analyze the development efforts of the Port Canaveral, Florida, Port Authority. It will do so by analyzing historical published research into the dynamics of port development, and contrasting such findings with actions taken by the Port Authority. Additionally, several statistical methods will be used to evaluate the results obtained from the developmental actions of the Port Canaveral Port Authority.

The restrictions and goals influencing port development today differ from those that prompted development in the very recent past. In the 1960s, innovations in the transport of cargo and passengers drastically changed maritime transport. In the 1970s, a new awareness of the environment demanded, and through the decade implemented, new changes in coastal development. Ports and their governing authorities found themselves at the epicenter of these events. Port development today is no longer a matter between the port authority and the Army Corps of Engineers, since other Federal agencies with

strict developmental guidelines, and the general public are now involved. The outcome of this new way of doing business has been that the lead-time, between the decision to develop and the actual completion of the project, has increased dramatically. In some instances, this long lead-time has been the cause for a port authority to abandon a development project. In order to maintain the research of modern port development within the scope of this study, a medium-sized port was required. Port Canaveral was chosen because of its relatively recent origin, its location in a fast growing region of the State of Florida, and its significant growth in recent times.

Port History

In 1878, the Navy Department and residents of Florida's central east coast recommended to Congress that a deep water harbor be constructed at Cape Canaveral. However, the recommendation was rejected for lack of "economic importance". The issue of a port at Cape Canaveral was brought up repeatedly during the following sixty years, without success. In 1939, construction at the Port again started gathering momentum, however World War II postponed any action. Congressional approval was gained in 1945, but for the next five years, the construction project was dependent on raising matching funds from "local interests". In 1948, a bond issue

was approved, and in 1949, it was sold out. Dredging and development of Port Canaveral finally commenced. By 1951, the Atlantic Ocean, Banana River, and Indian River waters mixed to form the Canaveral Harbor, consisting of one turning basin and a twenty-seven-foot deep channel to the ocean. In 1955, the first calls on Port Canaveral were made by a cargo vessel, loaded with European cement, and a petroleum tanker. Petroleum and cement have grown to become the two largest volume commodities moving through the Port (Canaveral Port Authority, N.D.a). The Cruise Revolution did not arrive until 1982, when the first cruise ship was homeported there. Prior to 1982, Port Canaveral was used by cruise ships only as a port of call (Agostinelli, 1993c). By FY 1992, Port Canaveral had captured 14 percent of the total North American multi-day cruise market, and 23 percent of the Florida multi-day market. When compared with 1984, the year multi-day cruises commenced sailing out of the Port, the cruising market shows a 535 percent increase over a period of nine years [(Agostinelli, 1993b), (University of Central Florida, 1989), and (U.S. Army Corps of Engineers, 1981-1989a)].

Port Location and General Description

The Port of Port Canaveral, Florida, is located directly south of the John F. Kennedy Space Center, approximately 7 nautical miles southwest of Cape Canaveral, about 146 miles south of the entrance to Jacksonville Harbor, and about 168 miles north-northwest of Miami Harbor (Figure 1.). The port occupies both sides of the Canaveral Barge Canal and Inner Reach of the deepwater entrance channel (Figure 2.). The City of Cape Canaveral, just south of the Port, is on the north end of the offshore barrier island following the Florida coast line and is connected to the mainland by the Bennet Memorial Causeway extending across the Banana and Indian Rivers. The deepwater entrance to the port is via a dredged channel approaching from the southeast, thence in an east-west direction across the shoreline to an East and Middle Basin on the north side of the channel; continuing westerly for approximately 4,000 feet, and then continuing as the more shallow Canaveral Barge Canal to West Basin, and Port Canaveral Basin on the south side, just east of the barge lock. The Canaveral Barge Canal continues through the lock, across the Banana River, and through Merritt Island to connect with the Atlantic Intracoastal Waterway running north-south in the Indian River. The commercial waterfront facilities at Port Canaveral are located along the south side of the main channel, along the north side of the channel west of the

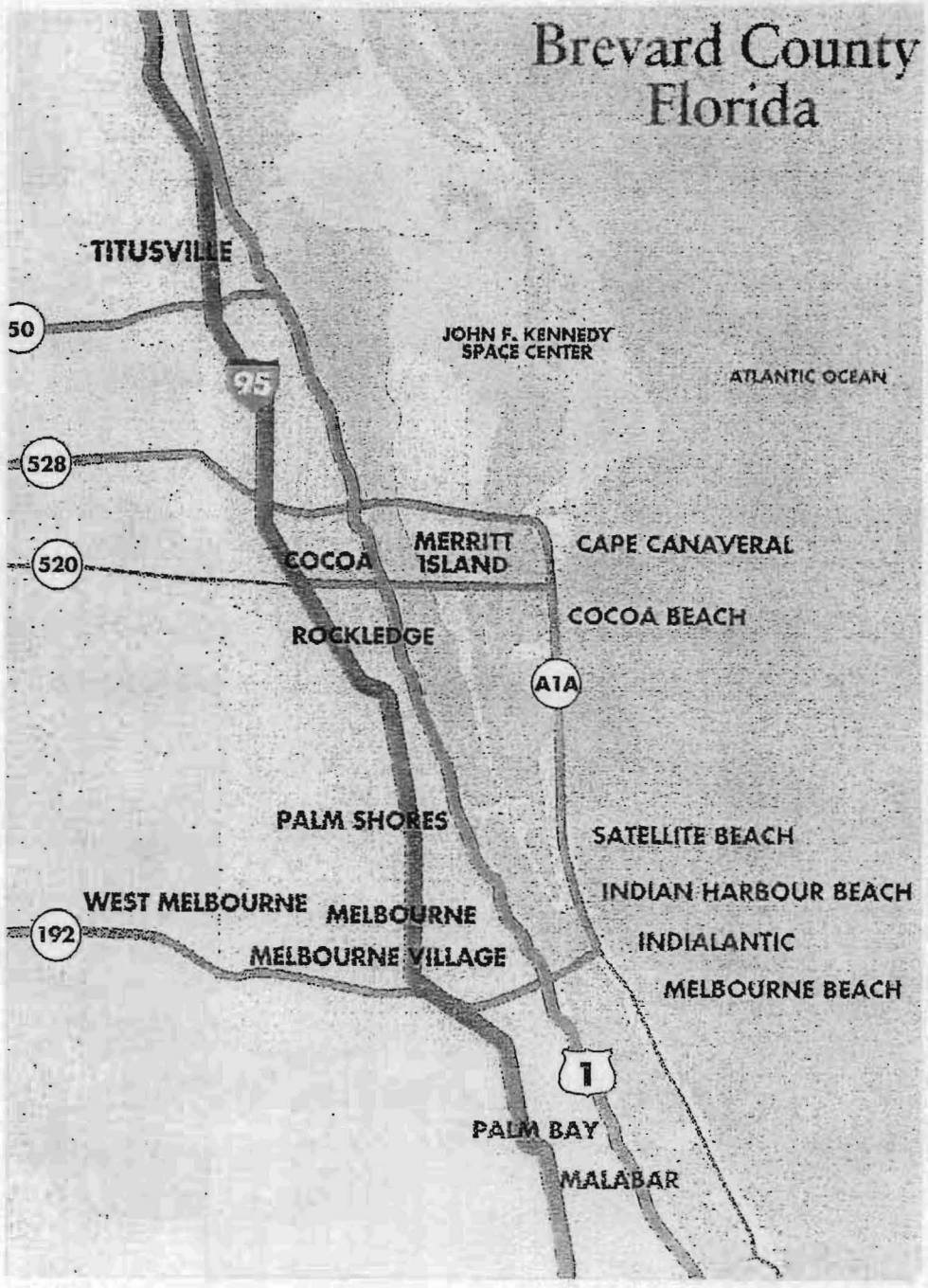

FIGURE 1.

MAP OF BREVARD COUNTY

Source: Canaveral Port Authority (N.D.c).

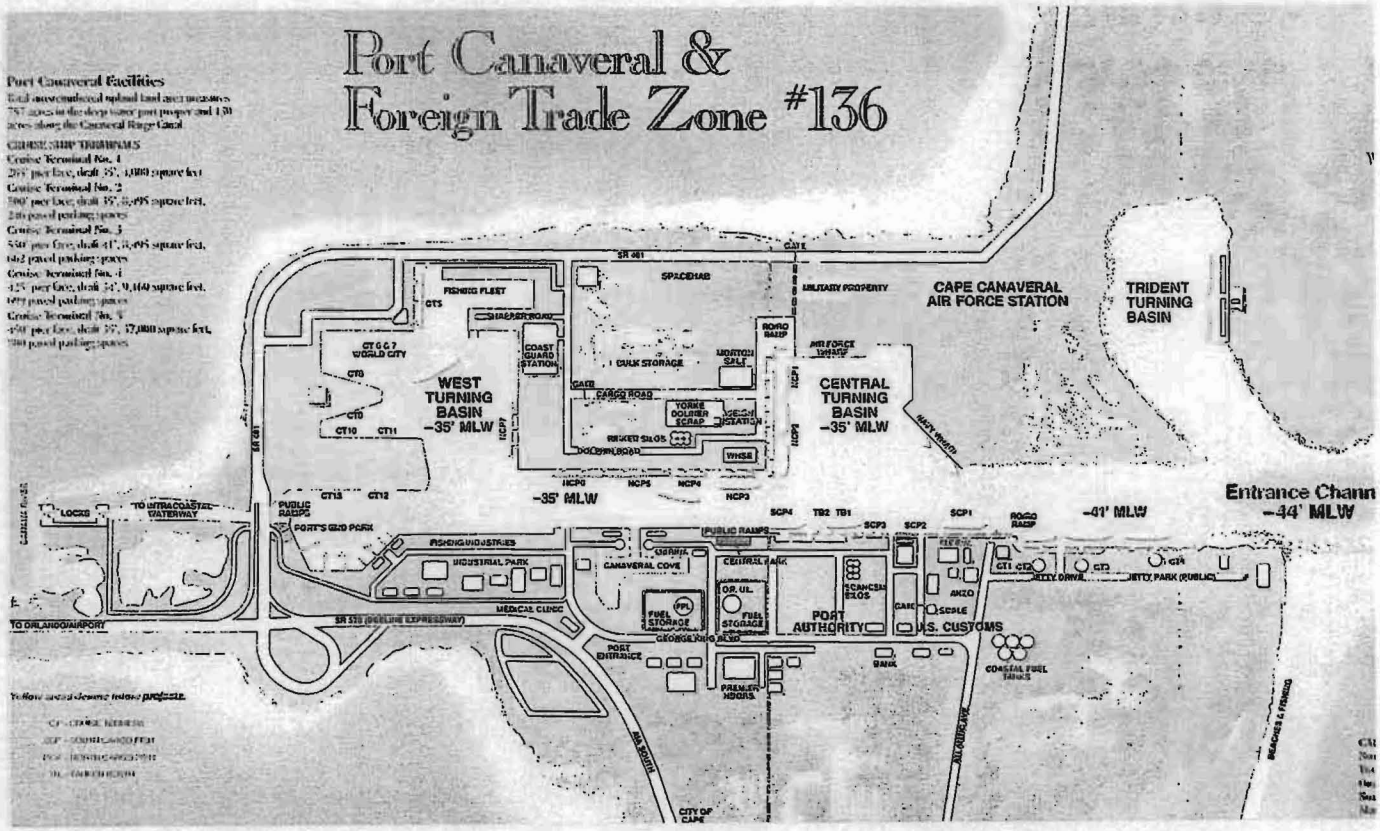

FIGURE 2.

MAP OF PORT CANAVERAL

Source: Canaveral Port Authority (N.D.c)

Middle Basin, as well as, along the sides of the Middle and West Basin (U.S. Army Corps of Engineers, 1991).

Hypothesis

The hypothesis of this research is that port development at Port Canaveral has been successful. It is further hypothesized that the nexus of this success lies with the management structure of the Port and the "broad-front" approach to port development undertaken by the Canaveral Port Authority. To validate these hypotheses, the research must, after a description of alternative port management structures and definition of the "broad-front" approach to port development, test the hypothesis via qualitative methodology of relevant literature, and the use of the statistical techniques of input/output and shift/share analysis.

Methodology and Analysis

To test the hypotheses postulated above, this study will first contrast the existing organizational structure of the Canaveral Port Authority against three alternatives for port control--national, regional, and local. Secondly, the "broad-front" approach to port development will be defined within the parameters of: a) site development; b) dredge and fill activity; c) environmental restrictions and mitigation;

d) public goods and access issues; e) cruise and cargo marketing strategies; and f) the establishment of a foreign trade zone. Lastly, to quantify the results of the Canaveral Port Authority "broad-front" strategy, two statistical techniques will be used: 1) an input/output study will be executed to show the economic impacts the Port's cruise and cargo activities have had on the port, county, and region; and 2) the shift/share technique will be performed to measure competition in the cruise and cargo markets.

CHAPTER TWO

BACKGROUND ON PORT DEVELOPMENT

Seaports and Development

Seaports serve a vital function in the ability of a nation to conduct its commerce. Ships carry some 99 percent of worlds trade in volume terms and 80 percent in value terms (Branch, 1986). Weigend (1957) defines a port as the place of contact between land and maritime space. Its primary function is to transfer goods (and people) from ocean vessels to land or to inbound carriers and vice versa. While the above statements are true, they are dated and narrow in scope. Modern day seaports have evolved into an enterprise with numerous non-port functions. Although some functions can be directly linked to the movement of cargo and passengers, numerous other port functions exist that bear little or no connection to cargo or passenger movement. Randal (1988) points out that the breath of port activities exceeds the imagination. Besides competition, there are public and environmental pressures on the port. Public access to the port's environs and the myriad of protective environmental regulations have had a profound effect on port operations and

development. The port manager's reaction to these pressures has been to undertake what Randal (1988) refers to as "non-cargo economic development". The role seaports play in the United States, can best be understood when seen within the context of the country having the largest economy and being the largest market in the world. Close to 50 percent of the population of the United States lives near the coast. Culliton (1991) supports the above paragraph, when he states that almost one-half of our total population now live in coastal areas. By the year 2010, coastal population will have grown from 80 million to more than 127 million people, an increase of almost 60 percent nation-wide. Some states, including Florida, will have increased more than 200 percent.

Port Canaveral's geographical location in Central Florida, places it in the fastest growing region in the United States (Hershman and Bittner, 1988). For a seaport to be of any economic significance, it is important that there ba a demand for its services: supply alone is not sufficient (Goss, 1990a). The demand for Port Canaveral has seen an explosive increase in the last two decades. Operating revenues at Port Canaveral increased 640 percent between 1977 and 1985 (Hershman and Bittner, 1988). Cargo movement through the Port between 1982 and 1992 increased by 55 percent [(Agostinelli, 1993b) and (University of Central Florida, 1989)]. Competition between Florida ports is fierce. These include the Port of Miami, Port Everglades, West Palm Beach, Port

Canaveral, and Jacksonville on the Atlantic Coast, and the Port of Tampa on the Gulf Coast. The State of Florida has seen dramatic expansion of its seaborne trade in the last decade (Marti, 1990b). Florida's warm climate, and its geographical proximity to the Bahamas Island Chain, the Caribbean and Latin America, gives the ports of Central and South Florida a tremendous advantage to compete for the cruise and cargo trade that serve these regions. Perez (1993), in describing the competitive region for the cargo trade, points out that the competitive region for imports extends beyond the State of Florida. The Ports of Pascagoula and Gulfport in Mississippi, and Wilmington in Delaware are competing ports for imports.

Santangelo (1984) describes cruising today as the fastest growing, most dynamic segment of the travel industry. Estimates are that world-wide, 90 percent of cruising passengers reside in North America, and he estimates that only six percent of Americans have ever taken a cruise (Gillies, 1986). In the cargo trades, the commerce between the United States, Latin America, and the Caribbean during the 1980s increased significantly. Recent events in the world political arena, such as the emergence of new Republics from behind the now defunct Iron Curtain, the creation of the European Economic Community (EEC), and the North American Free Trade Agreement (NAFTA), have created giant possibilities for expansion of seaborne commerce. The National Trade Data Bank

(Williams, 1994) calculates that NAFTA, which entered into force on January 1994, has created the world's largest free trade block. This agreement between the United States, Canada, and Mexico contains over 360 million consumers, and has a combined Gross Domestic Product of six trillion dollars.

Site and Situation

Marti (1990b) describes site and situation as geographic concepts. Site is defined as a physical factor that comprises the port itself. The term includes the infrastructure and superstructure of the port. Substantial investment, in both infrastructure and superstructure, are required for a port to attract passenger and cargo business. Situation, explains the relationship of a port to outside factors. Port Canaveral enjoys a tremendous locational advantage because of its near proximity to the Kennedy Space Center, Walt Disney World and Epcot Center, Sea World, MGM and Universal Studios, and countless miles of uncongested beaches. The Florida Department of Commerce estimates that over 43 million vacationers visited Central Florida in 1992 (Canaveral Port Authority, N.D.c). The Canaveral Port Authority's commitment to development is manifested by the level of new construction and expansion that has been on-going at the Port since 1982. A fifteen year West Turning Basin expansion project commenced that year. It included the planned construction of nine

cruise terminals, a convention center, and a festive marketplace (Frey-Gaynor, 1991-1992). Cruise Terminal Number 5 was completed in 1991, and Cruise Terminal Number 10 is under construction, with a completion date in the spring of 1995. All other terminals are under design with construction of Terminals Number 6 and 7 contingent on the building of the Phoenix World City, a 5,600 hundred passenger cruise ship, that when built, will be the largest passenger cruise ship in the world (Agostinelli, 1993b). The capital investment in Cruise Terminal Number 5 was $14 million. Frey-Gaynor (1991-1992) describes the terminal as a two story, 42,000 square-foot facility that can accommodate 3,000 passengers, and is considered one of the most elegant and modern terminals in the United States. The capital investment in Cruise Terminal Number 10 is expected to be $19 million, with an additional $1 million for further dredging of over 300,000 cubic yards of sand; other ancillary development activities will account for a further $10 million capital investment (Canaveral Port Authority, 1992a).

Port Control

Unlike the majority of the world's maritime nations, port control in the United States rests primarily with the individual states, at the regional or local level. Federal involvement in port control and operations is limited to

maintenance of navigation and regulatory controls based on protection of the environment, customs, and rulings on cargo rates and tariffs. Hershman and Kory (1988) state that the United States has neither a national port administration nor a national port development policy. This lack of a national port policy has its basis in the political structure of the country: A federation of independent states bound by a Constitution. These U.S. States have a strong resentment to Federal encroachment into state government and built into the Constitution of the United States, safeguards against Federal Government meddling in States Rights. Fleming (1988) cites Article 1, Section 9 of the Constitution as prohibiting Federal intervention in port affairs except for National security reasons. Goss (1990b) devotes the second of a four article series on economic policies and seaports, to a discussion of seaport administration. He cites the example of Canada to point out the fallacy of centralized national port control. In Canada, prior to 1982, all of the Country's ports fell under the centralized control of the National Harbours Boards (NHB), an agency of the Federal Government in Ottawa. The NHB ignored any of the needs of the individual ports, promoted inefficiency, and accumulated large debts, which the more efficient ports had to cover. Capital investment funds were scarce and slow in coming for expansion programs. Efficient ports saw their profits used to pay the debts accumulated by the central government and were severely

limited in their ability to improve or expand (Goss, 1990b). The National Research Council (NRC, 1976) addresses arguments vis a vis central, regional, and local control. Centralized control advocates argue that such controls would eliminate the overcapacity created by port competition, a result of the independent port authority's struggle for commerce. De-centralized control proponents argue that overcapacity, where it exists, is good because the port has capacity available to accommodate the cyclical nature of maritime commerce. Citing the modern nature of modal transportation systems, mini-land bridges and load centers, central control advocates argue that historic hinterlands have overlapped to such extent that few U.S. ports can claim proprietary rights to any upland regions. Accordingly, savings could be gained by the concentration of ports. Opponents argue the concentration will lead to restrictions of free competition, thus creating inefficiency. Other issues addressed by the de-centralized port government argument are that each port has unique characteristics and requirements. Therefore, a national strategy could never work for all ports in the country. Additionally, a central government will lack the local knowledge required to formulate local development and operational strategies. There is no evidence that ports, in countries where national control exists, have developed any better than those in the U.S. The most telling argument contained in the NRC report is: free enterprise is an American tradition, and most people in the

port industry feel it should be maintained through local initiative. Further, opponents of central planning feel there is no certainty that national port planning will lead to an improvement in the nation's port industry, particularly when economic, political, and social conditions are changing so rapidly, both internationally and domestically. Development of a national port plan could remove some of the flexibility ports now have to adjust to varying conditions (NRC,1976).

Under the highly competitive environment found in the United States, centralized port control would hinder the economic and competitive ability of the individual port. In the U.S., port administration is left to the individual states, who mostly allow their ports autonomy to control and operate through independent port authorities, subject to few constraints from the states.

The Canaveral Port Authority

The Canaveral Port Authority is the governing body of Port Canaveral. Bill Number 11136, Chapter 28922 from the Laws of Florida Special Acts of 1953, created the Port Authority and the Canaveral Harbor District. The District was further subdivided into five port districts, each with a commissioner. The Canaveral Port Authority is a quasi-public body and is not under the jurisdiction of Brevard County or any neighboring city. Elected commissioners, representing the

five port districts, act as a board of directors, have jurisdiction over all fiscal and regulatory policies, and domain over the operation of the Port. Administration and operations are carried out by an Executive Director and staff. The Port is a self-supporting, revenue-producing entity. As an independent agency, the Canaveral Port Authority can levy ad-valorem taxes, incur indebtedness through the sale of bonds, establish tariff rates, and negotiate for government grants. Port Canaveral is a non-operating Landlord Port, with the Canaveral Port Authority owning all property. The Port Authority grants long term leases to tenants. Tenants are responsible for developing their own facilities (buildings, parking lots, etc.). The Port Authority provides, through contractual methods, water and sewer service, solid waste collection, and fire and police protection (Canaveral Port Authority, 1993). The Canaveral Port Authority runs its entire operation, including the board of directors, with 87 employees (including part-time help) (Agostinelli, 1993a). The development of the cruise and cargo industry will be addressed in a later chapter, but this is a good place to note that from 1982, when cruise lines started to homeport cruise ships at the Port, it took only four years for the Port to become financially self sufficient. In 1986, the Canaveral Port Authority eliminated the ad-valorem tax it had been collecting from its port districts to subsidize the operation of the Port (Canaveral Port Authority, 1991).

CHAPTER THREE

THE "BROAD-FRONT" APPROACH TO PORT DEVELOPMENT

Introduction

This paper uses the term "broad-front" to describe an approach towards port development that encompasses a number of developmental strategies, employed by the Canaveral Port Authority, whose goals are the enhancement of the Port's ability to increase its commerce. Willingale (1984) points out one of the basic problems port authorities face when planning for development-- "the problem lies in the fact that a considerable time difference exists between the providers and users of port facilities, in their respective speeds of reaction to changes in the demand for their services; this creates an inevitable lead-lag situation in port planning". A basic problem underlying port development is that the market for its services, whether the cargo or the cruise market, is highly volatile and sensitive to short-term fluctuations. Contrastively, development and expansion of the port facilities requires long-term planning and implementation. Hershman and Bittner (1988) in describing Canaveral Port Authority actions say: "Its activities reflect a managerial

flexibility that was absent in the old regime of privately owned and operated ports. Whereas much of Port Canaveral's success is being in the right place at the right time, the responsiveness of the Port is the result of careful planning and preparation by the Port Authority. Interestingly, Port Canaveral is not a container port; its growth, a 640 percent increase in operating revenues from 1977 to 1985, can instead be attributed to the development of facilities designed to meet the specialized needs of its customers". The Canaveral Port Authority has focused its development plans towards carving a niche in areas where it enjoys a decided advantage.

Site Development

To sustain an expansion to meet increased demand in the cruise and cargo markets, the Canaveral Port Authority had the foresightedness to invest in the planning for the development of unused areas of the Port. Dredging and fill permits, from the Army Corps of Engineers and the State of Florida Department of Environmental Regulation, were in hand early enough to allow the Port to be developed in step with the increased demand. The West Turning Basin was dredged to thirty-five feet, and in 1992 the Port opened Cruise Terminal Number 5. A two story, 42,000 square-foot state of the art facility, that can accommodate the largest of the 2,500 passenger "mega-liners" coming into service today. Canaveral

Port Authority has also succeeded in creating and having approved, significant mitigation projects to counter destruction of wetlands incurred during dredge and fill projects. In progress now is a project to reconnect approximately 2,140 acres of impounded salt marshes to the Indian/Banana River Lagoon system (Decker, 1989).

Dredge, Fill, Ports and The Environment

There are few developmental projects today that are as complex or require the length of time from inception to completion, as a major dredging project in the waterways of the United States. Often, this complexity and long lead-time has caused port planners to abandon the project. "Seaport expansion often generates tensions between the national interest in efficient transport and local interests in water quality and habitat preservation. The governing American permitting system, however, establishes an extraordinarily cumbersome, legalistic, and costly method for balancing environmental and economic considerations" (Kagan, 1991). The regulatory environment port planners face today is of recent origin. Prior to the decade of the 1970s, wetlands and marshlands were called swamps and bogs, and as such they were regarded as nuisances to be eliminated by land fills. Dredging was the responsibility of the Army Corps of Engineers, and getting approval and funding for a dredging

project was a relatively simple process. Little or no regard was given to the habitat damage that such activities caused. Passage of the National Environmental Policy Act, in 1969, followed by the Clean Water Act and the Coastal Zone Management Act, in 1972, set the stage for a radical and protective doctrine that henceforth controlled and regulated port development. The Army Corps of Engineers continued to be the lead agency regulating and managing the nation's waterways, however, ports now have to operate within the guidelines of the Environmental Protection Agency (EPA), providing Environmental Impact Statements/Study (EIS) for all proposed major projects. Additionally, the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, and state and local governments have a voice and regulatory powers that parallel the Corps of Engineers.

The U.S. Army Corps of Engineers has been regulating the activities in the nation's waters since 1890. The Rivers and Harbors Act of 1899, provided the regulatory authority. Until the 1960s, the primary purpose of the regulatory program was to protect navigation. Since then, new laws and court decisions have broadened the program. The regulatory program now considers the full public interest for both the protection and use of water resources.

"Mitigation is the undertaking of steps to avoid, or minimize, impacts associated with development activities. In cases where impacts cannot be avoided, mitigation can also be

accomplished through compensation by replacing or providing substitute resources", (Kelley, 1992). Determining the kind and extent of the mitigation project that must accompany any coastal development project, is usually the primary reason for the long lead-time of the project. Kagan (1991), and Decker (1989) offer an interesting contrast of two port dredging projects. Kagan (1991) reports on a project to dredge Oakland Harbor in Oakland, California. The project started in 1960, when the Oakland Harbor Authority applied for the permits to dredge the harbor to a deeper depth. To date, the project has not started. Kagan (1991) blames "adversarial legalism" and a governmental structure that fragments decision-making power among many agencies creating a situation where no progress is made or is possible. Decker (1989), on the other hand, describes the dredging project of the West Turning Basin at Port Canaveral. The project was completed on schedule and with minimal environmental conflict. Decker (1989) attributes the success of the project to the cooperation of the Port Authority and the Corps of Engineers through the planning, design, and execution of the project. The required mitigation project was proposed and approved early enough, preventing the delays that existed in the Oakland Harbor project.

Public Goods and Public Access Projects

The Canaveral Port Authority has been well aware of the need for providing the residents of the community and visitors with facilities for water related activities. These facilities, in addition to creating good will and good relations between the residents and the Port, also serves to attract customers to the numerous retail tenant activities of the Port. The Port contains three parks, with a fourth planned, eight boat launching ramps, full range camping facilities, athletic fields, bike paths and jogging trails, a four and a half acre beach, and some of the best fishing around. Use of most facilities is free of charge to the public. Additionally, numerous events, such as seafood festivals, boat races, and fishing tournaments are held each year. The Port also maintains excellent relations with Brevard County. Currently under construction is a sand transfer facility, to be used for renourishment of Brevard County's beaches (Canaveral Port Authority, N.D.c).

Cruise Industry Development

The Canaveral Port Authority operates under an aggressive competitive strategy. Goss (1990d) explains that a landlord port operates most efficiently under such strategy. The cruise industry accounted for forty-eight percent of Canaveral

Port Authority's operating revenues for FY 1991 (Agostinelli, 1993a). As one of the approach venues of the "broad-front" development approaches employed, Canaveral Port Authority attracted cruise lines to develop a "niche" market in the cruise industry; the family vacation cruise segment. Lewis (1986) states: "Understanding the changing nature of the market, some lines have begun to understand the importance of developing a "niche" for their product...Premier (Cruise Lines) has developed a unique vacation package; three days in Disney World plus four days of cruising aboard their ships...In a market, in which most cruises are seen to offer the same experience, it will stand out as unique. It will also be difficult to duplicate. Premier was able to develop their concept by positioning their ships at Port Canaveral (100 km south of Disney World), rather than in South Florida (400 km south of Disney World)". The Canaveral Port Authority (1992b), reports that over one million cruise passengers embarked or disembarked from multi-day cruises at the Port during FY 1991. This figure represents an increase of twenty-five percent over the previous year. By FY 1992, Port Canaveral had captured 14 percent of the total North American multi-day cruise market and twenty-three percent of the Florida multi-day market. When compared with 1984, the year multi-day cruises commenced sailing out of the Port, the cruising market shows a five hundred and thirty-five percent increase over a period of nine years [(Agostinelli, 1993b),

(University of Central Florida, 1989), and (U.S. Army Corps of Engineers, 1980-1989a)]. Port Canaveral is also the homeport to Carnival Cruise Line's T.S.S. Carnivale and T.S.S. Mardi Gras. Business is growing at such a rate that, in October 1993, Carnival will exchange one of its smaller cruise ships homeported at Port Canaveral, for the Mega-Liner Fantasy with 2,600 hundred passenger capacity. Additionally, The World City Corporation, in 1990, selected Port Canaveral as the homeport for the first of the class of U.S. built 5,600 passenger ships, Phoenix World City. As of the date of this study, the Phoenix World City is still on the drawing board, but negotiations are proceeding and the outlook is promising for construction to start. In addition to Terminal Number 5 and the pier space reserved for the Phoenix World City, Port Canaveral still has room for six other cruise terminals. Terminal Number 10 is in the design stage, about one third complete. Construction of Terminal Number 10 is scheduled for completion in early 1995 (Frey-Gaynor, 1993). Canaveral Port Authority has a Master Twenty-Year Plan that is revised yearly. Amongst its plans for the near future is the promotion and marketing of seven-day cruises to the Caribbean and Bermuda (the Bermuda itinerary has been test-marketed twice with considerable success). Of longer range in their plan are itineraries to Cuba (when Cuban ports open up), and the east coasts of Mexico, Central and South America.

Cargo Market Development

As a Landlord Port, the Canaveral Port Authority leases its Port properties on long-term leases of up to fifty years (Agostinelli, 1993a). Tenants build the necessary buildings, warehouses, and port superstructure. Currently, Port Canaveral has over six million cubic feet of freezer/chill storage capacity, making the Port the largest cold storage facility in the southeast (University of Central Florida, 1989). Additionally, there is over 400,000 square-feet of warehouse space, over 1.4 million barrels and 370,000 barrels of petroleum and cement respectively (Canaveral Port Authority, 1991). Cargo tonnage moving through the Port grew to over 3.2 million tons in FY 1991, over a 56 percent increase over 1982. The Canaveral Port Authority (1993) states that: "The first two commodities to pass through the Port, were petroleum and cement. In 1958, tanker vessels began transporting refrigerated fresh orange juice to New York out of Port Canaveral. Bulk Cement was first shipped through the Port in the mid-1960s. Petroleum, which has become Port Canaveral's major import, accounted for 93 percent of the Port's cargo by 1966, while cement imports represented six percent. The remaining one percent of cargo included newsprint, military, and miscellaneous cargo. During 1966, Port Canaveral's cargo reached the one million mark for the first time. As cargo tonnage continued to increase steadily,

so did the varieties of cargo. In the 1970s, scrap iron, processed locally for export, was added to the Port's list of cargo, as well as, fresh citrus cargo exports to Northern Europe and Japan. During the 1980s, citrus concentrate became a key import. Brazilian citrus concentrate is imported through Port Canaveral, blended with Florida orange concentrate, and then distributed throughout the United States and exported to many foreign countries". (Canaveral Port Authority, 1993). Other import commodities include solar salt, lumber, and in 1991, oats from Finland arrived for the first time (Port Canaveral Journal, May/June 1991a). An integral part of Canaveral Port Authority's marketing strategy is the search for new cargo markets. Louis Perez, Director of Marketing and Trade Development for the Port, has been travelling extensively through the Far-East and Europe looking for export markets. "The potential new exports being targeted by the Canaveral Port Authority marketing staff for fiscal year 1992 and 1993 include fertilizer, fresh oranges, fresh single strength orange juice, and recyclable materials (rubber tires, waste paper and auto fluff). To increase imports, efforts are being developed to make regional industries, with needs for imported bulk and neo-bulk products, aware of... Port Canaveral" (Canaveral Port Authority, 1991).

Foreign Trade Zone Number 136

Another developmental venue used by Canaveral Port Authority is the creation of the Foreign Trade Zone (FTZ). The effort started in the early 1980s, when the potential for such an enterprise was defined. In 1986, application was made to the Foreign Trade Zone Board, in Washington, D.C. After public hearings were held, the initial zone was approved in 1987. It consisted of fifty acres in the southern part of the Port. Soon after, it was realized that to get the most benefits from its operation, the zone had to be enlarged to include the near air/land and inland/space, as well as the land/sea interface. A couple of small areas, primarily, the locational foot-print of already existing space technology concerns, were likewise designated part of the Foreign Trade Zone. Today, Foreign Trade Zone Number 136 consists of 4,160 acres. This includes the entire Port, the Space Center Executive Airport, as well as Space Port Florida, Melbourne Regional Airport, and two sites of already established companies. A Foreign Trade Zone serves to enhance international trade by allowing U.S. companies to compete with foreign firms and still remain within the United States. Companies manufacturing for exports derive the most benefits from an FTZ, especially companies that utilize foreign components as part of their finished product. Products manufactured within an FTZ are exempt from paying import

duties on their foreign components until the goods enter the U.S. economy. If, the finished product is to be exported, import duties are eliminated altogether. Products launched into space are considered exports. Another benefit derived from Foreign Trade Zone Number 136 is to U.S. commercial space operations. Assume that a foreign country wishes to send one of its satellites into orbit. Besides the satellite, the foreign country will have to import into the U.S. the satellite support equipment required to service and prepare the satellite for space flight. By sending the satellite and support equipment into the FTZ, the foreign company saves the cost of import duties. This benefit gives an advantage to the U.S. commercial space industry, enhancing its ability to operate against foreign competitors. With the FTZ, Port Canaveral can make an argument for billing itself as the only "quadra-modal" (land, sea, air, and space) transportation hub in the world. FTZ Number 136 is now the largest general purpose FTZ in the country in area and in value of exports (Canaveral Port Authority, 1993). The Canaveral Port Authority (1993) reports the status of the Foreign Trade Zone Number 136 as of March, 1993 (Table 1).

Astrotech Space Operations, a satellite processing facility activated in 1989, by boundary modification (approximately 90,000 sq. ft.) is located in Titusville, Florida, 12 miles from the public zone site at Port Canaveral Florida. This site has been very active. With the approval

TABLE 1

FOREIGN TRADE ZONE NUMBER 136 STATUS REPORT

CANAVERAL PORT AUTHORITY
FOREIGN-TRADE ZONE #136
STATUS REPORT

ACTIVE ZONE SITE OPERATION	*ZONE STATUS APPROVED PENDING ACTIVATION WITH CUSTOMS*	*ZONE APPLICATIONS IN PROCESS DEVELOPMENT*	*ZONE INTEREST PENDING APPROVAL*	*FUTURE ZONE EXPANSION*
Astrotech Space Operations	American Digital Switching	Crown Cork & Seal	Harris Corporation	Larsh Foundation, Inc. 16.8 acres Spaceport Florida area
Flite Technology	Tech-Vest	Premier Cruise Lines	Dictaphone	Don Gabbert 183.29 acres Merritt Island near Kennedy Space Center
Aero Metals		Optic Ware	Relm Industries	
SpaceHab		Mid-Florida Freezers Warehouses	Scientific Atlanta	Rockledge Central 71.75 acres Rockledge area
Foreign Trade Zone Warehouse/Distribution Center		Melbourne Regional Airport Customs User Fee Status	Precision Fab	
The Foreign Trade Zone Group		MED-ECO Trust Millennium Corporate Park	Spaceport Florida Authority	North Brevard Industrial Park 23.54 acres Titusville area
SkyData		Geldmark	Space Station Freedom	
			Technophone	The Viera Company
			Targ-it-Tronics	
			Terry Labs	
			IPCorporation	
			Bukoski	
			Visionaire	
			Intellikey	
			SODI 2001	
			Ameritron Inc.	05MAR93

SPECIAL INTEREST--MID-FLORIDA FREEZER is in the final stages of FTZ activation for their facility at Port Canaveral. Approval is expected to be in last week of April.

MELBOURNE REGIONAL AIRPORT has been approved by U.S. Customs to operate as a user free airport. Immediately upon this approval an FTZ/Custom inspection status will be activated.

MED-ECO (Spaceport Industrial Park) project is on track for April 15th closing, providing all necessary permitting has been satisfied.

Source: Canaveral Port Authority (1992).

of Foreign Trade Zone Number 136s' expansion, Astrotech is now on permanent general purpose land, and has since been granted more acreage for their zone site. This will certainly enhance Astrotech's ability to provide service for their customers' satellite processing needs. During this reporting period, three foreign payloads and associated ground support equipment (GSE), valued at $305 million, and seven domestic payloads and GSE valued, at $600 million, were accepted into the zone for launch processing operations. Eight of the ten payloads were launched into space via U.S. launch companies at Cape Canaveral Air Force Station and Kennedy Space Center.

The Spacehab Inc. facility, located at Port Canaveral, is a payload processing facility, owned by a privately financed corporation, engaged in the design, development, manufacture, marketing, and leasing of pressurized habitable modules to fly on the U.S. Space Shuttle. The manufacturing itself is done in Italy, and subsequently shipped to the United States, and admitted to the zone for integration and testing. Since activation in January, 1992, three modules have been admitted to the zone site. The company anticipates its first launch on the Shuttle in March of 1993.

Tech-Vest is a warehouse and office complex, located in the City of Cape Canaveral, immediately adjacent to Port Canaveral. Approval for this zone site was made by the FTZ Board, in Washington, on June, 1990. The company is currently looking for one or multiple users to lease the 32,000 sq. ft.

of available space to optimize its FTZ potential.

Port Canaveral Foreign Trade Zone Warehouse and Distribution Center, Inc. is the first of two warehouse facilities to be activated at Port Canaveral in FY 92. The organization offers lease space to the general public for individuals and companies requiring zone procedures. The parent company, Integrated Distribution Services, Inc., has in place a sophisticated bar code inventory system to track merchandise tested, repackaged, and stored. The official activation date was December, 1991.

The Foreign Trade Zone Group, Inc., is a 55,000 sq. ft. warehouse facility offering leasing space to the general public. Since its activation, in May, 1992, the company has leased three quarters of its space and plans to utilize the remaining acreage for providing storage for ships stores and duty free shop supplies. The company plans to build another 50,000 sq. ft. building in 1993, as a result of their growth in business.

Aero Metals, is a warehouse distribution facility of exotic metals, such as titanium and high grade aluminum for sale to the marine and aero space industries, which was officially activated in August, 1992. To fully use Foreign Trade Zone procedures, the company is considering leasing a portion of its business for public Foreign Trade Zone warehousing.

Flite Technology, Inc., a manufacturer and refurbisher of injection and extrusion screws and barrels for the plastics industry worldwide, became the first plastics zone operation in the United States when it was activated in 1991.

American Digital Switching, Inc., a telecommunications manufacturing and service company located in Melbourne, Florida, manufactures central office digital switches (components that help route telephone calls) for small to medium size independent telephone companies. They also concentrate on repairing and refurbishing computers, and related products, for major international electronic firms. This company is currently undergoing preparations for U.S. Customs activation.

On October 28, 1992, Geldmark signed a contract with the Canaveral Port Authority to begin the application process for sub-zone status of their Palm Bay Facility. The company, together with European investors, have formed an export trading company. Their primary objective is to use the FTZ as a storage, packaging, staging, and distribution point. The company anticipated substantial shipping to and from Port Canaveral (approximately 100 - 40 ft. containers per month).

Mid-Florida Freezers, Inc., with over 1,000,000 sq. ft. of dockside and inland cold storage capacity, is considered the largest dockside freezer/cooled warehouse in the southeast United States. The Cape Canaveral facility is within the boundaries of FTZ Number 136, and could be activated by U.S.

Customs within 30-60 days. The company feels, however, that for FTZ procedures to work, their inland facility, at Plymouth, Florida, must also be an activated FTZ site. The Greater Orlando Airport Authority and FTZ Number 42 have submitted a boundary modification to the FTZ Board, in Washington, D.C., to accomplish this. Activation is scheduled for early spring of 1993.

CHAPTER FOUR

ECONOMIC IMPACT OF PORT CANAVERAL

Introduction

Seaport activity involves the interchange of cargo and passenger traffic between different surface transport modes at the land/sea interface. Combined with various storage, processing, and other ancillary businesses assembled in and around the immediate port area, seaports function both as initiators and maintainers of broader economic and social development processes at various local, regional, national, and international spatial scales (Willingale, 1984). Port Canaveral is Central Florida's connection to the international economy, putting shipments closer to more Florida markets than any other port (University of Central Florida, 1989). It is evident that Port Canaveral provides Central Florida's businesses and residents with a number of benefits. As a dynamic and powerful force within the regional economy, these benefits are both tangible and intangible. The direct economic effects that result from the port's activities represent only part of the economic effects throughout the region. For example, the University of Central Florida (1989)

estimates that, in 1988, each job created within the port, creates 1.59 total jobs in the region.

Economic Impact Study to 1989

The University of Central Florida (1989) conducted an economic impact study of the direct and indirect contribution to the local and regional economies made by Port Canaveral. The study examined the Port's economic effects on both Brevard County and the larger Central Florida Regions of Brevard, Orange, Osceola, and Seminole Counties during fiscal year 1988. The sources that were addressed by the study were the purchases and expenditures of the port community, port industries, federal government, the cruise ship industry and its passengers, and the Port Authority. The cruise industry accounted for 43 percent of the Canaveral Port Authority's revenues of $6.7 million for fiscal year 1988. The impact of the cruise industry on the area's economy is made up from purchases made by both the industry and its passengers (Figure 3, shows the annual passenger flows between 1982 and 1989). The combined purchases injected over $287 million annually into the local economy. The industry itself spends $53.7 million, with over 1,900 employees. The cruise industry is

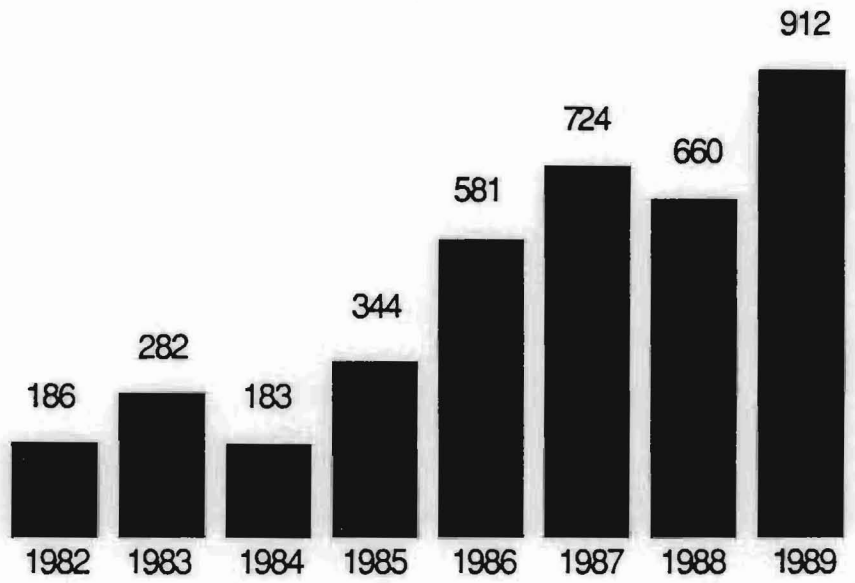

FIGURE 3.

ANNUAL PASSENGER FLOWS

(In Thousands)

Source: University of Central Florida (1989).

the largest employer at the Port (Figure 4). Passenger expenditures are the largest component of the direct impact created by the cruise industry at Port Canaveral. The University of Central Florida (1989) quotes an estimate made by the Florida Department of Commerce reporting that in 1987 and 1989, ship's passengers passing through the Port were each spending an average of $337.50 during their stay, and leaving Brevard County $233.7 million richer (Figure 5).

The cargo industry was the second largest (37 percent) source of revenue in 1988. Cargo passing through the Port topped 2.6 million tons (Figure 6). Over the years, the Port Authority has successfully pursued a cargo boosting strategy, including the construction of the largest freezer cooler warehouse facility in the Southeast. Another component of the cargo strategy was the development of roll-on/roll off ramps to facilitate a comprehensive intermodal transport network (University of Central Florida, 1989). The Canaveral Port Authority is a self-sufficient entity. Generated revenues, through its operation and sale of bonds, completely finance the Port's operation and development. Between 1983 and 1988, capital expenditures averaged $3.5 million annually (Figure 7). The impact study was accomplished in four sequential phases. The first, as described by the previous paragraphs, was the identification and quantification of the different sources that contributed the data from which to conduct the study. The second phase, was the measurement of the direct

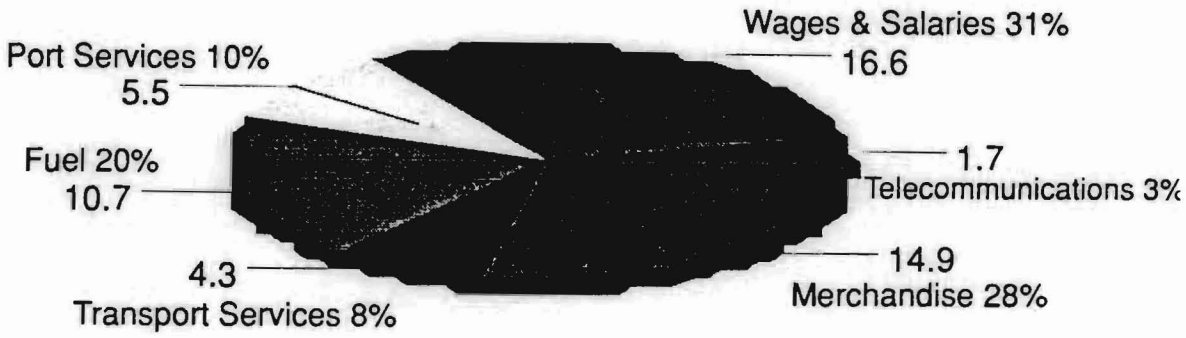

FIGURE 4.

CRUISE INDUSTRY PURCHASES

Source: University of Central Florida (1989)

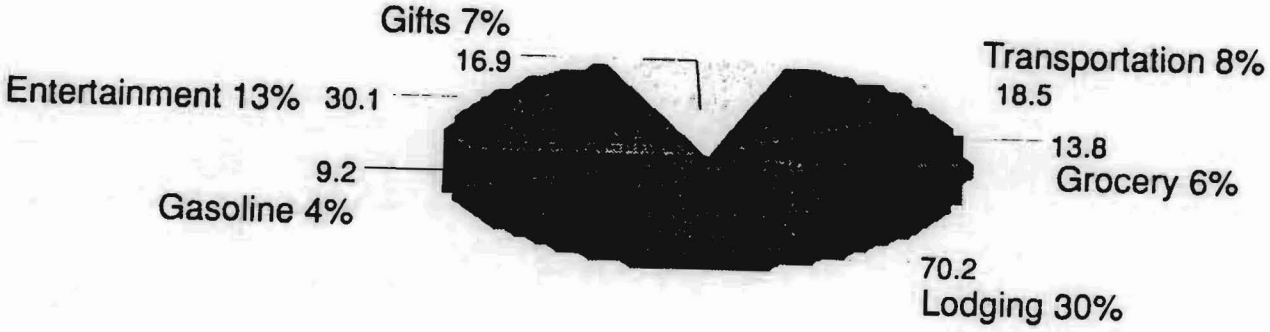

FIGURE 5.

PASSENGER EXPENDITURES

(In Millions of Dollars)

Source: University of Florida (1989).

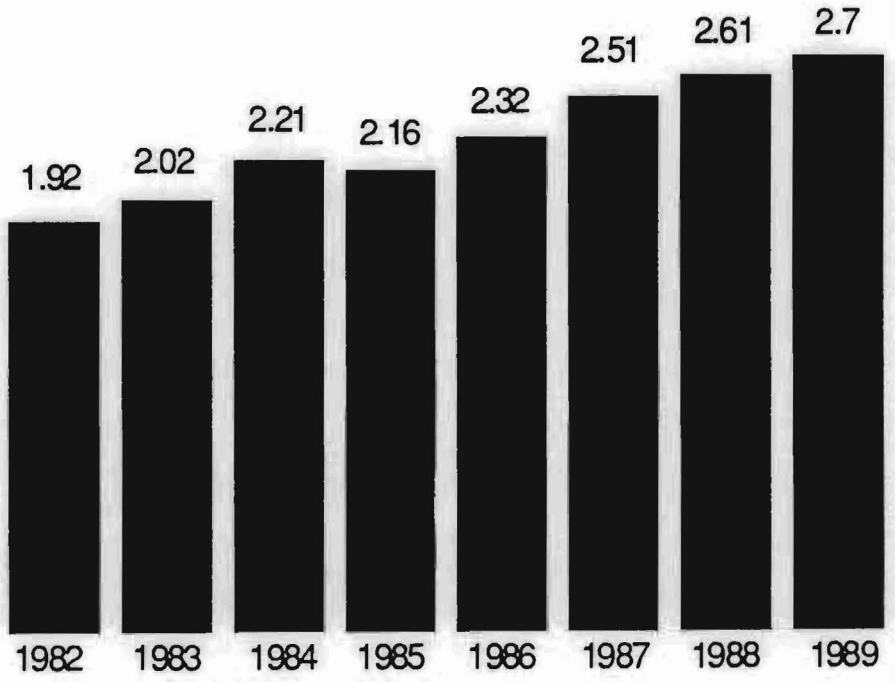

FIGURE 6.

ANNUAL CARGO FLOWS

(In Millions of Tons)

Source: University of Central Florida (1989).

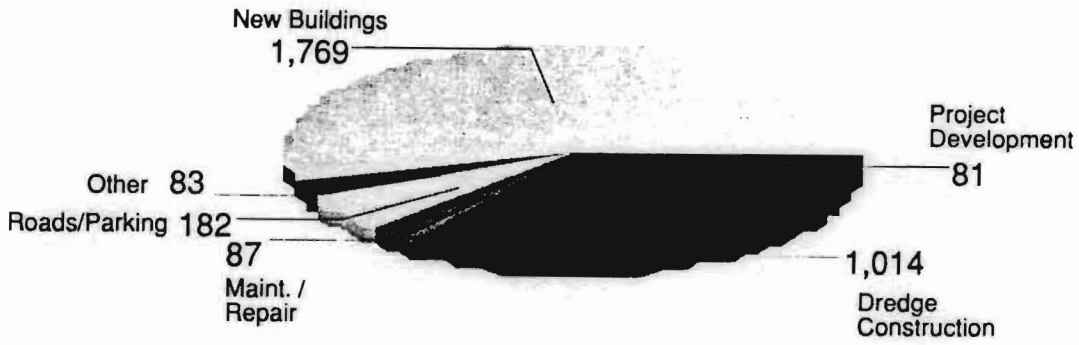

FIGURE 7.

PORT AUTHORITY ANNUAL CAPITAL EXPENDITURES

(5 Year Avg., In Thousands of Dollars)

Source: University of Central Florida (1989).

impact of the Port's operation on county and regional economies. The third phase, was the calculation of the "multipliers" which will be used to estimate the indirect impact at the county and regional level. The fourth and final phase, involved the determination of the total impact of the major economic groupings followed by a breakdown of these groupings into individual sectors. The processes used for this study was a 494 sector input/output computer model. The University of Central Florida (1989) describes the process of measuring the Port's direct economic impact, stating that detailed estimates were made using the jobs and purchases of the three major sources of economic impact--production, wages and jobs. These estimates revealed that the Port added $452 million in production, $145 million in wages, and 22,670 jobs to the Brevard County economy (Figure 8). From within the broad categories shown in Figure 8, twenty-five separate sectors were identified. These individual sectors and their impacts are presented in Table 2.

"The Port also stimulated a set of broad economic interactions that produced additional jobs and income within Brevard County and throughout the Central Florida Region. These indirect effects arose as the directly affected industries purchased their supplies from other businesses within the county and region. The secondary supplying firms, in turn, had to buy more production inputs from their suppliers and labor services from households. This second

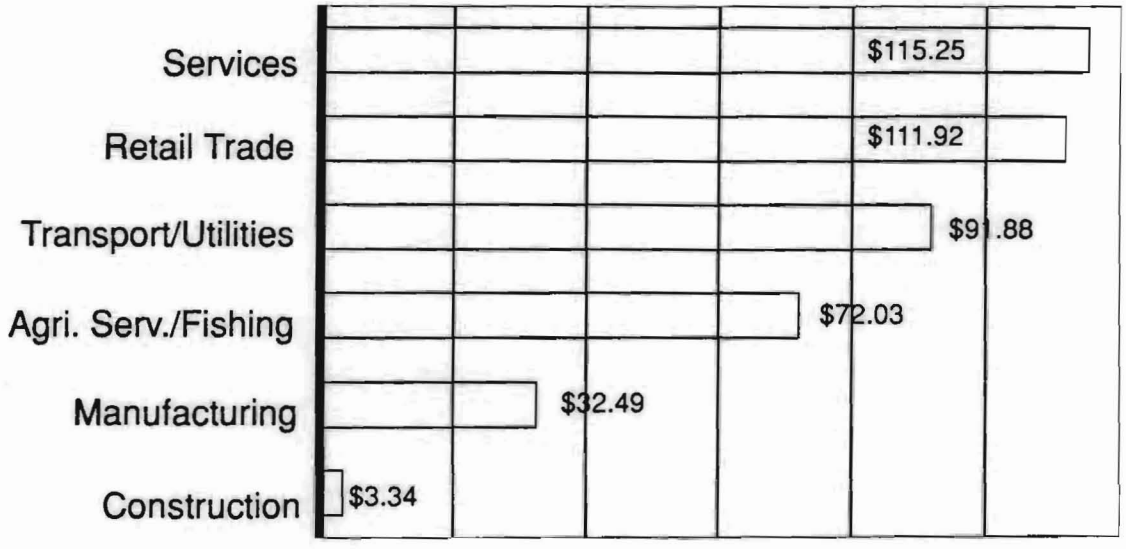

FIGURE 8.

DIRECT EFFECTS ON BREVARD COUNTY

(In Millions of Dollars)

Source: University of Central Florida (1989)

TABLE 2

THE DIRECT EFFECTS OF PORT CANAVERAL ON BREVARD COUNTY
(In Thousands of Dollars)

Economic Sector	Output
HOTELS & OTHER LODGING	$80,450.7
COMMERCIAL FISHING	72,028.8
WATER TRANSPORTATION	64,267.8
EATING & DRINKING PLACES	59,466.0
TRANSPORTATION EQUIPMENT	32,250.0
AMUSEMENT & RECREATION	31,165.9
GOVERNMENT	25,483.3
MISCELLANEOUS RETAIL	22,701.8
TRANSPORTATION SERVICES	19,139.6
FOOD STORES	14,128.6
AUTO DEALERS-SERV.STAT.	9,931.4
TRUCKING & WAREHOUSING	8,457.0
BLDG. MAT.-GARDEN SUPPLY	5,694.3
HEALTH SERVICES	2,435.3
GENERAL BLDG. CONTRACTORS	1,768.8
HEAVY CONST. CONTRACTORS	1,340.2
MISCELLANEOUS SERVICES	683.2
LEGAL SERVICES	510.0
SPECIAL TRADE CONTRACTORS	229.9
MACHINERY, EXCEPT ELEC.	211.0
ELECTRIC & ELEC. EQUIP.	23.3
GREENHOUSE & NURSERY PROD.	17.3
ELEC.,GAS & SANITARY SERV.	12.1
MISC. MANUFACTURING	8.0
TOTAL	$452,404.3

Method: Input/Output Model.
Source: University of Central Florida (1989).

round of purchases led to a third round of material and labor purchases which caused a fourth round, etc.". (University of Central Florida, 1989). Each one of the rounds referred to above created an economic benefit that when all these rounds of indirect effects are added up, they, in turn, constitute the Port's "multiplier" effect. The input/output model calculates that each direct job produced by the Port resulted in 1.38 total jobs within the county. In production, each direct dollar of output required an additional $0.55 in indirect production for the county. Each direct dollar in wages paid by the Port, generated an additional $0.57 in indirect wages at the county level. The Port's effect on the region breaks down into 1.59 in jobs; every dollar of production required an additional $0.77, and each dollar in wages created $0.79 extra in wages in Central Florida. The Port's total impact on Brevard County was estimated to be $709 million in production, $255 million in wages, and 31,177 jobs. At the regional level, the impact translates to over $835 million in production, $263 million in wages, and 31,900 jobs [(Table 3 and Table 4) (University of Central Florida, 1989)].

TABLE 3

INDIVIDUAL SECTORS IN BREVARD COUNTY MOST AFFECTED BY THE PORT
(In Thousands of Dollars)

Economic Sector	Indirect	Direct	Total
HOTELS & OTHER LODGING	1,817.9	80,450.7	82,268.6
COMMERCIAL FISHING	201.4	72,028.8	72,230.2
WATER TRANSPORTATION	10,104.2	64,267.8	74,372.0
EATING & DRINKING PLACES	13,262.5	59,466.0	72,728.5
REAL ESTATE	35,523.3	0.0	35,523.3
AMUSEMENT & RECREATION	5,044.7	31,165.9	36,210.6
TRANSPORTATION EQUIPMENT	882.7	32,250.0	33,132.7
MISCELLANEOUS RETAIL	5,591.1	22,701.8	28,292.9
ELEC.,GAS & SANITARY SERV.	23,856.8	12.1	23,868.9
HEALTH SERVICES	16,665.8	2,435.3	19,101.1
BUSINESS SERVICES	18,070.9	0.0	18,070.9
TRANSPORTATION SERVICES	1,316.7	19,139.6	20,456.3
AUTO DEALERS-SERV.STAT.	8,058.5	9,931.4	17,989.9
TRUCKING & WAREHOUSING	1,633.9	8,457.0	10,090.9
FOOD STORES	3,554.2	14,128.6	17,682.8
WHLSALE-DURABLE-GOODS	5,201.2	0.0	5,201.2
WHLSALE-NONDURABLE GOODS	7,816.7	0.0	7,817.4
COMMUNICATION	8,848.8	0.0	8,848.8
SPECIAL TRADE CONTRACTORS	9,765.3	229.9	9,995.2
AUTO REPAIR,SERV.,GARAGES	8,094.3	0.0	8,094.3
BLDG. MAT.-GARDEN SUPPLY	2,958.0	5,694.3	8,652.3
PRINTING & PUBLISHING	5,080.9	0.0	5,080.9
BANKING	6,665.7	0.0	6,665.7
PERSONAL SERVICES	5,373.6	0.0	5,373.6
GENERAL MERCH. STORES	5,520.8	0.0	5,520.8
CREDIT AGENCIES EX. BANKS	5,013.2	0.0	5,013.2
MISCELLANEOUS SERVICES	2,900.6	1,055.0	3,955.6
TOTAL	186,063.0	423,414.2	609,477.2

Method: Input/Output Model.
Source: University of Central Florida (1989).

TABLE 4

INDIVIDUAL SECTORS IN THE REGION MOST AFFECTED BY THE PORT
(In Thousands of Dollars)

Sectors	Total County	Total Region	Net Increase
HOTELS & OTHER LODGING	82,268.6	98,158.1	15,889.5
COMMERCIA FISHING	72,230.2	78,630.0	6,399.8
WATER TRANSPORTATION	74,372.0	78,394.0	4,022.0
EATING & DRINKING PLACES	72,728.5	74,983.0	2,254.5
REAL ESTATE	35,523.3	42,343.0	6,819.7
AMUSEMENT & RECREATION	36,210.6	36,358.9	148.3
TRANSPORTATION EQUIPMENT	33,132.7	34,337.8	1,205.1
MISCELLANEOUS RETAIL	28,292.9	33,558.6	5,265.7
ELEC.,GAS & SANITARY SERV.	23,868.9	29,352.4	5,483.5
HEALTH SERVICES	19,101.1	23,217.6	4,116.5
BUSINESS SERVICES	18,070.9	21,345.9	3,275.0
TRANSPORTATION SERVICES	20,456.3	20,633.5	177.2
AUTO DEALERS-SERV.STAT.	17,989.9	19,777.1	1,787.2
TRUCKING & WAREHOUSING	10,090.9	18,373.6	8,282.7
FOOD STORES	17,682.8	18,336.8	654.0
WHLSALE-DURABLE-GOODS	5,201.2	16,414.9	11,213.7
WHLSALE-NONDURABLE GOODS	7,816.7	14,161.1	6,343.7
COMMUNICATION	8,848.8	12,930.1	4,081.3
SPECIAL TRADE CONTRACTORS	9,995.2	11,321.5	1,326.3
AUTO REPAIR,SERV.,GARAGES	8,094.3	10,177.9	2,083.6
BLDG. MAT.-GARDEN SUPPLY	8,652.3	10,169.8	1,517.5
PRINTING & PUBLISHING	5,080.9	9,265.3	4,184.4
BANKING	6,665.7	9,063.4	2,397.7
PERSONAL SERVICES	5,373.6	7,603.3	2,229.7
GENERAL MERCH. STORES	5,520.8	6,479.4	958.6
CREDIT AGENCIES EX. BANKS	5,013.2	5,033.0	19.8
MISCELLANEOUS SERVICES	3,955.6	5,596.2	1,640.6
TOTAL	642,238.6	746,016.2	103,777.6

Method: Input/Output Model.
Source: University of Central Florida (1989).

Financial Status at the End of Fiscal Year 1992

The Canaveral Port Authority's stewardship of Port Canaveral, continued to achieve growth through 1992. Operating revenues set a new record, growing at a rate of 6.4 percent from the previous year, and reaching $14.1 million dollars (Figure 9 and Figure 10). In spite of this success, Port Canaveral did not escape the nation-wide recession of 1992 unscathed. Port Canaveral experienced a slow-down in its growth rate and actual decline in several sectors of its operations. The Executive Summary of Port Canaveral Annual Evaluation (1992), details the significant financial events of FY 92. Cargo tonnage declined by 6.7 percent to 2.976 million tons, and cargo revenue declined by 6.8 percent to $3.08 million. Even when considering the cargo decline, FY 92 was the second best year, over the eight year period, for cargo tonnage and cargo revenue (Figure 11). Total cruise passengers grew by 1.2 percent. Partial day cruises (cruises to no-where) ceased operating very early in the year, resulting in a decline in this category from 64,744 revenue passengers in FY 91, to 9,499 revenue passengers in FY 92. However, passengers on longer cruises increased by 68,173 or 6.8 percent to 1,072,722 revenue passengers in FY 92. Cruise revenue increased by 11.3 percent, to $7.8 million (Figure 12). After additional revenues and all expenses, the Canaveral Port Authority generated a surplus available for

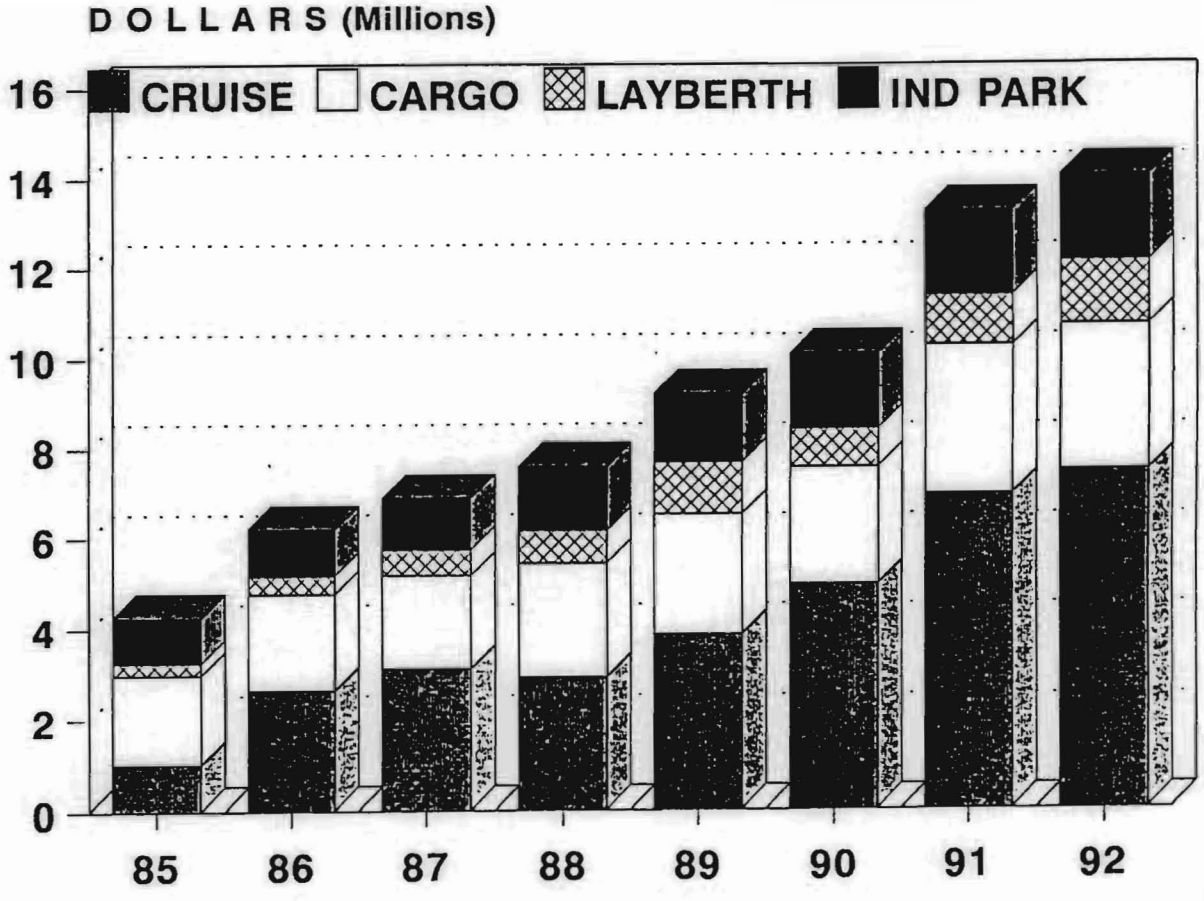

FIGURE 9.

OPERATING REVENUES FY 85-FY 92

Source: Canaveral Port Authority (1992).

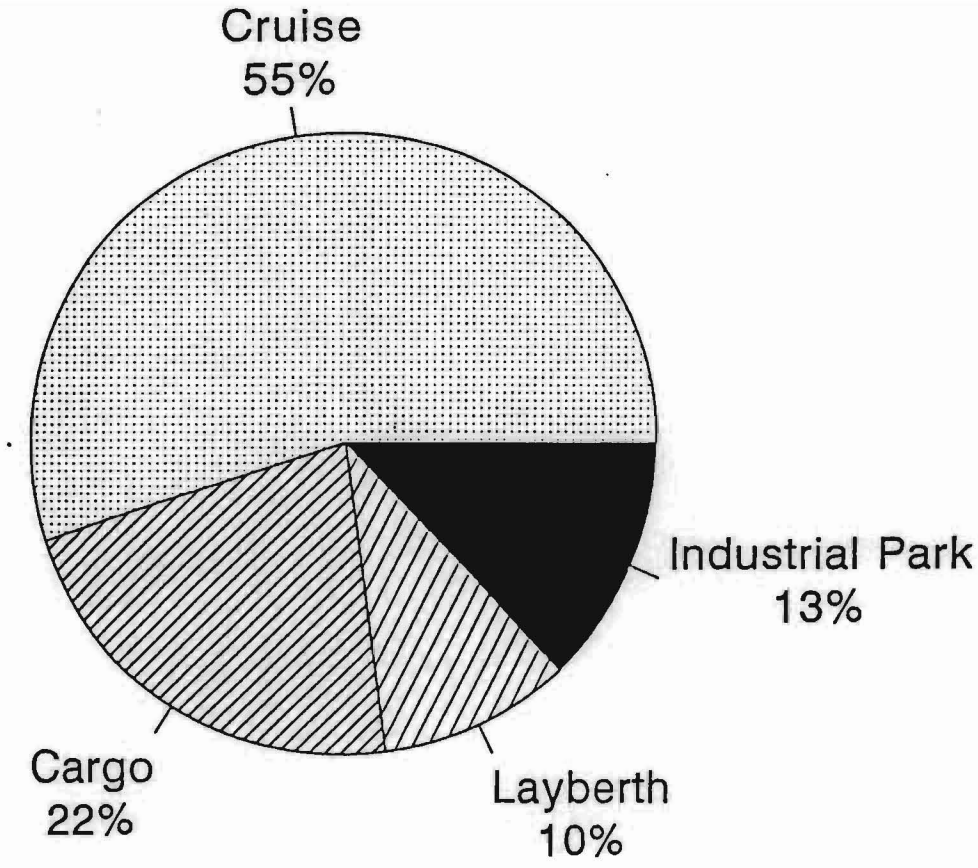

FIGURE 10.

OPERATING REVENUE FY 92

Source: Canaveral Port Authority (1992).

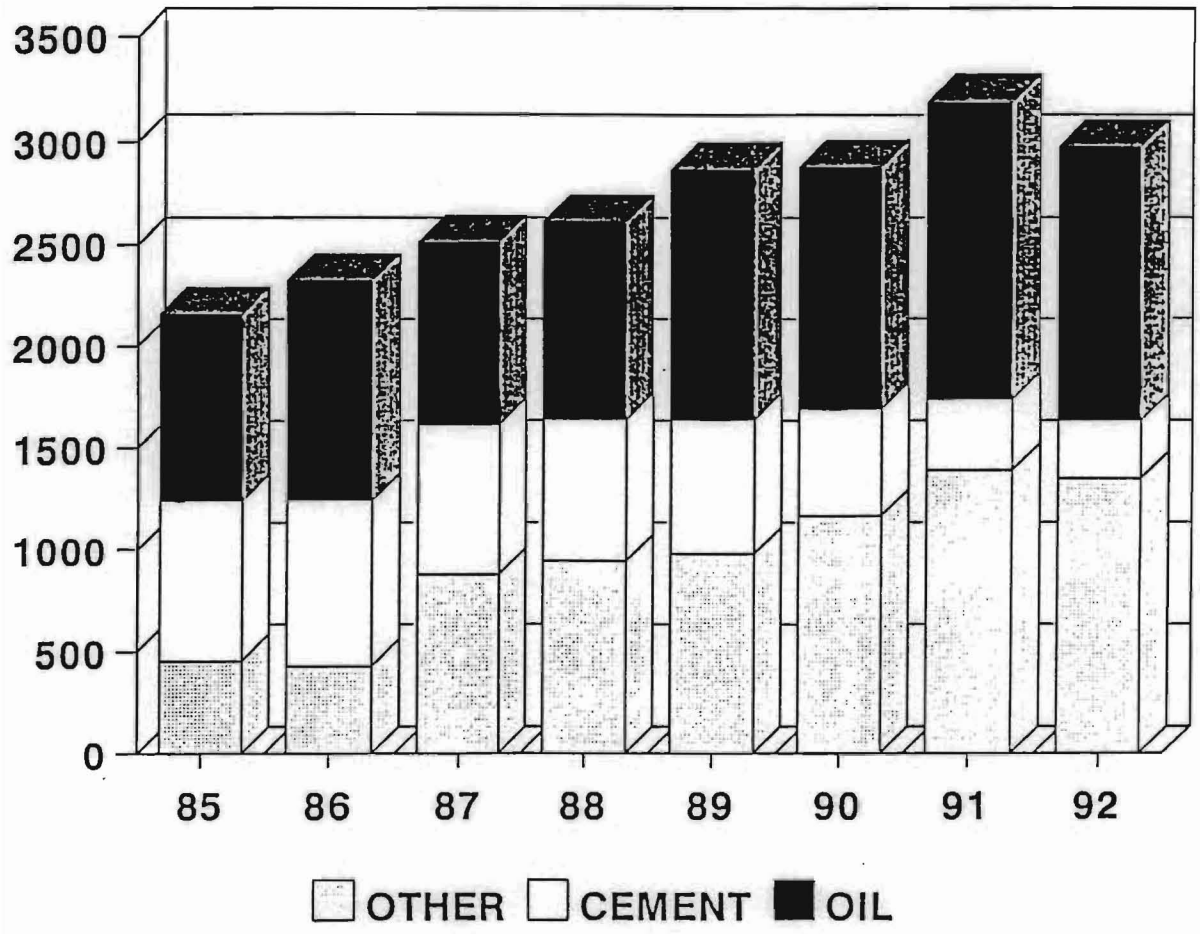

FIGURE 11.

CARGO FLOWS FY 85-FY 92

(In Thousands of Short Tons)

Source: Canaveral Port Authority (1992).

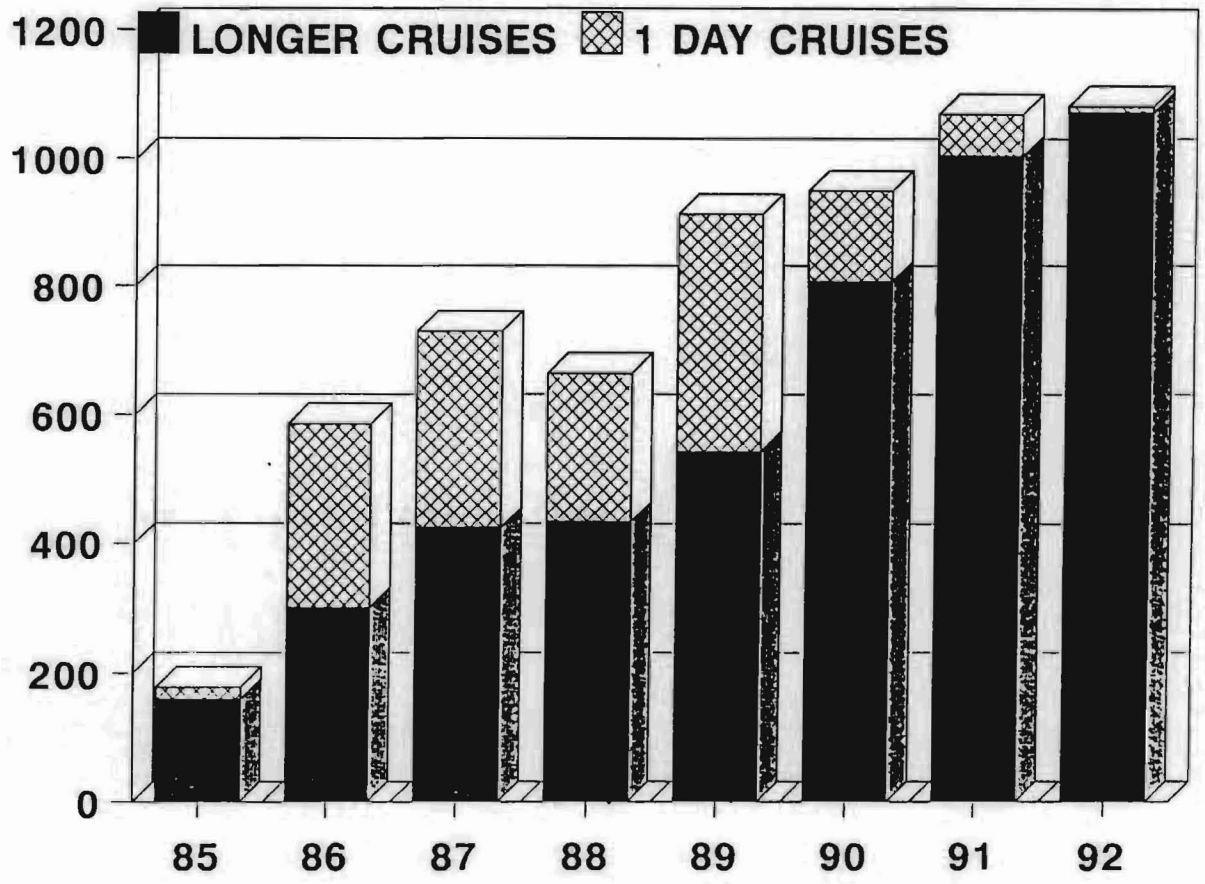

FIGURE 12.

REVENUE CRUISE PASSENGERS FY 85-FY 92

(In Thousands)

Source: Canaveral Port Authority (1992).

financing new facilities and debt retirement, of $5.2 million, which was the second largest surplus in the history of the Port [(Figures 13, 14 and 15) and (Canaveral Port Authority, 1992)]. The Canaveral Port Authority has an optimistic outlook for the Port's continued success. Since eliminating the ad-valorem tariff, charged to residents of the Port Districts, in 1986, the Port has been self-supporting and has been able to fund over $30 million in infrastructure and superstructure development (Canaveral Port Authority, 1992).

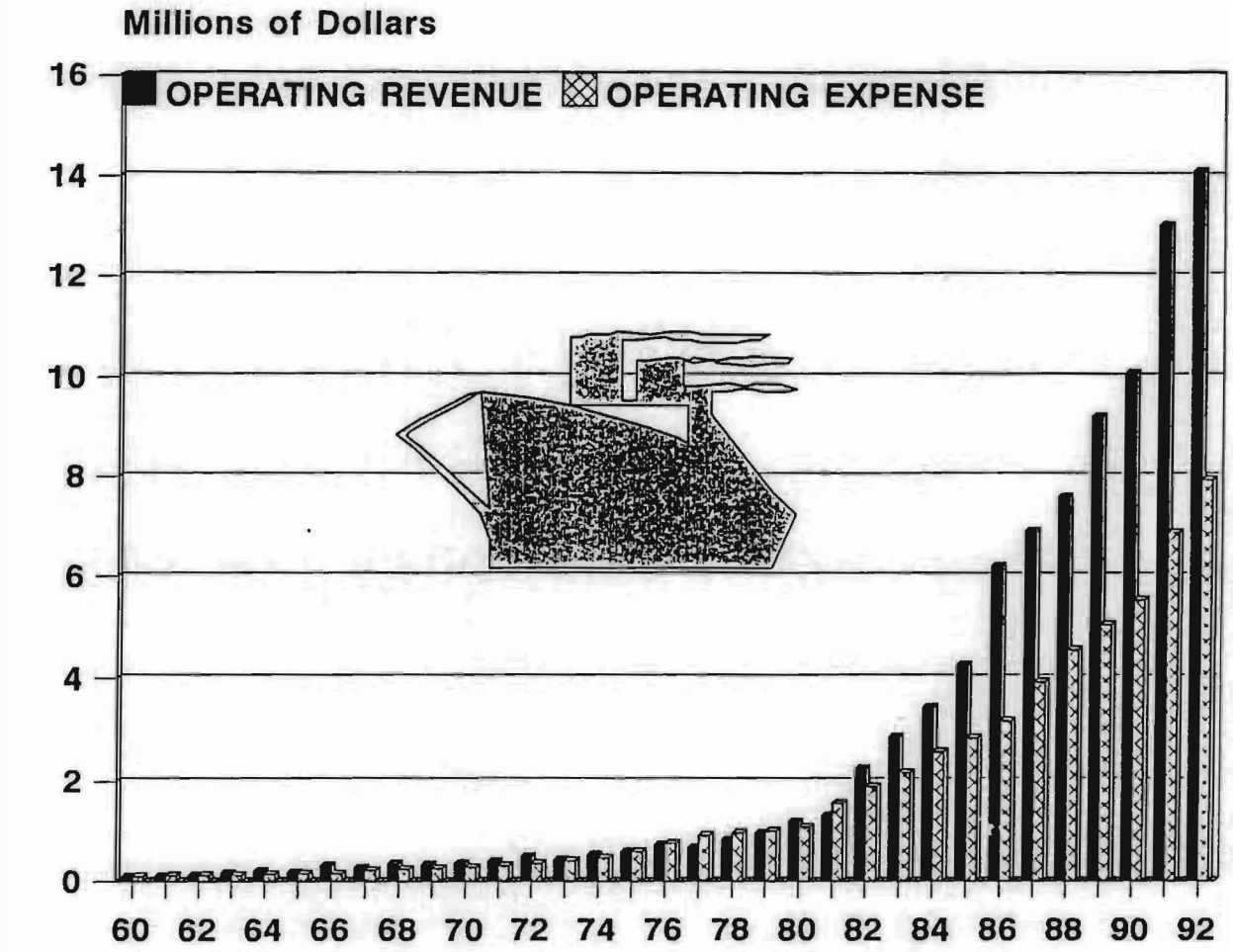

FIGURE 13.

OPERATING REVENUE AND EXPENSE FY 60-FY 92

Source: Canaveral Port Authority (1992).

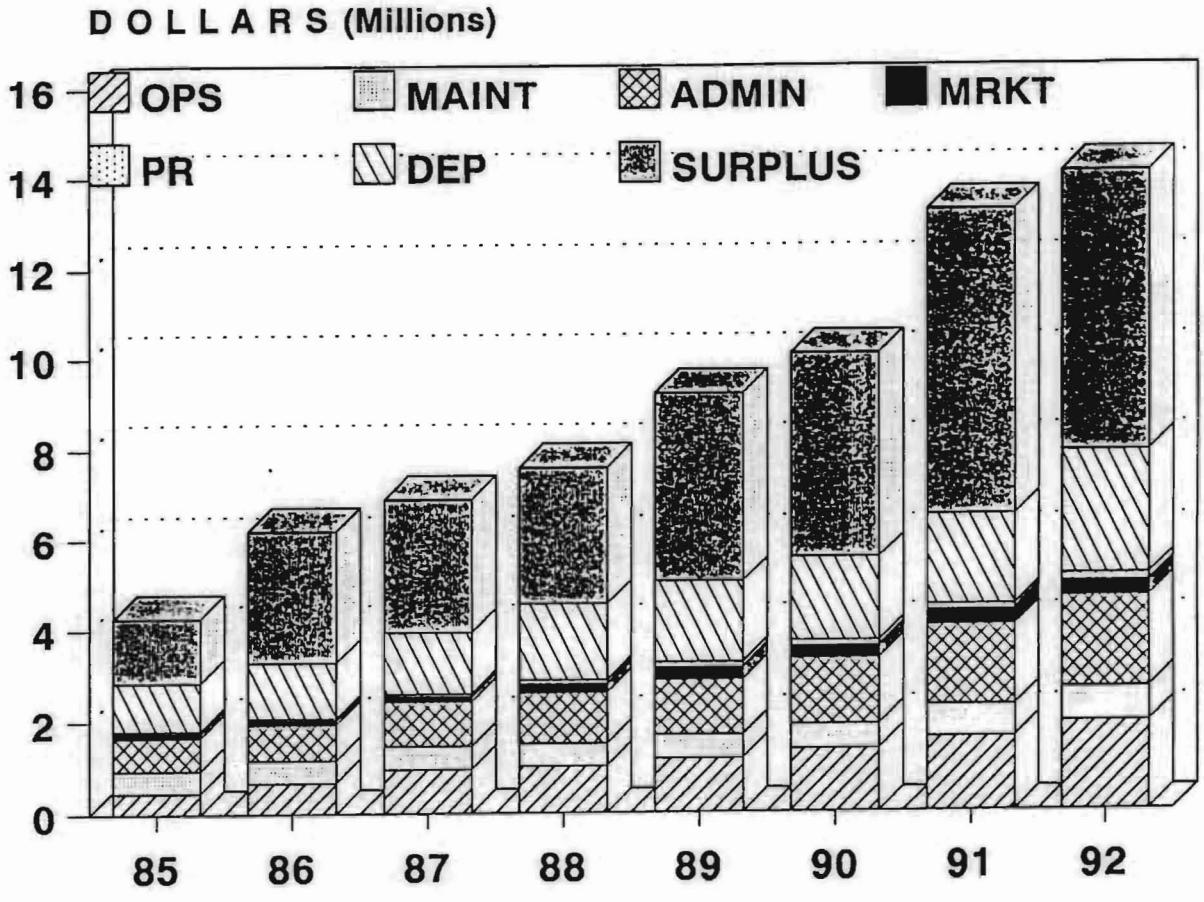

FIGURE 14.

OPERATING EXPENSE AND SURPLUS FY 85-FY 92

Source: Canaveral Port Authority (1992).

U.S. Department of the Army, Corps of Engineers. "Are You Planning to Work in a Waterway or Wetland?" Information brochure on regulatory requirement produced by New England Division, July, 1990.

U.S. Department of The Army, Corps of Engineers. "Guide for Permit Applicants," U.S. Army Corps of Engineers, New England Division, February, 1991a.

U.S. Department of the Army, Corps of Engineers. "The Ports of Miami, Port Everglades, Palm Beach and Port Canaveral, Florida," Port Series, No. 16, 1991b.

U.S. Department of The Army, Corps of Engineers. "Dredged Material Management Program," U.S. Army Corps of Engineers, New England Division, May, 1992.

Weigend, G. "Elements in Port Geography," The Geographical Review, Vol. 48, No. 2, April, 1958: 185-200.

Wessel, A.E. and Hershman, M.J. "Mitigation: Compensating the Environment for Unavoidable Harm," in Hershman, M.J. Urban Ports and Harbor Management, 1988: 253-286.

Williams, C.J. "United States - Mexico Waterborne Containerized Cargo Flows," Thesis proposal for Masters of Marine Affairs, University of Rhode Island, Kingston, Rhode Island, Quoting data from: National Trade Data Bank. US Department of Commerce, Compact Disk, CD-ROM, February 1994, Program - Lexicon Of Trade Terms: North American Free Trade Agreement, 1994.

Willingale, M.C. "Ship-operator Port-routing Behavior and the Development Process," in Hoyle, B.S., and Hilling, D. Seaport Systems and Spatial Change, 1984: 43-59.

Willis, M.G. Canaveral Port Authority, Pers. Comm., March 24, 1993.

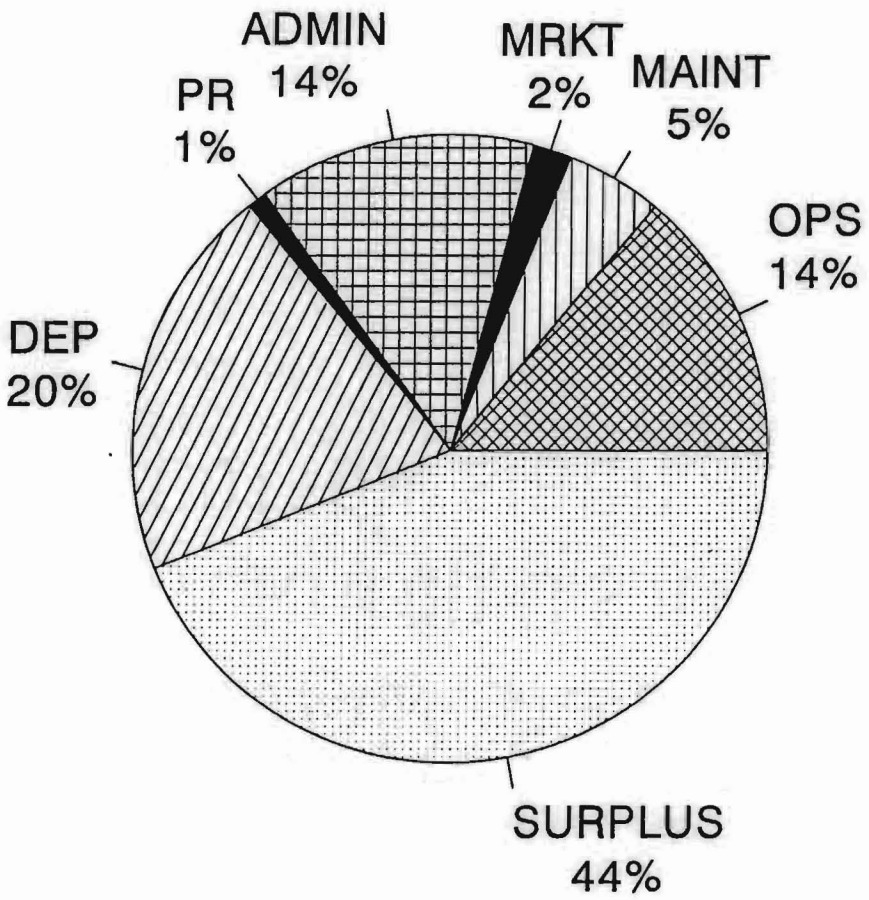

FIGURE 15.

OPERATING EXPENSE AND SURPLUS FY 92

Source: Canaveral Port Authority (1992).

CHAPTER FIVE

THE SHIFT/SHARE TECHNIQUE

Introduction

The shift/share analysis technique is especially well suited for condensing large amounts of real data into a more usable form. Three distinct stages are involved in the utilization of the technique to analyze ports. The first is the derivation of the "regional share" component. This "share" indicates the amount of growth in commerce a port is expected to experience between two points in time, and is based on the average growth rate of all ports. That is, if a port handled ten percent of the total commerce for the region during the initial year of the study, then the port could be expected to handle ten percent of the total commerce in the terminal year of the study. The two remaining steps are designed to measure the so-called "Shift"of commodities into and out of a port. Initially, the share figure is modified through consideration of the relative growth rates of the particular commodity. The resulting "proportionality shift" is an indication of the types of commodities found at the

port, whether they are predominantly fast-or-slow growing or actually declining on the regional scale. The "shift" will have a positive value if the port has a higher than average proportion of its commerce in commodities which grew faster than the regional average. Likewise, the value will be negative in the case where the port is specializing in a regionally slow-growing or declining commodity. Finally, there is the "differential shift" component which is a measure of which commodities at the port grew faster or slower than they did regionally. In effect then, this is the difference between the observed and the expected shifts, and is an indication of cargo (passenger) capture or loss from or to other ports. The differential shift will have a positive value if the port's commodities grew faster than its total commodity composition indicated it would (Marti, 1989).

The shift technique allows for comparative port analysis rather than the study of ports in isolation. Its advantage over many other techniques, which may be used to measure given aspects of a port's traffic, is that the results are given in real numbers (tonnage or passengers). Actual figures may prove to be more useful to port decision-makers, than ratio values or index numbers. For instance, a positive differential shift discloses cargo captured at the expense of other regional ports. Proportionality shifts result from exogenous factors which cannot be controlled by individual ports. Hence, increased regional demand for a specific

commodity will cause a positive proportionality shift. However, differential shifts are endogenous and can be influenced by such factors as port planning, port investment, and marketing schemes (Marti, 1982).

Six definitive scenarios of a port's "commodity dynamics" can be characterized by examining the signs of the two shifts. When summing the two shifts, two subsets of a "total shift" are achieved. The first includes shifts which are positive, while the second includes total shifts which are negative. In the case of positive total shifts, the three possibilities are:

(i) positive proportionality shift and positive differential shift;

(ii) positive proportionality shift and negative differential shift; and

(iii) negative proportionality shift and positive differential shift.

Under situation (i), optimal conditions are present and the port should seek long-term solutions to ensure continued growth. Situation (ii), much like the previous situation, indicates healthy regional growth; however, the port is losing cargo (passengers) to other ports and must initiate programs to rectify this dilemma. Finally, situation (iii) describes regional decline; however, in the short run, the port might desire to make investments to assure a continued positive differential shift (Marti, 1982).

When negative total shifts occur, they are caused by three possibilities:

(i) negative proportionality shift and negative differential shift;

(ii) negative proportionality shift and positive differential shift; and

(iii) positive proportionality shift and negative differential shift.

Scenario (i) demonstrates the worst possible condition, one in which regional demand is declining and the port is not attracting cargo (passengers) as well as other ports. In this case, the port should divest itself from this cargo and utilize investments for cargo which has a positive total shift. The second case (ii), much like the first, indicates declining regional demand; however, a positive differential shift allows for short-term investments and policies. Finally, the last case, a positive proportionality shift should encourage the port to turn around a declining differential shift by an effective policy which tries to secure such cargo (passengers) (Marti, 1982).

All the "shifts" in the shift/share analysis are zero sums. That is, the sums of the proportionality, differential and total shifts always equal to zero, thus, each port's gain is balanced by another's loss. Accordingly, the shift/share technique allows for comparative port analysis, rather than the study of ports in isolation (Marti, 1982). The

shift/share technique is not a short-cut towards port investment or marketing strategies. It is designed to be nothing more than a simple tool that can provide the port manager with a "first look" of the competitive environment facing the port. Two examples illustrating the basic nature of this technique are: first, the dual possibilities of a negative proportionality shift; shift/share assumes that a negative proportionality shift describes a commodity that is either growing slower than the regional average, or that is actually declining. Second, is the "blanket" recommendation of divestiture of such commodities. While eliminating traffic in a commodity with declining regional demand could be a sound strategy, divestiture in the traffic of commodities growing slower than the regional average might not be a desirable or feasible solution. A "high value" commodity could still generate significant port revenues even though it is growing slower than the regional average. Divestiture of traffic in commodities with slower than regional average growth might not be an alternative, because the superstructure in place can not be reconfigured to handle another commodity or, as in the case of the land-lord port, lease agreements might prevent the port from affecting change.

This study uses the shift/share technique to analyze the Cargo and Cruise Passenger Markets at Port Canaveral. Shift/share analysis has previously been used as an analytical tool to measure cargo activity. One of the primary goals of

this research paper is to adapt the shift/share technique to the cruise industry, and use it, for the first time, to describe changes in passenger flow caused by competition between ports in the study region. The methodology followed in the analysis of both the Cargo and Cruise Markets involved two major steps: first, was the preparation of the data which was gathered from port authorities, government and civilian publications. Second, was the computation of respective shifts using the Statistical Analysis System (SAS) computer program. In the cargo analysis data were collapsed from four-digit to two-digit SICs (Standard Industrial Codes) groups for ease of handling. Table 5 shows the collated commodity groups. The analysis of both the Cargo and Cruise Markets was accomplished in two parts. First, the regional commerce was examined to show the level of competition among the ports within the region. Second, specific SICs for cargo, and day markets for cruise traffic were surveyed at Port Canaveral to show the competitive situation at the Port.

Shift/Share Analysis of The Cargo Market

This study measures the change in international commerce within the competitive region of Port Canaveral, Florida, over a ten year period: 1980 to 1989.

The competitive region of Port Canaveral is:

For imports (Perez, 1993):

1) Pascagoula;
2) Gulfport, in Mississippi;
3) Port of Wilmington, in Delaware;
4) Port of Jacksonville;
5) Port Everglades;
6) Port Canaveral; and
7) Tampa;

For exports (Perez, 1993):

1) Port of Jacksonville;
2) Port Everglades;
3) Port Canaveral; and
4) Tampa;

TABLE 5

COMMODITY CLASSIFICATION GROUPS

Group Code	Item Name
01	Farm Products
08	Forest Products
09	Fresh Fish & Other Marine Products
10	Metallic Ores
11	Coal
13	Crude Petroleum
14	Nonmetallic Minerals, except Fuels
19	Ordnance and Accessories
20	Food and Kindred Products
21	Tobacco Products
22	Basic Textiles
23	Apparel & Other Finished Textile Products including Knit
24	Lumber & Wood Products except Furniture
25	Furniture and Fixtures
26	Pulp, Paper and Allied Products
27	Printed Matter
28	Chemicals and Allied Products
29	Petroleum and Coal Products
30	Rubber and Misc. Plastic Products
31	Leather and Leather Products
32	Stone, Clay, Glass & Concrete Products
33	Primary Metal Products
34	Fabricated Metal Products, except Ordnance, Machinery & Transportation Equipment
35	Machinery, except Electrical
36	Electrical Machinery, Equipment & Supplies
37	Transportation Equipment
38	Instruments, Photographic & Optical Goods, Watches & Clocks
39	Misc. Products of Manufacturing
40	Waste and Scrap Minerals
41	Special Items
99	Defense Cargo

The regional share component may be represented as:

$$REGSHR = TPRT80\ (TALL89/TALL80) - TPRT80$$

Where:

1) REGSHR is the regional share;
2) TPRT80 is the total commerce at the port in 1980; and
3) TALL80 or TALL89 is the sum of all commerce at all study area ports in a respective year.

The two remaining steps are designed to measure the so-called "shift" of commodities into or out of a port. The proportionality shift is an indicator of the types of commerce found in the region, whether they are predominantly fast-or slow-growing, or actually declining on a regional scale. It is computed as follows:

$$PROSFT = COMM80\ \ [(TCMM89/TCMM80 - (TALL89/TALL80)]$$

Where:

1) PROSFT is the proportionality shift;
2) COMM80 is the commerce in a particular commodity at the port in 1980;

3) TCMM80 or TCMM89 is the total regional commerce in a particular commodity in a respective year; and
4) TALL80 or TALL89 is the sum of all commerce in all study area ports in a respective year.

Finally there is the differential shift component, which is a measure of commodities in the port which grew faster or slower than they did regionally; and is represented as:

$$DIFSFT = COMM89 - COMM80 \quad (TCOMM89/TCMM80)$$

Where:

1) DIFSFT is the differential shift;
2) COMM89 or COMM80 is the commerce in a particular commodity at an individual port in a respective year; and
3) TCMM89 or TCMM80 is the total regional commerce in a particular commodity.

The differential shift in effect, then, is the difference between observed and expected shifts. This shift will have a positive value if the port's traffic grew faster than its commodity composition indicated it should have and negative if it grew slower.

Table 6 displays the tonnage information, as well as the results of the shift/share application for all seven ports in the import study area. The Mississippi Port of Pascagoula exceeded all other ports in import tonnage for 1980 and 1989. In 1980, imports at Pascagoula accounted for 45 percent of the entire study region's import commerce. By 1989, Pascagoula's share of the region's import commerce had increased to 48 percent. A more close scrutiny of Pascagoula's import tonnage, discloses that the Port is very specialized. SIC 13 (crude petroleum) for 1980 and 1989 accounted for 99 percent and 96 percent respectively of the import tonnage at the Port. The Regional traffic grew 57 percent during the study period. Three of the seven ports in the region, Florida's Port Everglades (117 percent), Delaware's Wilmington (86 percent), and Mississippi's Pascagoula (67 percent), grew at a rate faster than the region's. Only Mississippi's Port of Gulfport (23 percent), experienced a decline. SIC 13 (crude petroleum) and SIC 29 (petroleum and coal products) accounted for 50 percent of the import region's growth. Table 6 also displays the shift components of the competitive region. Since the region grew, all ports in the region recorded positive gains in their regional shares.

Proportionality shifts were positive for five of the seven ports-- Florida's Tampa, Port Canaveral and Port Everglades, and Mississippi's Gulfport and Pascagoula. Positive proportionality shifts indicate that the mixture of

TABLE 6

REGIONAL IMPORT COMMERCE 1980-1989

PORT	IMP 1980	IMP 1989	REGSHR	PROSFT	DIFSFT	TOTSFT
CN	915,916	1,019,364	524,456	73,835	-494,842	-421,008
GL	726,848	570,322	416,194	269,339	-842,059	-572,720
PS	9,644,487	16,091,204	5,522,460	272,205	652,052	924,257
WL	1,175,350	2,190,747	673,008	-4,992	347,379	342,389
EV	1,808,059	3,917,978	1,035,299	92,420	982,201	1,074,620
TM	4,228,998	5,655,572	2,421,537	86,395	-1,081,362	-994,963
JX	3,039,929	4,428,026	1,740,699	-789,200	436,627	-352,572
TL	21,539,587	33,873,213	12,333,623	2*	-4*	3*

* - Prosft, Disft and Totsft are "zero sum" columns. Rounding errors are reflected in the greater than zero sums totals.

Abbreviations used: CN= Port Canaveral, GL= Gulfport, PS= Pascagoula, WL= Wilmington, EV= Port Everglades, TM= Tampa, JX= Jacksonville.

Source: U.S. Army Corps of Engineers (1980-1989a); and Author's Calculations.

commodities at the port has grown at rates faster than the average of all commodities in the region. Marti (1991b) states that these commodities relate to "Glamour Cargoes". The ports of Jacksonville and Wilmington had negative proportionality shifts, indicative of a commodity admixture at both ports that was growing at a slower rate than the regional average or that was actually declining.

Marti (1991b) regards the differential shift as the crucial component that measures port competition. It may be viewed as an indicator of "cargo capture"--a situation where one port gains cargo at the expense of the others. As such, it truly examines the dynamic, competitive relationships within a port system. Four ports recorded positive differential shifts--the Florida ports of Jacksonville and Port Everglades, Delaware's Port of Wilmington, and Mississippi's Port of Pascagoula. Port Everglades (982,201) and Pascagoula (652,052) had the largest positive differential shifts in the region. In both cases, the differential shift component had the strongest influence on the total shift, indicating that both Port Everglades and Pascagoula were highly efficient in capturing a large share of the region's import commerce increase. However, due to the different composition of both port's commodity commerce, a comparison of these two ports is limited to the level of diversity of each port's cargo admixture.

At the Port of Pascagoula, one commodity, crude petroleum, accounted for over 95 percent of the port's import tonnage increase. On the other hand, Port Everglades, which had the largest import cargo capture in the region, was significantly more diverse. Fifteen SICs showed positive differential shifts of over two thousand tons. Of these, the largest, SIC 29 (petroleum and coal products), accounted for only 41 percent of the commerce increased at the port. The inference that can be made from the above comparison is that commodity diversity, as shown by Port Everglades, places a port in a better position to weather a loss of commerce in any single commodity of its cargo admixture.

The Port of Tampa experienced the largest negative total shift (-994,963) influenced by an extremely large differential shift of (-1,081,362). This differential shift indicates a large volume of import cargo lost to all other ports in the region, excepting the Port of Gulfport. Of interesting note is a survey of SIC 11 (coal) at the ports of Tampa and Jacksonville. Tampa experienced a negative differential shift of almost 780,000 tons in SIC 11, while Jacksonville showed a positive differential shift in SIC 11 of nearly the same amount. Since no other port in the region showed any significant tonnage capture in SIC 11, the inference is that Tampa is losing most of her SIC 11 (coal) import cargo to the Port of Jacksonville. Port Canaveral's performance within the regional competitive environment described in the above

paragraph is best quantified as modest. As shown by Table 6, Port Canaveral recorded the second smallest import tonnage in the competitive region. It has the smallest positive growth (11 percent). Its regional shift components shows that its import cargo admixture had a relatively small positive proportionality shift (73,835) and the differential shift (-494,842) had the most influence affecting the negative total shift (421,008). The strategy indicated by the shift/share analysis for Port Canaveral is one of aggressive marketing and capital investment efforts to reverse the negative differential shift and to capture available cargo commerce.

Previously, a "macro" or over-all regional overview of the competitive import traffic environment was provided. The following analysis provides a "micro" or local study of the import traffic at Port Canaveral. Table 7 shows the shift/share computed data.

Seven commodities showed positive total shifts of over one thousand tons. SIC 24 (lumber and wood products except furniture) had the largest positive total shift (89,680). SIC 32 (stone, clay, glass, and concrete products) had the second largest positive total shift (38,463), followed by SIC 14 (non-metallic minerals except fuels) (26,936), SIC 01 (farm products) (22,370), SIC 40 (waste and scrap materials) (5,591), SIC 09 (fresh fish and other marine products) (2,855), and SIC 28 (chemicals and allied products) (1,900). In six of the seven SICs, the differential shift had the

TABLE 7

SHIFT/SHARE ANALYSIS OF PORT CANAVERAL IMPORTS 1980-1989

SIC	Commodity Group	1980	1989	Prosft	Difst	Totsft
01-	Farm Product	0	22,370	0	22,370	22,370
09-	Fresh Fish & other Marine Products	122	3,047	631	12,224	2,855
14-	Non Metallic Minerals Except Fuels	6,726	68,965	963	25,973	26,936
20-	Food & Kindred Pro--ducts	30,478	48,534	13,861	-13,257	604
22-	Basic Textiles	0	10	0	10	10
24-	Lumber & Wood Pro--ducts Except. Fur--niture	0	89,680	0	89,680	89,680
26-	Pulp, Paper & Allied Products	60,768	78,062	-3,279	-14,223	-17,502
28-	Chemicals & Allied Products	130	2,104	-66	1,965	1,900
29-	Petroleum & Coal Products	461,284	134,161	-226,417	-364,838	-591,255
30-	Rubber & Misc. Plastic Products	0	148	0	148	148
32-	Stone, Clay, Glass & Concrete Products	334,168	563,977	289,334	-250,870	38,463
34-	Fabricated Metal Products, Except. Ordnance, Mach., Equipment & Supplies	2,240	2,702	-1,192	372	-821
35-	Machinery Except. Electrical	0	13	0	13	13
40-	Waste & Scrap Metals	0	5,591	0	5,591	5,591

Note: Sic's with zero tonnage are omitted.

Source: U.S. Army Corps of Engineers (1980-1989a); and Author's calculations.

greatest influence on the total shift, indicating that cargoes in those commodities were being captured from other ports. SIC 14 (non-metallic minerals except fuels) and SIC 09 (fresh fish and other marine products) recorded a positive proportionality shift in addition to the positive differential shift. These two commodities presented the optimum situation, and Port Canaveral should continue to try to attract such cargoes. Three commodities, SIC 01 (farm products), SIC 24 (lumber and wood except furniture), and SIC 40 (waste and scrap materials) had no commerce in the initial year, thus, the shift/share technique cannot compute a proportionality shift for these SICs and therefore, these SICs cannot be identified as growing faster or slower than the regional average. However, an inspection of the raw data shows that all three commodities showed over 100 percent commerce growth at the regional level, during the period of this study. Port Canaveral should assume a long-term situation for these SICs and continue to try to attract such cargoes. SIC 28 (chemicals and allied products) had a positive differential shift (1,965) and a negative proportionality shift (-66), showing that Port Canaveral is capturing cargo in this commodity. However, because of its negative proportionality shift, the commodity is growing slower than the regional average or its actually declining. The standard shift/share technique recommendation in this case would be for a short-term strategy, because it is a declining regional cargo, and

over the long-term, the decline would not allow for cargo capture. Nevertheless, because the negative proportionality shift is so weak (-66), some long-term effort might be advised in this case. The proportionality shift (289,334) had the greater influence in the positive total shift of SIC 32 (stone, clay, glass, and concrete products). Because of such strong positive proportionality shifts and strong negative differential shift (-250,870), an ideal opportunity for long-term investment exists to reverse some of this lost cargo back to the port. SIC (petroleum and coal products), and SIC 26 (pulp, paper, and allied products) showed negative total shifts, caused by negative proportionality and differential shifts. The recommendation here is for Port Canaveral to divest itself of these cargoes, since they were growing at a slower than the regional average or might actually be declining, and since some other ports were able to lure cargo in these SICs away from the Port.

Port Canaveral exported considerably less than it imported during the study period. Table 8 shows that Canaveral's exports grew over 200 percent, compared to 11 percent for imports between 1980 and 1989. The region's export commerce shrunk by almost three million tons in the ten year period. Port Everglades, with growth rates of 278 percent, and Port Canaveral, with 201 percent, experienced gains. The ports of Tampa and Jacksonville experienced loses. However, the declining magnitude of the regional export

TABLE 8

REGIONAL EXPORT COMMERCE 1980-1989

PORT	Exp 1980	Exp 1989	Regshr	Prosft	Difsft	Totsft
CAN	94,868	285,973	-12,293	184,744	18,654	203,398
EVE	241,112	911,760	-31,241	354,570	347,322	701,889
TAM	18,467,775	15,461,397	-2,393,024	-1,181,888	568,529	-613,354
JAX	3,137,260	2,438,807	-406,519	642,571	-934,507	-291,934
TOT	21,941,015	19,097,937	-2,843,077	-3	-2	-1

Source: U.S. Army Corps of Engineers (1980-1989a); and Author's calculations.

commerce loss caused all ports to show a negative regional share component. Regional losses in SIC 14 (non-metallic minerals except fuels) and SIC 20 (food and kindred products) accounted for the regional export shrinkage. Gains by other competing ports accounted for less than ten percent of the cargo loss in the two SICs, thus, identifying exogenous factors, such as decreased international demand, as the causative reason for the regional export commerce loss.

Table 9 shows the raw data and shift/share computations of export commerce at Port Canaveral during the study period. Three SICs had the largest positive total shifts. Of these SIC 40 (waste and scrap materials) had the largest total (161,718) and proportionality (82,321) shifts. This is an optimal situation that calls for long-term investment to insure continued growth in these cargoes. SIC 01 (farm products) recorded a negative differential shift (-90,985). However, a positive proportionality shift (102,521) was the greater influence in a positive total shift, indicative that a long-term investment strategy is called for to reverse cargo losses to cargo capture. SIC 09 (fresh fish and other marine products) had a negative total shift (-673), caused by a negative differential shift (-838). This is also a long-term situation that could be reversed. Only SIC 20 (food and kindred products) showed a negative proportionality shift. The highly positive differential shift in this commodity calls for short-term investments so that the port can continue to

TABLE 9

SHIFT/SHARE ANALYSIS OF EXPORTS AT PORT CANAVERAL, FLORIDA

SIC	Commodity	Exp 1980	Exp 1989	Prosft	Difsft	Totsft
01	Farm products	25,972	344,143	102,521	-90,985	11,536
08	Forest products	0	51	0	51	51
09	Fresh fish & other marine products	848	65	165	-838	-673
10	Metallic ores	0	256	0	256	256
11	Coal	0	536	0	536	536
14	Nonmetallic minerals except fuels	0	502	0	502	502
20	Food & kindred products	1,193	12,921	-799	12,682	11,883
21	Tobacco products	0	45	0	45	45
22	Basic textiles	0	178	0	178	178
23	Apparel & other finished textiles prod. incl. knit	0	21	0	21	21
24	Lumber & wood prod.	0	445	0	455	455
25	Furniture & fixtures	0	2	0	2	2
26	Pulp, paper & allied prod.	0	6,003	0	6,003	6,003
27	Printed matter	0	1	0	1	1
28	Chemicals & allied prod.	0	6,105	0	6,015	6,105
29	Petroleum & coal prod.	0	89	0	89	89
30	Rubber & Misc. prod.	0	59	0	59	59
31	Leather & Leather prod.	0	135	0	135	135
32	Stone, clay, glass & concrete	0	138	0	138	138

TABLE 9 (Continued)

Shift/Share Analysis of Exports at Port Canaveral, Florida

33 Primary metal prod.	0	1,466	0	1,466	1,466
34 Fabricated metal prod., except. ordnance, machinery & transportation equipment	0	226	0	226	226
35 Machinery except. electrical	0	1,084	0	1,084	1,084
36 Electrical machinery, equipment & supplies	0	252	0	252	252
37 Transportation equipment	0	1,204	0	1,204	1,204
38 Instruments, photographic & optical goods, watches & clocks	0	6	0	6	6
39 Misc. prod. of manuf.	0	7	0	7	7
40 Waste & scrap materials	6,855	219,910	82,321	79,397	161,718
41 Special items	0	113	0	113	113

Source: U.S. Army Corps of Engineers (1980-1989a); and Author's calculations.

capture cargoes in a regionally slow-growing or declining commodity. A survey of commodities shown in Table 9 shows an important factor. Twenty-four of the twenty-eight SICs, that comprised Port Canaveral's export commerce in 1989, were not part of the Port's 1980 export tonnage. This increasing commodity diversification is indicative of the aggressive strategies by the Canaveral Port Authority towards development of its cargo markets. (See Figure 16 for a graphical representation of commodity diversification).

Shift/Share Analysis of the Cruise Market

The Cruise Revolution is slightly over twenty years old. Santangelo (1984) describes the typical cruise passenger of former years as being over 50 and wealthy, with the time and money to spare. Today's cruise passengers span all ages and walks of life...around 50 percent of today's cruise passengers earn $25,000 or less. "One of the most attractive features of cruising is that it is an "all inclusive" package; there are no "hidden" costs for meals, transportation, and entertainment" (Santangelo, 1984) Kloster (1976) offers a very perceptive, and even though stated almost twenty years ago, still a very valid reason of why people go cruising. He affirms that the main objective behind vacation travel may be summarized into "sunlust" and "wanderlust". While the human desire to experience new places and cultures (wanderlust) has

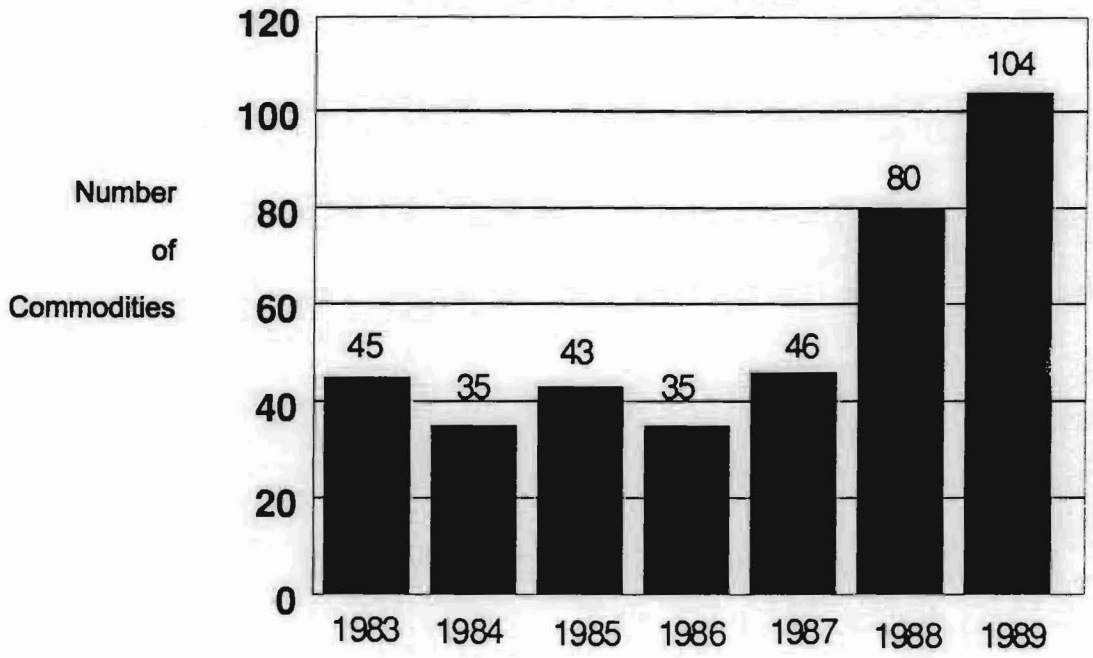

FIGURE 16.

COMMODITY DIVERSIFICATION OF CARGO FLOW

Source: U.S. Army Corps of Engineers (1980-1989a).

always been an important reason for traveling, "sunlust" has become more and more important in the vacation market, and is the main factor behind the development of large-scale mass tourism. Many vacation alternatives offer a rather similar kind of experience and relaxation, and for this reason hundreds of different vacation possibilities are more or less substitutes/competitors to each other. In general, a cruise vacation appeals: a) to the desire to see new places and meet new people; b) to the physical need to rest, get a tan, breath clean air, swim, eat and drink; and c) to the wish to escape from work, family, neighbors, etc.

Passenger carriage, by water in the past was solely for the purpose of transportation. That is, people embarked on a ship in order to get from point "a" to point "b". With the introduction of the jet passenger aircraft in the early 1960s, ocean transportation rapidly disappeared. In the later part of the decade of the 1960s, transport was replaced by cruising for pleasure. Initially, this conversion required nothing more than changing the itinerary of the passenger liner, and sending it in search of "sun and fun". Soon it became evident that these liners were not suitable for cruising. They had been built for speed, and sailing the frigid waters of higher latitudes. As a cruise ship, the liner was expensive to operate, did not have the ventilation equipment to fight the heat of the tropical latitudes, and they were usually of too deep a draft for the relatively shallow waters of the cruising

grounds. In the 1970s, the first generation of purpose-built cruise ships appeared and the Cruise Revolution began.

The Caribbean area is the most popular of all the cruising grounds of the world (Mescon and Vozikis, 1985). This research paper undertakes to study U.S. cruise ports that service the Caribbean by utilizing the Shift/Share technique as the statistical vehicle by which to describe changes in passenger flows through regional ports. The study period covers the years between 1983 to 1992. Shift/share analysis will show the effects of competition between the ports in absolute numbers. The variable used in this study is the number of passengers crossing through the port, either outbound or inbound. A port earns revenues by charging a tariff or "head tax" every time a passenger crosses the threshold of the port. For example, a passenger taking a cruise will pay this "head tax" twice; when he embarks at the beginning of the cruise and again when he debarks at the cruise's completion. This study uses this passenger flow through the port as the value to be analyzed. The dollar amount of revenue a port earns is determined by multiplying the number of PAX-PORT-DAYS by the port's tariff or "head tax".

Shift/share analysis has traditionally been a tool used by economists to describe change. This paper adapts this technique to the cruise business. Three distinct steps are necessary in order to apply the technique to an analysis of

passenger flows. The first involves the computation of the regional share component. This "share" designates the amount of total growth a port is expected to experience between two points in time. In this study, the "cruise day market" is partitioned according to cruise duration, each grouping constituting a specific market. It is based on the regional average growth rate of the total market, and assumes that the existing "day market" admixture will remain constant through time. The region share component, for each "day market", may be represented as:

$$REGSHR = PAX83\ (TALL92/TALL83) - PAX83$$

Where:

1) REGSHR is the regional share;
2) PAX83 or PAX92 is the flow of passengers in a particular day market at a particular port in a respective year; and
3) TALL83 or TALL92 is the total regional passenger flows in a particular day market.

The remaining steps are designed to measure the so-called "shift" of passenger flows into or out of a port. The proportionality shift is an indicator of the types of

passenger flows through a particular "day market" found in the region, whether they are predominantly fast-or slow-growing, or actually declining on a regional scale. It is computed as follows:

PROSFT - PAX83 [(TPAX92/TPAX83) - (TALL92/TALL83)]

Where:

1) PROSFT is the proportionality shift;
2) PAX83 or PAX92 is the flow of passengers in a particular day market at an individual port in a respective year;
3) TPAX83 or TPAX92 is the total regional passenger flow in a particular day market; and
4) TALL83 or TALL92 is the total regional passenger flows in a particular day market.

Thus, this share figure is (modified) through consideration of the relative growth rates of the particular "day markets" that the port is participating in. This shift will have a positive value if the port has a higher than average proportion of its passenger flow in "day markets" during the time period observed. Conversely, the value will

be negative in the case of a port specializing in regionally slow-growing or declining "day markets".

Finally, there is the differential shift component, which is a measure of "day markets" in the port which grew as a result of passenger capture from other ports, and it is represented as:

$$DIFSFT = PAX92 - PAX83 \quad (TPAX92/TPAX83)$$

Where:

1) DIFSFT is the differential shift;
2) PAX92 & PAX83 is the flow of passengers in a particular day market at an individual port in a respective year; and
3) TPAX92 or TPAX83 is the total regional passenger flows in a particular day market.

The differential shift in effect, then, is the difference between observed and expected shifts. This shift will have a positive value if the port's passenger traffic grew faster than its "day market" composition indicated it should have, and negative if it grew slower. The shift/share technique allows for comparative port analysis rather than the study of ports in isolation. Its advantage over many other methods,

which may be used to measure given aspects of a port's traffic, is that the results are in real numbers (PAX-PORT-DAYS). Actual figures may often prove to be more comprehensible and useful to port decision-makers than ratio values or index numbers. For instance, positive proportionality shifts indicate those "day markets" growing at a faster rate than the regional average, while positive differential shifts disclose passenger flows captured at the expense of the other ports.

The methodology followed in the subsequent analyses involve two major steps: first, the preparation of the data; and second, the computation of the respective shifts. The computer program, Statistical Analysis System (SAS) was used for computation of collected data. The primary sources of the data were Kidd's (1982, 1983a, 1983b, 1991, 1992a, and 1992b) twice-yearly articles in the Sunday Travel Edition on cruise ships and their itineraries that appeared in The New York Times. Both Lewis (1986) and Marti (1990a and 1990b), make reference to the difficulties encountered in finding published data on the cruise industry. Lewis (1986) affirms the view that published studies comparing elements of the cruise industry are almost non-existent. Marti (1990b) attributes this scarcity of data to the proprietary nature of industry-wide information. The author, fared no better in finding direct-source data to perform comparative research. While port authorities were generally willing to provide the

aggregate number of passengers flowing through the port, on an annual or monthly basis, with the exception of one port, they could not breakdown these figures into the "day market" variables that are essential to perform a shift/share analysis. This study assumes that the cruise itineraries published in The New York Times sailed as scheduled, and at "full capacity".

The region under study includes the ports of:

1) Miami;
2) Port Everglades, in Ft. Lauderdale;
3) Key West;
4) Tampa;
5) New Orleans;
6) San Juan;
7) Port Canaveral; and
8) West Palm Beach, in Riviera Beach.

The day markets analyzed are:

1) one-day;
2) two-day;
3) three-day;
4) four-day;
5) five- and six-day;
6) seven-day;

7) eight to thirteen-day;

8) fourteen-day;

9) fifteen day and greater; and

10) ports of call.

An overview of the results of the shift/share analysis is shown in Table 10. The number of Passenger-Port-Days increased from 3,597,549 to 9,480,602, for a 164 percent regional growth rate. The Port of Miami, which is known as "the cruising capitol of the world", has a negative differential shift (3,156,486), and the largest negative total shift (2,265,224) of all ports. While Miami retains its title, the negative differential shift indicates that Miami is losing passengers to other ports in the region. Port Canaveral shows the second largest positive total shift (539,988), with a differential shift (358,854), which is indicative of healthy growth and the capture of passengers from other ports. Inferences that can be made from the regional overview provided by Table 10 are that the Port of Miami needs to intensify efforts to attract more cruise ships to the port and make capital investments available to expand its facilities to accommodate new cruise ships. A quick glance at Table 10 revels that the Port of Miami is the mature port in the region; in 1983 Miami handled close to 61 percent of all passengers in the region, over three times as much as San Juan, and over ten times the traffic of Port Everglades. By 1992, Miami's share had dropped to 37 percent of the

TABLE 10
PASSENGER TRAFFIC AT U.S. PORTS ENGAGED IN CARIBBEAN SERVICE, 1983 AND 1992

PORT	PAX 1983	PAX 1992	Regshr	Prosft	Difsft	Totsft
MIA	2,181,946	3,484,846	3,568,124	891,262	-3,156,486	-2,265,224
SJN	644,267	1,749,872	1,053,566	-575,190	627,230	52,040
CAN	321,655	1,387,645	526,001	154,134	385,854	539,988
EVE	200,270	2,106,747	327,501	-250,583	1,829,561	1,578,978
WPB	300	270,672	491	-554	270,436	269,882
NOR	40,177	91,108	65,701	-37,176	22,407	-14,769
TAM	67,378	173,118	110,183	-28,592	24,149	-4,443
KWT	141,556	216,594	231,486	-153,298	-3,150	-156,448
TOTAL	3,597,549	9,480,602	5,883,053	3	1	4

Abbreviations: MIA = Miami; SJN = San Juan; CAN = Port Canaveral; EVE = Port Everglades; WPB = West Palm Beach; NOR = New Orleans; TAM = Tampa; KWT = Key West.

Source: Kidd (1982), (1983a & b), (1991), and (1992a & b); and Author's calculations.

regional passenger traffic. Table 11 compares port growth with regional growth; the port of Miami grew at less than half the rate of the region. Port Everglades (952 percent) and West Palm Beach (902 percent) had the largest growth rates in the region. Port Canaveral had the third largest, 331 percent compared with 164 percent for the region, while Miami's growth rate stood at only 60 percent. Besides Port Everglades, West Palm Beach, Port Canaveral, and San Juan grew at faster rates than regional growth. By the end of 1992, Port Canaveral was the second largest "multi-day" cruise port in the region; the Port of Miami was first with 3,091,796, Port Canaveral was second with 1,386,320, followed by San Juan with 985,900 and Port Everglades with 705,005 PAX-PORT-DAYS. Additionally, by the end of 1992, Port Canaveral had taken the lead in the region, in the "three-and four-day" markets, with 1,386,320 PAX-PORT-DAYS, and Miami had dropped to second place with 1,266,304 PAX-PORT-DAYS in the same "day markets".

Recently enacted Federal legislation makes the validity of the "one-day market" analysis as a tool for long-term decision making, doubtful. The general effect of this legislation will be to force "foreign flagged" ships to leave the "one-day market". Since 100 percent of the U.S. and Caribbean "one-day market" traffic is carried by "foreign flagged" ships, and there are no U.S.-flag ships (above 1000 tons) operating on the Atlantic or Pacific Coasts of the U.S. (except for Hawaii), several questions arise. Can U.S.-flag

TABLE 11

GROWTH IN CRUISE PASSENGER BY U.S. PORTS

1983 AND 1992

PORT	PAX 1983	PAX 1992	Percent Growth
EVE	200,270	2,106,747	952
WPB	300	270,672	902
CAN	321,655	1,387,645	331
SJN	644,267	1,749,872	172
TAM	67,378	173,118	157
NOR	40,177	91,108	127
MIA	2,181,946	3,484,846	60
KWT	141,556	216,594	53
REGION	3,597,549	9,480,602	164

Source: Kidd (1982, 1983a, 1983b, 1991, 1992a, 1992b); and Author's calculation.

ships be cost effective operating in the "one-day market"? Will "foreign flag" operators abandon the "one-day market", or remain operating in the "one-day market" under the assumption that few, if any U.S.-flag ventures, will enter the market? It is the author's contention that regardless of the future outcome, uncertainty has been created by the enacted legislation, and the effect of this uncertainty prohibits long-term capital investment in this "day market". The effect of eliminating the "one-day market" from the shift/share analysis is negligible and does not alter any of the recommendations. However, it does affect the regional verses port growth comparisons as illustrated by Table 12.

Table 13 shows the results of the shift/share analysis at Port Canaveral. Canaveral had a negative differential and total shift, with a positive proportionality shift in the "one-day market". This is indicative of healthy regional growth in the "one-day market", but the negative differential shift shows that the Port is losing passengers in the "day market", to other ports in the region. The shift/share recommendation of this case is for long-term investment to reverse the negative differential shift. The primary passenger traffic of the Port is in the "three- and four-day markets". These markets account for 99.9 percent of all passenger traffic at Port Canaveral. The "two- and three-day markets" show zero for proportionality shift because traffic in these "day markets" did not exist during the initial year

TABLE 12

GROWTH IN CRUISE PASSENGERS BY U.S. PORTS 1983 AND 1992 WITHOUT ONE-DAY MARKET

PORT	PAX 1983	PAX 1992	Percent Growth
CAN	29,655	1,387,645	458
WPB	300	78,912	262
EVE	200,270	715,857	257
TAM	67,378	173,118	157
SJN	644,267	1,574,872	145
NOR	40,177	91,108	127
MIA	1,816,946	3,092,046	70
KWT	141,556	216,594	53
REGION	2,940,549	7,330,152	149

Source: Kidd (1982, 1983a, 1983b, 1991, 1992a and 1992b); and Author's calculations.

TABLE 13
SHIFT/SHARE ANALYSIS OF PORT CANAVERAL, FLORIDA CRUISE MARKET 1983 AND 1992

DAY MARKET	PAX 1983	PAX 1992	Regshr	Prosft	Difsft	Totsft
1	292,000	0	477,506	186,249	-955,756	-769,507
2	0	0	0	0	0	0
3	0	693,160	0	0	693,160	693,160
4	0	693,160	0	0	693,160	693,160
5 & 6	0	0	0	0	0	0
7	0	0	0	0	0	0
8 - 13	0	0	0	0	0	0
14	0	0	0	0	0	0
15	0	0	0	0	0	0
POC	29,655	1,325	48,495	-32,115	44,710	-76,825

Source: Kidd (1982, 1983a, 1983b, 1991, 1992a and 1992b); and Author's calculation.

of the study. However, a survey of the "day markets" in the region show that the "three- and four-day markets" are the fastest growth markets in the region. Port Canaveral has carved a niche in the passenger traffic in these markets, and should continue long-term investments to maintain its leadership position. The port of call "day market" shows a negative proportionality shift, indicative of a slower than the average regional growth for all "day markets" or actual decline. However, because of the positive differential shift, short-term investments in this "day market" could continue to generate revenues for the Port.

CHAPTER SIX

GENERAL CONCLUSIONS

This study set out to analyze the developmental efforts of the Port Canaveral, Florida, Port Authority. It did so by examining available historical published research into the dynamics of port development doctrines, with actions taken by the Port authority. Additionally, several statistical methods were used to quantify the results achieved by the actions of the Port Canaveral Port Authority. In order to maintain the research of modern port development, within the scope of this study, a medium sized port was required. Port Canaveral was chosen because of its relatively recent origin, its location in a fast-growing region, and significant growth in recent times.

The basic premise or hypothesis of this research was that port development at Port Canaveral was successful. A secondary hypothesis, postulated in this study, was that the success achieved by the Port, could be attributed to the management structure of the Port and the "broad-front" approach to port development undertaken by the Port Canaveral Port Authority. With little exception, post research results

supported the hypotheses.

The study began the analysis by addressing the issue of seaports and development. Some of the definitions of seaport functions found in published literature, were dated and narrow in scope, because they defined seaports only within the context of traditional water-related functions. Modern day seaports engage in numerous functions which Randal (1988) defines as "non-cargo port functions". These activities could include operations such as parks, trails, picnic grounds, and restaurants. Port Canaveral was recognized to be actively involved in developing these non-cargo functions. Activities on the coastal zone were deemed to be of vital importance to the United States; information provided by Culliton (1991) reported that almost one-half of the population of the United States lives in coastal areas. Port Canaveral's geographical location places it in the fastest growing region in the United States. Various articles attested to Port Canaveral's developmental success. Among them Hershman and Bittner's (1988) article, which calculated that operating revenues at the Port increased 640 percent between 1977 and 1985. Likewise, figures from the Canaveral Port Authority showed a 55 percent increase in cargo movement between 1982 and 1992. Other literature provided insights into the State of Florida's expansion of its seaborne commerce, due to the State's geographical proximity to trading partners (Marti, 1990b). World political events, such as the North American Free Trade

Agreement (NAFTA), have increased the potential for expansion of the international commerce--the trading block created by NAFTA includes over 360 million consumers and has a combined gross domestic product of six trillion dollars (Williams, 1994).

Port Canaveral's on-going multi-million dollar development, to expand its passenger and cargo capacity and its tremendous locational advantage because of its proximity to a region visited by over 43 million vacationers, was well within the concepts of site and situation. The issue of port control in the United States was discussed in articles by Hershman and Kory (1988), Fleming (1988), Goss (1990b), and the National Research Council (1976). The discussion centered on the arguments for and against a local or centralized port control policy. The prevailing findings were that, because of the constitutional framework of the Country and the free competitive environment of American commerce, a de-centralized policy fostering local control would best serve the operation of seaports in the United States. The organizational structure of the Canaveral Port Authority, as a quasi-public, landlord port, with independent powers, allows the Port Authority the autonomy to operate within the framework suggested by the port control discussion. The Canaveral Port Authority's operational success was evident by its ability to eliminate, in 1986, the ad-valorem tax it had been charging residents of its port districts. By 1992, six years after the

Port became self-sufficient, port operations were generating over five million dollars, revenue surplus to be used for future capital investment and debt retirement (Canaveral Port Authority, 1992).

The Canaveral Port Authority's approach to development was referred to as a "broad-front" approach, because development was pursued through a varied number of developmental strategies. A basic problem when planning for port development was identified by Willingale (1984), as being the time difference that exists between the providers and users of port facilities--the long-term planning and implementation required by improvements on port facilities was contrasted with the short-term nature of the highly volatile demand for port services. The Canaveral Port Authority was praised, by Hershamn and Bittner (1988), for its flexibility, responsiveness, and careful planning, while achieving a 640 percent increase in operating revenues.

The first element of the "broad-front" strategy examined, was that of site development. The Canaveral Port Authority's timely planning and permitting process allowed for the Port to be developed in step with increased demand for its services. Development highlights at the Port include, the West Turning Basin Project (dredged to 35 feet), construction of Cruise Terminal Number 5, construction of Cruise Terminal Number 10, and the mitigation Project in the Indian River/Banana River Lagoon. Seaport expansion, within existing

environmental regulations, was the second element of the developmental approach conducted by the Port Authority. The cumbersome and time consuming guidelines required by existing Federal and Local Government Legislation were identified. Two dredging projects were used as examples of successful and failed efforts of port development. The Oakland Harbor Dredging Project (Kagan, 1991) illustrated a poorly planned and executed project, while in contrast, the West Turning Basin Project, at Port Canaveral (Decker, 1989) exemplified success through a well planned and executed effort.

The other strategies for development within the "broad-front" approach of the Canaveral Port Authority were those of enhancement of public access and construction of public goods projects. Public parks, boat launching ramps, camping areas, athletic fields, bike paths, jogging trails, retail outlets, and restaurants are but a few projects developed to integrate the general public into the Port's activities. Use of most of these facilities is free of charge. Environmental enhancing projects include a recycling plant, a sand-transfer facility, berm revitalization, and sand replenishment of the foreshore.

Integral to the "broad-front" approach are the competitive strategies towards development of the cruise and cargo markets. The Canaveral Port Authority attracted cruise lines to develop a niche market in the cruise industry--the family vacation cruise segment. Nowhere was the success of the Canaveral Port Authority's efforts more evident than in

the development of its cruise passenger market. Starting multi-day cruises in 1984, by 1992, Port Canaveral had become the second largest multi-day cruise port in the world. Over the nine-year period the Port experienced a 535 percent increase of its cruising market (Agostinelli, 1993a). Cargo tonnage moving through the Port grew to over 3.2 million tons in FY 91, over a 56 percent increase from 1982 (Canaveral Port Authority, 1991).

The development of Foreign Trade Zone Number 136 represents the Canaveral Port Authority's effort to capitalize on the space and space related industries surrounding the Port facilities. Established in 1986, by 1992, the Foreign Trade Zone had six active sites, employing 211 personnel. In FY 92, products worth 923.2 million dollars were processed in the zone and zone exports accounted for 553.2 million.

The final chapters of this study were dedicated to quantifying the results of the Canaveral Port Authority's developmental efforts. The University of Central Florida (1989) conducted an economic impact assessment, using input/output computer models to determine the direct and indirect effects of Port Canaveral's operation on the local and regional economies. Results of this study estimated that port operations added $452 million in production, $145 million in wages, and 22,670 jobs to the Brevard County economy. When the indirect effects the Port had on the County economy were estimated, the result showed that the total effect (direct and

indirect) was $709 million in production, $225 million in wages and 31,900 jobs. Regionally, the total effect represented over $835 million in production, $263 million in wages, and 31,900 jobs (University of Central Florida, 1989). At the end of FY 92 the Canaveral Port Authority's stewardship of Port Canaveral showed that growth continued at the Port. Operating revenues reached $14.1 million, setting a new record, and generating a revenue surplus of $5.2 million. Operating in the black since 1986, the Port has been able to fund over $30 million in infrastructure and superstructure development.

The last analysis conducted by the research paper, was to employ the shift/share analysis technique, to evaluate the cargo and cruise passenger commerce at the Port and within its competitive region. The analysis of cargo commerce showed that positive growth was achieved in both the import and export commerce. The regional import traffic grew 57 percent during the study period. Port Canaveral's growth was a modest 11 percent, the second lowest positive growth in the region. The analysis of the export commerce showed that regionally total tonnage declined during the period of study. However, Port Canaveral's export tonnage increased by 200 percent over the same period. This section of the study has illustrated the use of the shift/share technique to evaluate the cargo market at the regional, and then at Port Canaveral's level. Imports and exports were analyzed within the context of the

competitive region. The analysis indicated that intense competition exists between ports in the region. The shift/share analysis supports the thesis of this research paper, by showing positive growth in tonnage of Port Canaveral's international commerce. Further proof that successful port development strategies were in place at Port Canaveral during the study period is provided by the fact that in the terminal year of the study, 30 out of 42 commodity groups of the Port's international commerce admixture were not part of its international commerce in the initial year.

The last section of the research study employed the shift/share technique to analyze the cruise passenger market. The number of passenger port days showed a 164 percent regional growth rate. The Port of Miami was shown by the shift/share technique to have a large negative differential shift that indicated that Miami was losing passenger traffic to other ports. Port Canaveral showed the second largest positive total shift with a large positive differential shift, which was indicative of healthy growth and the capture of passengers from other ports. Over-all Port Canaveral's cruise passenger commerce had grown 331 percent.

The shift/share analysis of the passenger cruise market at Port Canaveral supports the basic premise of this research paper; that successful developmental activity by the Canaveral Port Authority was present during the study period. Port Canaveral increased its passenger traffic through the Port by

over a million PAX-PORT-DAYS between 1983 and 1992, and in doing so, achieved second place in the multi-day itinerary markets and a position of leadership in the "three- and four-day" markets.

BIBLIOGRAPHY

Agostinelli, C. Canaveral Port Authority, Pers. Comm., February 5, 1993a.

Agostinelli, C. Canaveral Port Authority, Pers. Comm., February 19, 1993b.

Agostinelli, C. Canaveral Port Authority, Pers. Comm., March 10, 1993c.

Agostinelli, C. Canaveral Port Authority, Pers. Comm., April 25, 1994.

Bird, J.H. "Seaport Development: Some Questions of Scale," Seaport Systems and Spatial Change, 1984: 21-41.

Bird, J.H. "Seaports and Seaport Terminals," Seaports and Seaport Terminals. (London: Hutchinson & Co.), 1971.

Branch, A. E. Elements of Port Operation and Management, (London: Chapman and Hall), 1986.

Brookfield, H.C. "Boxes, Ports, and Places Without Ports," in Bird, J.H., Seaport Systems and Spatial Change, 1984: 61-79.

Canaveral Port Authority. Port Canaveral News, February 7, 1984a: 9.

Canaveral Port Authority. "We've Come A Long Way: Port Canaveral Then and Now," Directions. May/June, 1984b: 6-7.

Canaveral Port Authority. "Military Cargo On The Move. Local Scallops Industry No. 1," Canaveral Port Authority, September/October, 1984c: 5-6, 11.

Canaveral Port Authority. Fischer's: "Five Decades and Still Growing," Directions, November/December, 1984d: 4, 13.

Canaveral Port Authority. Port Canaveral Capsules, Directions, September/October, 1985: 4.

Canaveral Port Authority. Port Canaveral Capsules, Directions, May/June, 1986a: 4, 13.

Canaveral Port Authority. Port Canaveral News, January 29, 1986b: 15.

Canaveral Port Authority. "Canaveral Port Authority Annual Report," Canaveral Port Authority, September 30, 1991.

Canaveral Port Authority. "Annual Evaluation and Update of Port Canaveral's Comprehensive Plan for Fiscal Year 1992," Canaveral Port Authority, 1992a.

Canaveral Port Authority. "Annual Report Foreign Trade Zone #136, October 1, 1991 - September 30, 1992," Canaveral Port Authority, 1992b.

Canaveral Port Authority. "Handbook, Port Canaveral & Foreign Trade Zone #136," Canaveral Port Authority, 1993.

Canaveral Port Authority. "A Brief History of Port Canaveral," Information Brochure, Canaveral Port Authority, N.D.a.

Canaveral Port Authority. "Recreation Abounds at Port Canaveral," Information Brochure, Canaveral Port Authority, N.D.b.

Canaveral Port Authority. "Port Canaveral Overview," Information Brochure, Canaveral Port Authority, N.D.c.

Canaveral Port Authority. "Cruise Port of the 21st Century," Information Brochure, Canaveral Port Authority, N.D.d.

Canaveral Port Authority. "Foreign Trade Zone #136," Information Brochure, Canaveral Port Authority, N.D.e.

Cartaya, S.A. "Port Canaveral, A Development Success: Fact or Fiction?," Paper submitted for Marine Affairs Seminar (MAF-652), Marine Affairs Program, University of Rhode Island, Kingston, Rhode Island, February 15, 1993a. Unpublished.

Cartaya, S.A. "Will The Port of Miami Hold On? Analysis of the Competitive Aspects of U.S Caribbean Cruising Ports," Paper submitted for Marine Affairs course, "Port Planning and Policy" (MAF-564), Marine Affairs Program, University of Rhode Island, Kingston, Rhode Island, May 20, 1993b. Unpublished.

Chu, D.K.Y. and Chiu. T.N. "Laissez-Faireism in Port Development: The Case of Hong Kong," Seaport Systems and Spatial Change, 1984: 135-160.

Cocoa Tribune. "Talk of a Harbor at Canaveral Began Way Back in 1878," Cocoa Tribune, Cocoa Beach, Florida, November 3, 1953: 2.

Cruise Industry News Quarterly. Advertisement inside front cover, Cruise Industry News Quarterly, 1992.

Culliton, T. et.al. "Fifty Years of Population Change Along the Nation's Coasts: 1960-2010," National Oceanic and Atmospheric Administration, Rockville, Maryland, 1991.

Decker, D. "Canaveral Deepwater Port Development Balancing Benefits and Impacts," in Vol. 1, Coastal Zone '89, Proceedings of The Sixth Symposium on Coastal and Ocean Management, American Society of Civil Engineers, 1989: 153-162.

Fairplay, "Disney to Seek Contenders," Fairplay, Vol. 318, Issue: 5696, January 14, 1993: 24.

Fawcett, J.A. and Marcus, H.S. "Are Port Growth and Coastal Management Compatible?" Coastal Management, Vol. 19., 1991: 275-295.

Fleming, D.K. "The Port Community: Seaport Character and Public/Private Tensions," In Urban Ports and Harbor Management, Marc J. Hershman (ed.), New York: Taylor & Francis, 1988: 57-76.

Frey-Gaynor, L. "Port Canaveral: Port Poised for Future Growth With Ultra Modern Terminal," Cruise Industry News Quarterly, Winter, 1991/92: 5.

Frey-Gaynor, L., Lockett, D., and Mathisen, O. "Booming Cruise Business for U.S. Ports," Cruise Industry News Quarterly, Winter, 1992/93: 33-36.

Gillies, M. "Cause for Celebration?," Seatrade, March 16, 1986: 73-74.

Goss, R.O. "Economic Policies and Seaports: The Economic Functions of Seaports," Maritime Policy and Management, Vol. 17, No. 3, 1990a: 207-219.

Goss, R.O. "Economic Policies and Seaports: The Diversity of Port Policies," Maritime Policy and Management, Vol. 17, No. 3, 1990b: 221-234.

Goss, R.O. "Economic Policies and Seaports: Are Port Authorities Necessary?," Maritime Policy and Management, Vol. 17, No. 4, 1990c: 257-271.

Goss, R.O. "Economic Policies and Seaports: Strategies for Port Authorities," Maritime Policy and Management, Vol. 17, No. 4, 1990d: 273-287.

Hershman, M.J., et.al. Under New Management: Port Growth and Emerging Coastal Management Programs, (Seattle : University of Washington Press), 1978.

Hershman, M.J. and Kory, M. "Federal Port Policy: Retrenchment in the 1980's," in Hershman, M.J., Urban Ports and Harbor Management, 1988: 99-122.

Hoyle, B.S., and Hilling, D. "Spatial Approaches to Port Development," Seaport Systems and Spatial Change, 1984: 1-19.

Jones, P. "Report on Trip to Port Canaveral," Paper for Institute for Marine Studies, University of Washington. January 8, 1985, Unpublished.

Kagan, R.A. "The Dredging Dilemma: Economic Development and Environmental Protection in Oakland Harbor," Coastal Management, Vol. 19, 1991: 313-341.

Kalo, J.L. Coastal Ocean Law, (Place: The John Marshall Publishing Company), 1990.

Kelley, L. "Mitigation Banking: A Potential Tool for Port Planners," Thesis for Master of Arts in Marine Affairs, University of Rhode Island, Kingston, Rhode Island, 1992.

Kidd, V. "A full Log of Sailings," The New York Times, Sec. 10, Sunday, November 21, 1982: 21-32.

Kidd, V. "Chart of the Sailings," The New York Times, Sec. 10, Sunday, March 6, 1983a: 23-40.

Kidd, V. "A Directory of Sailings," The New York Times, Sec. 10, Sunday, November 13, 1983b: 27-39.

Kidd, V. "A Guide to Winter Ports of Call," The New York Times, Sec. 5, Sunday, October 13, 1991: 15-35.

Kidd, V. "A World Wide Directory of Sailings," The New York Times, Sec. 5, Sunday, February 2, 1992a: 14-39.

Kidd, V. "Setting Sail for the Season," The New York Times, Sec. 5, Sunday, October 11, 1992b: 15-33.

Kloster, K., Jr. "The Economics of the Cruise Market," Norwegian Shipping News, 1976: 6.

Lewis, J. "Cruising Industry in the USA," Travel & Tourism Analyst, August, 1986: 43-52.

Marti, B.E. "Shift-share Analysis and Port Geography: A New England Example," Maritime Policy and Management, Vol. 9, No. 4, 1982: 241-250.

Marti, B.E. "Handout on The Shift/Share Technique," hand out for course Port Operations and Policy (MAF 564), University of Rhode Island, Kingston, Rhode Island, 1989.

Marti, B.E. Telephone Conversation with J. Lewis in 1987, As quoted in, "Geography and the Cruise Ship Port Selection Process," Maritime Policy and Management, Vol. 17, No. 3, 1990a.

Marti, B.E. "Geography and the Cruise Ship Port Selection Process," Maritime Policy and Management, Vol. 17, No. 3,1990b: 157-164.

Marti, B.E. "Cruise Ship Market Segmentation: A "Non-Traditional" Port Case Study," Maritime Policy and Management, Vol. 18, No. 2, 1991a: 93-103.

Marti, B. E. "The Competitive Environment of Southeast Florida's Ports," The Florida Geographer, Vol. 25, 1991b: 20-40.

Marti, B.E. and Cartaya, S.A. "U.S. Port Competition in the Caribbean Cruise Trades," submitted for publication in, Maritime Policy and Management, 1993.

Masters, M.H. "Dredging Management: A Comparative Analysis of Mid-sized U.S. North Atlantic Ports," Thesis for Master of Arts in Marine Affairs, University of Rhode Island, Kingston, Rhode Island, 1988. Unpublished.

Mescon, T.S. and Vozikis, G.S. "The Economic Impact of Tourism at the Port of Miami," Annals of Tourism Research, Vol. 12, 1985: 515-528.

Moore, J. D. Gee & Jenson Engineers-Architects-Planners, Inc., Correspondence with L.M. Patella, Manager, Navigational Division, Port of Portland, Oregon, August 30, 1991.

National Research Council, (NRC), Port Development in the United States, (Washington D.C.: National Academy of Sciences), 1976.

Oram, R.B. Cargo Handling and the Modern Port, (London: Pergamon Pres, Ltd.), 1965.

Perez, J. Canaveral Port Authority, Pers. Comm., March 10, 1993.

Port Canaveral Journal. "Canaveral Port Authority," Port Canaveral Journal, May/June 1991a.

Port Canaveral Journal. "Canaveral Port Authority," Port Canaveral Journal, September/October 1991b.

Port Canaveral Journal. "Canaveral Port Authority," Port Canaveral Journal, November/December 1991c.

Port Canaveral Journal. "Canaveral Port Authority," Port Canaveral Journal, March/April 1992a.

Port Canaveral Journal. "Canaveral Port Authority,". Port Canaveral Journal, September/October 1992b.

Randal, J.E. "Fostering Economic Development: The Non Cargo Alternatives," in Hershman, M. Urban Ports and Harbor Management, 1988: 147-173.

Santangelo, R. "What's Happening in the Cruise Industry," Journal of Travel Research, Fall, 1984: 3-5.

Starr, J.T. "The Port of Baltimore: Off the Beaten Track?," Maritime Policy and Management, Vol. 18, No. 3, 1991: 171-181.

State of Florida Department of Environmental Regulations. "Permit Number 051433889: To Perform Continued Maintenance Dredging of the Non-Federally Portions of Port Canaveral," Florida Department of Environmental Regulation, May 5, 1989.

University of Central Florida. "The Impact of Port Canaveral on the Economies of Brevard County and the Central Florida Region," Impact, Prepared by the Department of Economics, College of Business Administration, University of Central Florida, April 1989.

U.S. Department of the Army, Corps of Engineers. "Waterborne Commerce of the United States," Army Corps of Engineers, 1980-1989a.

U.S. Department of the Army, Corps of Engineers. "Permit Number: 87IPI-21217, A Permit to Perform 10-year Periodic Dredging of No More Than 100,000 CY Per Year," June 14, 1989b.