

Department of Economics and Business

Thesis in Economic History

How US Airline Deregulation Triggered the Birth of Yield Management

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*“Ai miei genitori.
Ai miei nonni,
A mio cugino.
Ai miei amici di sempre”*

Introduction

This work aims to show how deregulation of the US airline industry in 1978 brought about the invention of a new discipline: yield management (sometimes in the literature a different word is used, revenue management: revenue management is a refinement of yield management, but the difference between the two—which often goes unnoticed—is immaterial for our purpose).

The American airline industry developed and flourished in two distinct periods: the first one dates from the late 1930s to the late 1970s. It was a period of economic regulation under the supervision of the CAB, an agency of the Federal Government of the United States. Competition within the industry was restricted, and managers couldn't make strategic decisions to optimize their business and increase profitability. After the Deregulation Act of 1978, the industry was characterized by a free-market approach.

Deregulation had many benefits: it increased competition, it increased efficiency, it produced lower air fares and a wider choice for consumers. Managers could come up with innovative business strategies and techniques aimed at increasing profits and strengthening their position within the market. Yield management, a dynamic pricing strategy, was born out of the airline industry as a mean to optimize load factors i.e., the percentage of available seating capacity that has been filled with passengers, and to maximize revenues.

Deregulation of the airline industry was highly influential; it served as a template for changes made in many other sectors of the American economy. Industries such as telecommunications, the energy sector, railroads and trucking were deregulated along similar lines.

Yield management has been extended to other industries having similar characteristics, such as the hospitality industry, restaurants, car rentals and rental properties.

In the first chapter of this thesis I will discuss the first period of development of the airline industry, by explaining how the regulatory approach evolved in the American economy and how it extended to the Airline Industry. I will also highlight the innovations in air travel that took place in the mid-20th century.

In the second chapter the philosophy behind deregulation will be discussed, and how the work of economists Milton Friedman and Alfred Kahn among others, influenced the movement up to 1978, when the Carter administration promulgated the Airline Deregulation Act.

In chapter 3 I deal with the effects of deregulation on the airline industry and the consequences for consumers and airlines.

In the last chapter I discuss the applications of yield management, the dynamic pricing strategy initially introduced by American Airlines that proved to be a great tool for maximizing revenues

(and other things being equal, profit). The application of yield management is discussed first with reference to the airline industry, and then the hospitality industry, which was the first, outside the airline field, to pick up the opportunity to use the new discipline.

CHAPTER 1

1.1 Regulation in the US economy

The 1970s can be considered a turning point in the history of American economic policy. It was during these years that economic policy shifted from an emphasis on federal regulation to a neoliberalism and laissez-faire inspired approach that was further expanded by the Reagan administration of the 1980s.

Historically the US economy has been subject to fluctuations in terms of degree of government regulation of economic matters, due to changing perceptions, ideas and economic conditions.

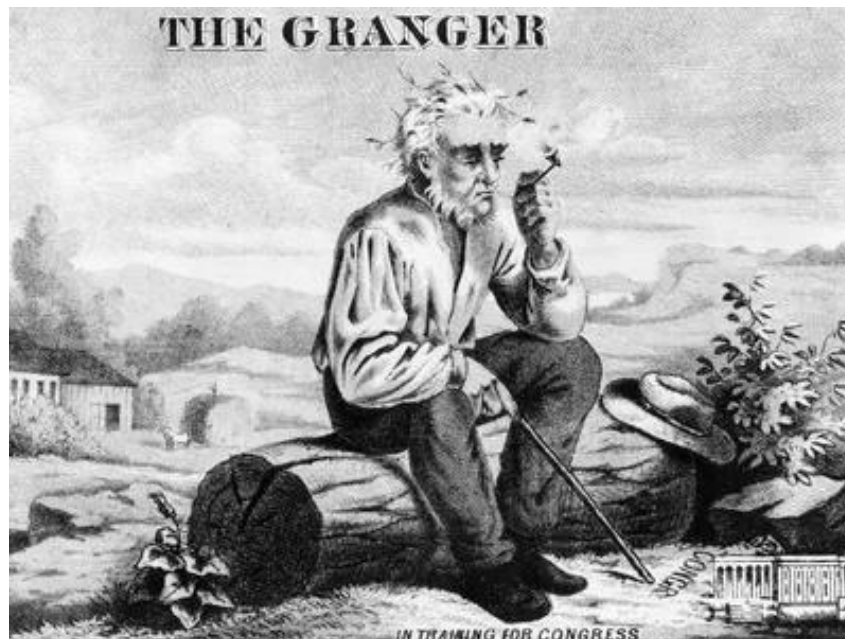
During the 1800s the government didn't play much of a role in the economy and the laissez-faire approach dominated economic policy. There was a legal framework that had to be followed, but firms had a considerable extent of freedom when dealing with business. Eventually monopolistic competition, whereby a few firms control a market, characterized important and profitable sectors of the economy such as railroads and the oil industry.

By the end of the 19th century the Granger movement had swept across the country. A group of farmers that produced grain united against the high monopolistic prices of railroad transportation, shaking the government's previous laissez-faire approach to economic matters. The farmers believed that the high fees charged for shipping of grain unfairly hindered their profits. The government intervened in order to mitigate the situation. As a response to the Granger movement, the first action of federal regulation was aimed at railroads.

The Interstate Commerce Act was promulgated in 1887.

The Act didn't require the government to set fixed rates but demanded that the prices set should be reasonable and just. The way to achieve this was by publicizing shipping rates and prohibiting any sort of price discrimination, for example setting different rates according to whether the trip was a short or long haul one. In order to ensure that these rules were being followed, the government created the Interstate Commerce Commission, a regulatory body whose goal was to monitor the railroad industry and make sure the regulations set by the Act were being complied with.

In the decades that followed the government used a similar regulatory model and set up regulatory bodies for a variety of different industries, including water, power, communications and the airline industry.



(Britannica, The Granger Movement)¹

1.2 Regulation in the airline industry

By the beginning of the 20th century, federal regulation of trade and transport was already an established and key feature of American economic policy. Therefore, the model of regulation used for the railroad industry was applied to airlines.

Since their birth in 1903, airplanes gradually started to become a common mean of transportation. Initially they were used for mailing purposes.

In 1925 the Kelly Act freed airmail from control of the Post Office, that hired pilots and owned the aircrafts. Thanks to the Kelly Act, private airlines were authorized to carry mail.

The Act was of fundamental importance for the development of commercial aviation in the United States, since private airlines started investing in aircraft, setting fares and established routes that linked cities across the country. It was at this time that important US airlines were born, such as United, American and Eastern.

¹ <https://www.britannica.com/event/Granger-movement> consulted on 10/09/23



First airmail service, 1918 (U.S. Air Force photo. Collection of the United States Postal Service).²



Airmail poster, 1938.

(Collection of the United States Postal Service)³

² <https://about.usps.com/who/profile/history/galleries/gallery-airmail.htm>

³ <https://about.usps.com/who/profile/history/galleries/gallery-airmail.htm> consulted on 17/09/23

Once safety standards allowed it, aircrafts started to be used not only for mailing and military purposes but also for passenger travel. Civil aviation started to become a tangible reality and the prospects for the growth of the industry were being recognized.

The Roosevelt administration, under the severe economic conditions of the 1930s, saw in the civil airline industry a mean to boost the national economy. The National Recovery Act was promulgated in 1933 during the Great Depression.

Its goal was to aid the American economy by supporting the recovery and growth of industries, to enhance fair competition between firms and to grant equal employment opportunities for workers.

The Act created the National Recovery Administration, whose goal was to approve codes of conduct and guidelines for quotas for imports and exports, prices, wages and fair employment practices. The codes were industry specific, meaning that each industry was encouraged to fairly set minimum wages, maximum work hours, indicative prices and fair labor practices. Before being implemented, the codes had to pass through the National Recovery Administration.

The Civil Aeronautics Act was promulgated in 1938. The Act created a regulatory body, the Civil Aeronautics Board (otherwise referred to as the CAB), that oversaw non-military aviation and air commerce.

According to the proponents, the goal was to provide order and stability in a newly born industry, by shielding it from monopolistic abuse. Regulation would also prevent a “survival of the fittest” outcome by protecting smaller but often inefficient carriers from competition.

The CAB had five main functions:

1) It limited the entry of airlines into the market. This was done to make sure new entrants complied with strict criteria. Each applicant would be examined thoroughly and only a set few that were deemed profitable and necessary would be granted a certificate. (U.S Centennial of Flight Commission, Deregulation and its Consequences).⁴

These airlines would then become US certificated or otherwise called “scheduled airlines.”

2) It awarded routes to airlines. Carriers couldn’t choose the routes to serve and had to comply with the ones dictated to them by the CAB. Each airline had to cover both large and small markets in order to provide all communities, whether large or small, with service. To this end, airlines would

⁴https://www.centennialofflight.net/essay/Commercial_Aviation/Dereg/Tran8.htm#:~:text=The%20most%20important%20effect%20of,freedom%20to%20set%20their%20fares. Consulted on 12/07/23

cover losses in smaller markets with the profits from the high profit markets or would receive subsidies from the CAB when necessary.

3) It established fares for passengers. It set a minimum and a maximum fare; it often approved fare increases requested by the carriers to cover losses. Therefore, air fares before 1978 were overall very high in comparison to today's standards. The fares didn't comply with economic theory, according to which the efficient use of scarce resources is conditional on the equivalence between price and marginal cost.

4) The regulatory agency also reviewed and either approved or disapproved of mergers and acquisitions of airlines.

5) The CAB also set standards for safety and quality of service.

The CAB used these rules to develop the airline industry for over four decades up until 1978 and did its best to suppress free competition, at the same time providing a high-quality service for Americans.

Airline managers had little room of maneuver due to the high degree of regulation. The role of the businessmen in a regulated economy was often limited to overseeing that activities complied with regulations. However, it was during this time that some managers started to think of different ways to compete and increase profits within the limits of a given strict legal framework.

Airlines couldn't compete on fares and routes and therefore would use alternative methods: flight frequency, which wasn't regulated by the CAB, was a weapon of choice, meaning that carriers would provide more flights for a specific route.

Although effective, this move created a problem; since the number of passengers per route was generally fixed, as well as price, increased flight frequency would decrease the load factor i.e., the percentage of available seating capacity filled with passengers.

Another way to compete was through service. Carriers would provide extravagant and high-quality service that characterized airline travel during the "Golden Age of flying" of the 1950s and 1960s. Air travel was seen as a glamorous and luxurious experience that mostly the wealthy could afford. The outstanding service would justify the high prices. In turn, airline employees and especially flight personnel enjoyed comparatively high salaries and status.



Passengers are served a buffet while traveling with Trans World Airlines in 1955. (CNN Travel, What the “golden age” of flying was really like).⁵

1.3 Innovations in air travel

The postwar American economy boomed, and so did the airline industry. Between 1950 and 1970 revenue grew from 10 to 100 billion dollars adjusted for inflation (Brown 2014, page 87).

A great innovation in aviation was the introduction of the jet engine in 1941. Aircrafts powered by jet engines could fly higher and faster than propeller planes, powered by spark ignited internal combustion engines, and aircrafts could be made bigger, therefore carrying more passengers per flight.

Another postwar phenomenon were the advances in computer technology, that became more and more embedded into the airline business. Computer reservations are a prominent feature of the industry today; they trace their origins back to 1967. In that year Robert Crandall, president of American Airlines, decided to place a few digital terminals in select travel agencies as an experiment. The experiment turned out to be successful and by 1976 the SABRE system had been installed in high volume travel agencies across the country (Bailey 1992).

⁵ <https://edition.cnn.com/travel/article/golden-age-flying-really-like/index.html> consulted on 15/09/23

Interestingly enough, Crandall was an opponent of the Airline Deregulation Act of 1978, he believed the customer experience quality would be lowered.

The digital reservation system created by him has become one of the core competencies that characterize the airline industry. The system provided information about the flights and allowed to make digital reservations. It is an early version of today's systems that have come to revolutionize air travel. Modern systems allow seat selection, online boarding passes and access to related services such as car rentals and hotel reservations. It was groundbreaking in its field and started the widespread use of computer technology that characterizes the modern airline industry. Today, information is a powerful tool of competition for airlines; by analyzing data, airlines can optimize their operations and develop business strategies. Some of these strategies are called yield management techniques.



American reservations agents at SABRE Terminals (American Automates Reservations and Ticketing, Part Two: SABRE).⁶

⁶ <http://aviationtrivia.blogspot.com/2015/06/american-automates-reservations-and-16.html> consulted on 15/09/23



SABRE terminals at JFK Airport

(American Automates Reservations and Ticketing, Part Two: SABRE)⁷

The mid-20th century was a prosperous time in terms of advancements in air travel in the United States. However, by the end of the “Golden Age” the inefficiencies of regulation started to become increasingly apparent within the industry.

The 1950s through the 1970s witnessed a steady increase in air fares to cover decreasing load factors, that fell from 70 to 50 percent between 1950 to 1970, coupled with higher costs for ever more extravagant in-flight services (Cook, 1996). The idea that a regulated economy was an inefficient approach to economic matters began to gain more and more traction within the country in the 1970s.

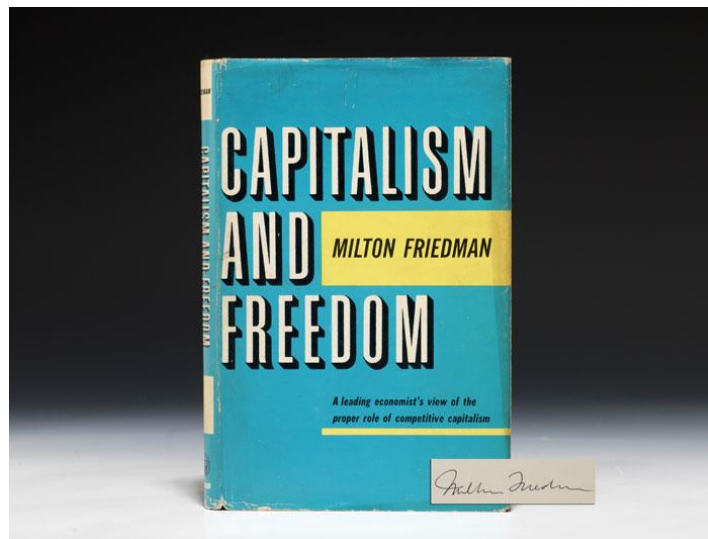
⁷ <http://aviationtrivia.blogspot.com/2015/06/american-automates-reservations-and-16.html> consulted on 15/09/23

CHAPTER 2

2.1 The philosophy of deregulation

Throughout the 1960s and the 1970s several economic theories, models and observations emerged that were a driving force of the deregulation movement. Pro-deregulation economists maintained that removing rigidities in the marketplace would improve consumer welfare by providing lower prices and greater consumer choice. They also believed that deregulation would increase competition that in turn would increase efficiency, productivity and innovation. The new ideas started to gain more and more traction within the economic sphere.

The first to champion deregulation was economist Milton Friedman. As one of the leaders of the Chicago school of economics his ideas were highly influential, and he eventually became advisor to both President Ronald Reagan and Prime Minister Margaret Thatcher. He was a major proponent of deregulation, free trade and lower taxes to spur economic growth and increase social welfare. In his work – “Capitalism and Freedom” – published in 1962, he illustrates his libertarian views on how regulation negatively affects several aspects of the economy.



(Bauman Rare Books, Capitalism and Freedom)⁸

⁸ <https://www.baumanrarebooks.com/rare-books/friedman-milton/capitalism-and-freedom/80461.aspx> consulted 10/09/23

He believed that:

- imposing a minimum wage would raise the unemployment level above the level it would attain without government intervention. According to Friedman, minimum wage imposes larger costs on businesses leading them to invest less in labor.
- fair employment practice committees hindered the freedom of parties to engage in contracts with one another. The role of these committees was to address employment discrimination in industries; they played an important role in supporting equal employment opportunities for minority groups.
- the US social security program, which provides shielding of earnings in case disability, death and retirement was an invasion of the personal lives of individuals.
- the higher wages of unionized labor negatively affected both other workers, who would find themselves with less opportunities, and taxpayers. When wages increase through the free market, and are not artificially inflated by the government, there are no burdens on other parties. With free competition, higher wages result from an increase in capital investment that triggers the increase in labor productivity.

Once these tenets were accepted, according to Friedman, the role of the government in economic matters should be limited to maintaining a stable legal framework in which markets could function. When the government tries to dictate morality or caters to special interests, the results are loss of freedom and economic efficiency.

“Reaganomics”, the economic policies of the Reagan administration (1981-1989) were largely based on Friedman’s ideas of the superiority of the free market.



Milton Friedman and President Ronald Reagan (Wikipedia).⁹

⁹[https://en.m.wikipedia.org/wiki/File:President Ronald Reagan and Nancy Reagan in The East Room Congratulating Milton Friedman Receiving The Presidential Medal of Freedom.jpg](https://en.m.wikipedia.org/wiki/File:President_Ronald_Reagan_and_Nancy_Reagan_in_The_East_Room_Congratulating_Milton_Friedman_Receiving_The_Presidential_Medal_of_Freedom.jpg)). consulted on 15/09/23

Friedman in turn, was influenced by Friedrich Hayek, the famous Austrian-British economist. In his article – “The Use of Knowledge in Society” – published in 1945, Hayek argues that knowledge on the state of the economy is not owned by a single entity but is dispersed between all individuals. All individuals of an economy possess information on local circumstances and preferences.

The information is knowledge on consumer preferences, the availability of resources and manufacturing capacity. Being dispersed, the information is hard to gather. Hayek introduces the price system as the most efficient way to both gather and convey information on the state of the economy. Each price contains information coming from a variety of sources. Thanks to the price system, the self-interested actions of individuals in the economy contribute to conveying economic information. In contrast, Hayek stresses the inefficiency of central planning. Due to the dispersed nature of information, central authorities lack sufficient knowledge to coordinate economic matters in an efficient way.

Along with Friedman, other economists started to voice their anti-regulation ideas: Richard Posner, an American legal scholar, suggested the “regulatory capture theory” (Posner 1974). Regulatory capture is a form of corruption in which regulators, instead of pursuing the public interest allocate resources in order to serve the best interests of the regulated industry. Many thought that this scheme applied perfectly to the airline industry.

A more empirical approach to dismantling regulation was brought about by Douglas and Miller in 1974 (Douglas and Miller 1974).

They studied intrastate airlines in California and in Texas that had maintained a degree of freedom during the first years since the establishment of the CAB. These airlines offered more service and route coverage and could set lower prices than regulated airlines (Goetz 2009).

It was the mixture of deregulatory ideas spreading through the economic community, observations on performance in cases of non-regulation, coupled with the severe economic crisis of the 1970s, that bred the deregulatory revolution.

2.2 Route towards the deregulation act

The context in which deregulation of the airline industry took place was a very peculiar time in the history of the American economy.

The US economy in the 1970s was characterized by stagflation i.e., inflation coupled with slow economic growth and high unemployment rates.

Until the 1970s economists relied on the validity of the Philips curve that establishes an inverse relationship between the inflation rate and the unemployment rate. When the unemployment rate lowers, the inflation rate rises, and vice versa. Milton Friedman maintained that the model appears to be valid in the short-run but in the long-run this trade-off ceases to exist (Friedman 1968). The discovery that the Philips curve was not valid in the long run triggered a review of traditional micro and macroeconomic policies, and spurred a large consensus that removing rigidities could be a smart move to get the economy up and running again.

The causes of stagflation can be traced to the rising energy prices of crude oil during the latter half on the 1970s, causing a rise in prices in most sectors of the American economy. The higher price of energy reduced the economy's production capability, leading to an increase in unemployment. Milton Friedman urged the Federal Reserve to fight inflation through the control of money supply. The Nixon administration took an eclectic approach, using both methods: those proposed by laissez-faire economists (tightening of money supply) as well as those dear to pro-regulation economists (price and wage controls). Overall, those policies failed to control inflation which rose from 5 percent in 1970 to 13 percent in 1980 (Worlddata.info, Inflation Rates in the United States of America).¹⁰

The mid-1970s were still characterized by a regulatory approach to economic matters; in fact, Nixon's successor, Gerald Ford, created the Economic Policy Board and promulgated the WIN program (Whip Inflation Now).

Inflation was to be controlled through reducing public and private spending. Nonetheless, the 1973-75 period was characterized by severe recession and high inflation rates.

The inflation rate reached 11 percent in 1974 (Worlddata.info, Inflation Rates in the United States of America).¹¹

President Gerald Ford, however, recognized the benefits of competition to the economy and was the first to introduce deregulatory practices as part of his program. The chairman of the CAB at the time, John Robson, expressed his favor for deregulation in 1976.

Ford's administration was characterized by the first attempt at deregulation in the airline industry. In 1976 the CAB permitted discriminatory fares, breaking its record of price regulation. With "Supersaver fares" customers had access to discounted fares for the first time.

¹⁰ <https://www.worlddata.info/america/usa/inflation-rates.php#:~:text=During%20the%20observation%20period%20from,year%20inflation%20rate%20was%203.2%25.>

Consulted on: 22/08/23

¹¹ <https://www.worlddata.info/america/usa/inflation-rates.php#:~:text=During%20the%20observation%20period%20from,year%20inflation%20rate%20was%203.2%25.>

Consulted on: 22/08/23

In 1977 The CAB granted free entry for a few certified carriers on routes. Therefore, carriers could start to choose whether to enter a particular market or not without it being imposed by the Board. These were the first pushes towards the deregulation of the industry, but it was during Jimmy Carter's term that the airline industry was formally and substantially changed thanks to the passing of the Airline Deregulation Act of 1978.

By 1977, the year of his election, the idea that regulation of economic matters hindered consumer welfare became clear in the mind of most economists and Carter himself. President Carter decided to appoint Alfred E. Kahn as lead of the CAB, where other likeminded economists pushed towards the deregulation of the industry.

By the time Kahn was appointed as chairman of the CAB, he was already known for his 1970 publication – “The economics of regulation: principles and institutions” – (Kahn, 1970).

In this volume, Kahn's pro-deregulation ideas were already clear. Along the lines of Hayek's thought, he believed that regulating well is virtually impossible. The single firms collectively have more knowledge about the economy than the regulator has.

“If I knew what the most efficient configuration of routes in the airline system was, then I could continue to regulate...it doesn't make sense to leave it to an ignorant person like me to tell airlines how they can best configure their routes” (Kahn, 2000).

He also observed that the role of institutions is crucial in determining the outcome of an industry. For example, at the time both the trucking and the airline industry were subject to similar regulatory schemes. But institutions in the trucking industry did not block collusion, leading to higher profits there (Rose 2012). Therefore, the role of institutions thoroughly influences industries.

Kahn states that “Deregulation does not mean Laissez-faire” (Rose 2012). This means that while deregulation should be based on free market principles government ought to intervene in order to guarantee competition, by making sure that antitrust rules are being complied with.

Kahn's leadership at the CAB was straightforward and revolutionary from the beginning. Initially he reviewed policies to grant airlines more freedom regarding the choice of both fares to charge and route to serve.

As previously stated, “Supersaver fares” had already been introduced by the previous administration: in certain high demand routes, they led to price cuts of up to 45 percent. These discounted fares proved to be a big success raising load factors to 60 percent by 1978 (Brown 2014).

The Kahn board implemented a sophisticated system of data collection to study the effects of discount fares. Through collection and observation of data it was shown that the introduction of discount fares resulted in a substantial increase in traffic (Bailey 1985).

Kahn's board started changing the regulatory framework. If carriers proved that they could carry out the service, they would be free to serve to routes of their liking. The board was not willing to protect big airlines from competition by giving them a monopoly position anymore. If special protection is not granted, airlines are compelled to provide higher quality service and/or lower prices in order to not exit the market.

Kahn's concern, however, was changing the legislation of the industry, not only the behavior of the regulator. If not, by simply choosing a new chairman of the CAB things could revert to their original protectionist set-up.

It was on October 24, 1978, that, supported by the president Jimmy Carter, the Airline Deregulation Act was signed into law. It radically, albeit gradually, transformed the airline industry. As a consequence, the CAB was dissolved after six years, on January 1st, 1985.



Alfred E. Kahn and President Jimmy Carter (NY Times).¹²

¹² <https://www.nytimes.com/2011/01/09/business/09view.html> consulted on 17/09/23

2.3 The Airline Deregulation Act of 1978

The goal of the CAB changed: it was to gradually eliminate restrictions on routes over a four-year period ending on December 31, 1981, and end all restrictions on fares by January 1, 1983.

According to the Deregulation Act:

- Carriers could set their own fares.
- Carriers could choose the markets to serve.
- Entry and exit of carriers were not regulated anymore.

Nonetheless, the Act stated a few goals that it would continue to pursue:

- The maintenance of safety levels as a top priority.
- Competition must be maintained.
- Encouraging the service to major areas to pass through non-primary airports.

Several institutions continued to exist such as:

- The Federal Aviation Administration, whose goal is to make carriers comply with safety measures. The FAA sets and enforces safety standards and oversees maintenance practices.
- The Secretary of Transportation, advisor to the President in matters of transportation; supervises the nation's transportation program by developing policies and building infrastructure.

CHAPTER 3

3.1 An overview of the industry since Deregulation

Since the introduction of the Airline Deregulation Act in 1978, there have been phases of growth and economic downturns that have shaped the industry into what it is today.

Many airlines have come and gone. Those who succeeded managed to apply successful strategies and used their resources better than their competitors. At the same time, many acclaimed carriers ceased to exist after only a few years after the Act was passed; they couldn't keep up with the intense competition coming from new entrants.

In 1978, the ten established carriers of the pre-deregulation era were: —American, Braniff, Continental, Delta, Eastern, Northwest, Pan Am, TWA, United and Western—.

In the first few years following the Deregulation Act these carriers lost a 12% market share due to fierce competition from new entrants (Goetz 2009).

A way to face competition from newcomers was through mergers and acquisitions. By merging, airlines could enhance efficiency through economies of scale. As the size of a firm increases, the average cost of producing each unit decreases (up to a point), leading to cost savings and streamlining of operations. Thanks to lower operational costs companies can charge lower fares and withstand the competition coming from new entrants.

From 1983 through 1993 the concentration of the industry increased, and by the early nineties the major players gained a 97% share of the market (Goetz 2009).

One of the most important success stories is that of American Airlines. The acclaimed firm made crucial decisions to modernize its operations, allowing it to face competition; it substituted its older carriers with newer more fuel-efficient and technologically advanced ones; cut costs by reducing the number of employees and streamlining operations (Bailey 1992). Managers at American brought about an important innovation that, in time, has come to characterize the whole airline industry: strategic pricing methods based on demand forecasting and market segmentation. This discipline was later named yield management and will be the subject of our next chapter.

Not all ten carriers survived; Pan Am, Braniff and Eastern went into bankruptcy and left the market after merely more than ten years after the Act was passed.

-Pan Am was a widely renowned air carrier; it was one of the first to make international aviation possible for American citizens. During the regulatory period it was awarded international routes but no domestic routes. After 1978 Pan Am sought to enter the domestic airline market by acquiring National Airlines, a firm established in 1985 and based in Orlando, Florida.

This merger proved to be unsuccessful; Pan Am flew international routes, therefore longer distance flights for which customers were ready to tolerate delays. The poor on-time performance spilled into the domestic markets as well. As a consequence, the airline failed to remain competitive against highly time-efficient carriers. This resulted in a 2-billion-dollar loss for Pan Am by the end of the 1980s (Bailey 1992).

Pan Am tried to rectify its situation by selling non-core assets such as buildings, hotel chains and several international routes, but it wasn't enough to fix the downturn: the airline eventually succumbed in 1991 and had to exit the market.

-In the case of Braniff, the bankruptcy came about during the term of CEO Harding Lawrence, which had started in 1965. During the initial deregulatory period, before the act was passed, Lawrence decided to invest and expand on both domestic and international routes. Lawrence firmly believed that deregulation would have been a short experimental period that would then be retracted due to unsuccessful outcomes. Therefore, Braniff could have kept the new routes under a new regulatory system. This wasn't the case: deregulation was codified and Braniff found itself deep in debt and with a negative cash flow. This, paired with poor management, led to its demise in 1982.



Pan Am 1980¹³

¹³ <https://archive.org/details/1980-pan-am-l-1011-poster> consulted on 17/09/23

-In Eastern's case, poor management was the main cause of failure. One of the main problems was its remuneration strategies. Eastern had high operating costs also due to labor agreements that granted above-average compensation to its employees.

The CEO's pay was high and not correlated to performance (Bailey 1992). High costs and a substantial amount of debt limited Eastern's ability to modernize its fleet and service. It ceased operations in 1991.

"The marketplace is supposed to punish poor management, and it has done so in the aviation industry. The reality has been that the failure of firms means that the markets are working" (Bailey 1992, page 21).

This quote from Bailey highlights how the free-market approach changed the aviation industry thoroughly; if before 1978 airlines could get away with operational inefficiencies and remain in the market, after deregulation airlines had to find ways to make their processes efficient by managing their resources optimally and strategically. Yield management (of which more later) is one of these strategies.

The 1990s saw a wave of expansion of new carriers during the middle of the decade and a reaffirmation of the majors reclaiming their power and market share at the tail end of the decade. The overall trend of the decade was upwards, with the industry growing at a steady pace.

The first decade of the 2000s proved to be a tricky time for the airline industry. The attacks of September 11, 2001 were followed by a shutdown of the domestic industry for four days. Two United planes and two American planes were hijacked and used to crash the World Trade Center and the Pentagon. The event was profoundly shocking to American society and the economy; a long period of low demand for flights followed. Other factors influenced industry losses throughout the decade: tight security measures, the SARS epidemic, the increasing cost of fuel. The price of oil in dollars increased from \$30 per barrel in 2003 to \$135 per barrel in 2008 (Wikipedia, 2000s energy crisis).¹⁴

These events of the first few years of the decade led to the worst losses in the history of the airline industry: a cumulative loss of 35 billion dollars from 1999 to 2005 (Goetz 2009) with some of the majors — United and Delta — filing for bankruptcy.

¹⁴ https://en.wikipedia.org/wiki/2000s_energy_crisis

Consulted on 11/08/23

3.2 Effects of deregulation

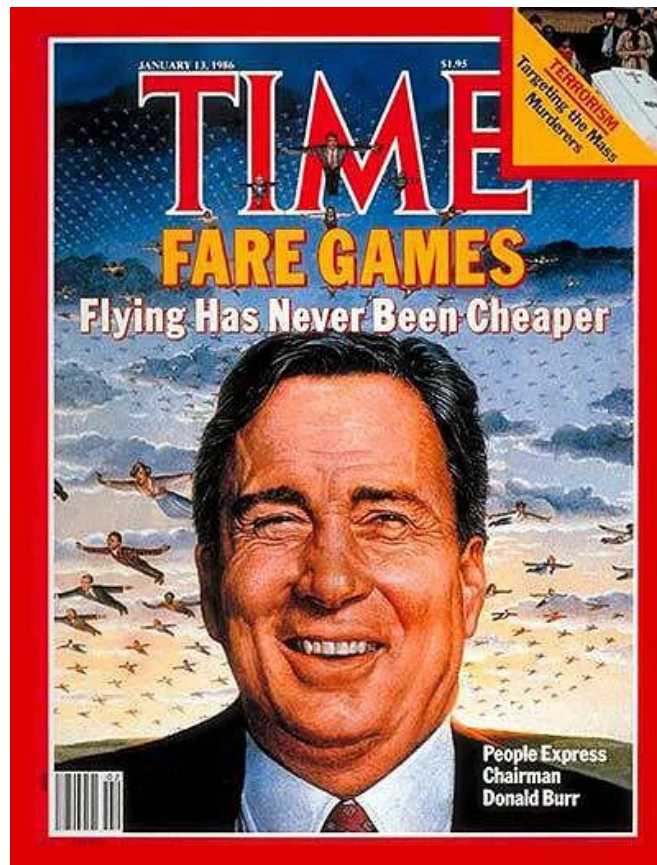
The transition years between the introduction of the Act and the stabilization of deregulation was a period of changes, experimentation and monitoring of the positive and negative effects of the new modus operandi. The CAB ceased to exist on January 1, 1985, six years after the act was passed. During the transition period the CAB did not intervene (except for handling customers' complaints). Post-deregulation, the idea was that letting competition work without constraints would make an efficient group of carriers emerge from the market. It was therefore necessary to accept the uncertainty and let competition have free rein in the industry.

There have been many effects of airline deregulation, both positive and negative, that have shaped the industry into what it is today:

As previously mentioned, the CAB used to subsidize routes and carriers in order to maintain smaller carriers in the industry and make sure that less in-demand routes were served. This policy was ended. The consequence was that airlines would invest in higher-demand routes and invest less in routes that connected smaller cities. Larger airports survived thanks to high volume of traffic while airports in less affluent areas that were previously cross subsidized suffered.

With entry no longer blockaded, start-up airlines entered the market, some with innovative ideas that increased competition within the industry.

A famous example is People Express. The airline was founded in 1981 by entrepreneur Donald Burr, who proposed extremely low fares for passengers. Low fares were achieved by cutting costs such as salaries and hiring employees who could perform many tasks. The service was without frills, passengers would be charged for meals as well as luggage. People Express was highly successful throughout the 1980s, but eventually, when established airlines cut their costs to match the newcomer, People Express couldn't compete. It stopped operating in 1987.



TIME Magazine, January 1986. On the cover: People Express founder Donald Burr. (Conde Nast Traveler).¹⁵

An example of competition at work:

“People express started after deregulation. It’s entry into the Buffalo-Newark market offers a typical illustration of the problems encountered by a new airline offering slimmed down service. When People Express entered this market in August 1981, US Air had been running load factors of 87-90 percent. US Air responded not only by lowering its \$97 fare to match the \$35 level, but also by expanding its capacity from 325 flights per month to 412 flights per month. People’s express experience shows that, even if passengers have incentives to prefer the incumbent, a low enough price can stimulate enough traffic so that simple price matching will not be a successful deterrent to entry. In fact, US Air greatly expanded its capacity on the market, yet People Express was able to achieve satisfactory load factors” (Bailey 1985)

¹⁵ <https://www.cntraveler.com/stories/2014-06-05/people-express-founder-don-burr-sounds-off-on-the-revived-1980s-budget-airline>). consulted on 17/09/23

This quote highlights the dynamics of the airline industry post-deregulation. There weren't any government restrictions on entry into the market, therefore new carriers did enter the market. New entrants proposed new strategies to challenge incumbents. In the case of People Express it was low fares. When threatened by new entrants, incumbents adjust their strategies and fare structure to meet increased competition. However, even though lowering ticket prices can generate a significant increase in traffic, it is often not enough to discourage the new entrant and prevent it from gaining market share. Therefore, even though US Air expanded its operations and matched People Express's fares, Burr's company managed to compete effectively.



People Express flight, 1980s¹⁶

An important action of the Kahn Board was installing a system of data collection to monitor the effects of discount fares on profitability. It was shown that discount fares raised load factors which in turn avoided increases in average costs. The average load factor was 60% in the 1980s, 65% throughout the 1990s and reached 80% in the 2000s. It attained a peak of 85% before the Covid-19 pandemic (The Geography of Transport Systems, Annual Passenger Plane Load Factor, World and United States 1950-2021).¹⁷

¹⁶ <https://www.cntraveler.com/story/airlines-that-actually-existed-in-the-1980s> consulted on 17/09/23

¹⁷ <https://transportgeography.org/contents/chapter5/air-transport/plane-load-factor/> consulted on 22 August 2023

Average US fares have declined from \$450 in 1994 to \$350 in 2013. In 2020 the average air fare was \$261 (Bureau of Transportation Statistics, Air Fares).¹⁸

This benefited both passengers who would use discount fares and regular passengers. (Bailey 1985) By setting lower fares, coupled with other factors such as an increase in income per capita and an increase in population, the number of American passengers increased greatly from 275 million in 1978 to 750 million in 2006. (Goetz 2009)

Air safety has gotten better, however there has been an overall decrease in the quality of service, both in terms of customer service and in terms of punctuality, since (among other things) airport congestion can cause delays (Goetz 2009).

Another aspect that has caused havoc within the industry is the reduced stability in employment. As mentioned previously, the airline industry is one that has seen many waves of merging, acquiring and liquidating. With reduced wages and overall instability, there has been a notable increase in employee dissatisfaction which, in turn, has a potential of disrupting normal business.

3.3 Innovations within the airline industry

After deregulation new core capabilities of the airline industry have emerged as a result of competition and strategic behavior, such as new business models, strategies, route systems and pricing concepts.

Hub-and-spoke network:

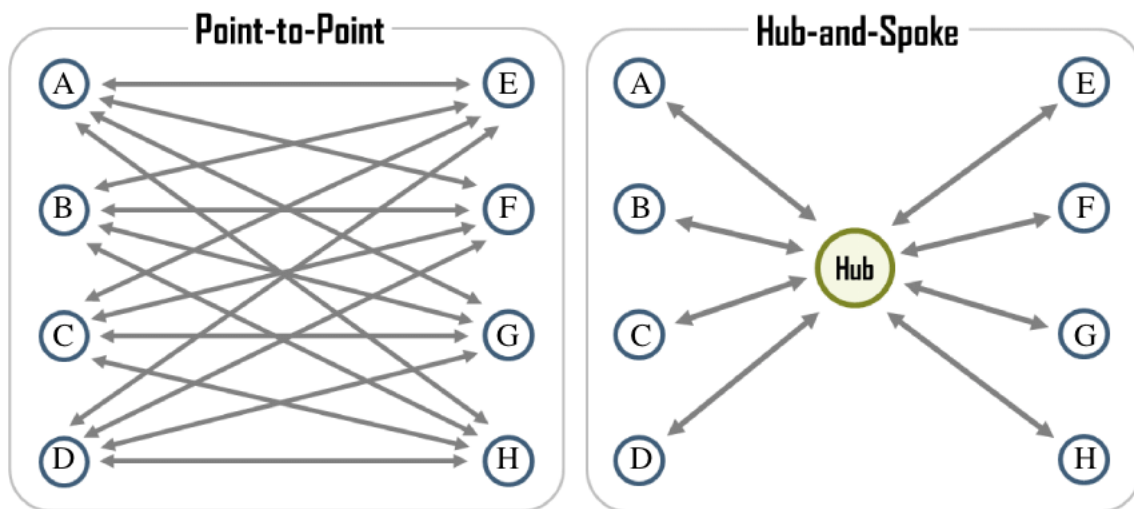
The old regulatory route system was a collection of linear connections imposed by the government. The logic behind the scheme was that it was based on the pattern of railroad tracks. A point-to-point system was used, in which direct flights were operated between city pairs. This system resulted in poor connectivity if cities weren't linked by a direct flight, so passengers might have to book several separate flights to reach their destination.

The hub-and-spoke design presents routes that go from the origin to an intermediate hub airport in which the airline is based, where passengers change planes in order to reach their destination.

¹⁸ <https://www7.bts.dot.gov/air-fares> consulted on 24 August 2023

At smaller hubs one airline tends to control 70 percent and more of flights both incoming and outgoing: therefore passengers tend to choose the same carrier for all flights (Bailey 1992). Whilst at bigger hubs many carriers coexist.

The hub-and-spoke model has proved to be very successful; smaller cities are better connected to global destinations; passengers have a wide array of choices for destinations from each hub at a high frequency. It increases passenger loads since flights serve both passengers originating at the hub and passengers originating from multiple spoke cities (Wikipedia, Airline hub).¹⁹



New marketing schemes:

Airlines have introduced creative marketing tools to enhance brand loyalty and increase profits. The first example of this is the Frequent-flyer program introduced by American Airlines in 1981. After having accumulated a threshold of miles travelled with a particular airline, passengers are granted a free ticket.

Most airlines today have adopted this kind of program.

Another strategic tool is overriding commissions to travel agents. The role of the travel agent within the airline industry has always been of fundamental importance; if travel agents reach a certain volume of sales for that airline, their commission rate will increase.

They are designed to motivate and reward travel agents and can incentivize to keep working with that airline.

¹⁹ https://en.wikipedia.org/wiki/Airline_hub consulted on 1 September 2023

Pricing schemes and yield management systems:

Deregulation changed the role of businessmen and managers; it freed them from the need to comply with strict regulations and gave them freedom of maneuver. Airlines could decide how to compete, and which means and strategies to employ. They could innovate and change their business models as they saw fit.

One of the biggest innovations brought about by deregulation is a complex system of dynamic pricing called yield management (or, by some authors, revenue management: in fact, the difference between the two is of no moment for us). By analyzing historical data, airline managers noticed several things: that demand varied according to time of the day, of the week, of the year; that different classes of consumers have different demand schedules for the same service. Therefore, a complex system of techniques has been introduced in order to monitor consumer behavior and price discriminate according to different parameters. The aim is that of maximizing revenue.

Yield management and its complex fares schemes have emerged from the airline industry and have been extended to many other industries that have similar characteristics, especially that of selling perishable goods.

These are goods that if not sold within a certain deadline (in the case of the airline industry, the deadline is the take-off of the airplane) lose their value entirely: an empty seat generates zero revenue. Yield management is single-handedly one of the most important contributions of deregulation to business. Its workings and applications will be discussed in the next chapter.

CHAPTER 4

4.1 What Yield Management is.

“Yield Management is selling the right seats to the right customers at the right prices” (American Airlines, annual 1987 report).

This quote is a simplification of yield management but can be useful to understand the intuition and the essence behind it: to decipher customer segments and their characteristics and to allocate resources strategically among them in order to maximize revenue. By identifying these customer segments, firms can price discriminate accordingly. From this conclusion, that nobody seriously disputes today, one can gauge the distance traveled from the times of the Interstate Commerce Commission.

Yield management is a series of techniques used in order to maximize revenue from the sale of services. These techniques help to allocate a limited amount of goods (such as the seats on a departing airplane) among a variety of customers. These goods are “perishable goods” meaning that they cannot be stored and if not used when available, lose 100 per cent of their value (Neteissine and Schumsky 2002). When planes depart or when hotel rooms are left vacant, they are lost forever. Industries with perishable inventory include airlines, hotels, car rentals, restaurants. Empty plane seats, hotel rooms, cars, restaurant tables represent lost revenue.

Firms that implement yield management techniques have several things in common:

-Excess resources cannot be stored for future use. For example, hotel rooms available one night cannot be stored for use the day after.

-Customer segmentation is possible. Firms can differentiate between potential customers. The typical differentiation is between business and leisure customers. How do airlines make this differentiation? One way to do this is by creating barriers or “fences” between market segments (Neteissine and Schumsky 2002; Donovan 2005). Airlines observed that leisure travelers most likely travel over the weekend, while business travelers tend to return home on the weekend. Therefore, including a Saturday-night stay in the reservation is required in order to receive a

discounted fare (Donovan 2005). The two groups, leisure travelers and business travelers, have different demand curves. Typically, business customers tend to be less price sensitive and accept to pay higher prices than leisure customers.

-These firms produce batches of units of the same service. For example, planes, hotels and restaurants deliver many seats, rooms and tables at the same time: some of them are sold, some are not (and produce zero income). Regular firms sell single goods to their customers and may deliver them. Firms that implement yield management can't deliver their goods; customers must reach the batch (the airplane, the hotel) in order to use the good.

-These firms have high fixed costs and low variable costs. In the case of airplanes, the rent of the aircraft is a fixed cost. Fuel can be considered a fixed cost in the short-run, whilst in the long-run airlines may decide to adjust the number of flights on a route making fuel a variable cost. In the case of a hotel, the rent on the property is a fixed cost. Wages, food, electricity and energy are variable costs.

Yield management strategies include:

1) Overbooking. It may happen that customers book a flight or a hotel room and not show up for departure or check in. Such customers are called, in the industry's jargon, no-shows. Firms foresee (after appropriate analysis of the data) that there will be a no-show probability and decide to overbook. This means selling more units of service than the ones available at a given time. By overselling, firms try to ensure that their units operate near full capacity all the time. The number of seats (or rooms) oversold is based on observation of past booking patterns and no-show rates: therefore, it can vary in time. In order to avoid having more actual customers than a unit can accommodate, overbooking requires careful data analysis and management. Overbooking is profitable for firms, as it can maintain its revenue streams, however it can cause inconvenience for customers, who must be bumped onto other flights or hotels not of their choice. In such case, firms must give a compensation to the customers in the form of refunds, transportation, accommodations or vouchers. These inconveniences can lead to customer dissatisfaction and loss of reputation. Even considering these extra-costs, overbooking is an essential management tool to optimize revenue.

2) Dynamic pricing based on market segmentation. Firms acknowledge that customers have different propensions to pay. Customers have different preferences, behavior and purchase history.

Discount allocation requires firms to create distinct customer groups, identify their characteristics and needs and offer their service accordingly. For example: leisure customers tend to be more price sensitive, tend to book in advance and tend to travel over the weekend including a Saturday-night stay. Firms therefore give customers the possibility of early booking at a lower price. On the contrary, business customers are typically less price sensitive, meaning they are willing to pay full price and tend to book last minute.

3) Dynamic pricing based on demand forecasting. Variation of prices is not solely based on catering to customer segments but also varies according to demand for the service; the season, time of day, month or year, market conditions and upcoming events are all factors that can influence demand. Firms therefore can adjust their prices in real-time based on changes in demand. Firms will set higher prices during periods of high demand, will set lower prices to attract customers during periods of low demand, and offer discounts during economically challenging times.

4.2 Yield Management in the Airline Industry

The Airline Industry is credited as the first to implement yield management strategies. Its origins can be traced back to three major changes in the industry, and each change is associated with the two main yield management strategies used in the airline industry: overbooking, discount seat allocation.

1) The SABRE reservation system created by Robert Crandall at American Airlines. The system provided access to the availability of seats, flight schedules and flight fares and provided the opportunity to make flight reservations via computer. The system was installed in the 1960s; by 1979 SABRE had historical data regarding trends, flight occupancy and consumer preferences from ten years of bookings (Donovan 2005).

All sale and cancellation transactions whether from American Airlines or travel agents are registered in SABRE (Smith, Leimkuhler, Darrow 1992). The data collected were fundamental in implementing yield management strategies, since they allowed to observe trends. This, in turn, became the basis for forecasting and managing inventory and prices. The data on sales, cancellations and no-shows prompted the development of overbooking.

2) Super-saver fares introduced in 1977. Discount fares made travelling more affordable for the general public. Offering tickets at lower prices stimulated demand and improved load factors.

Super-saver fares prompted the development of the discount allocation strategy. American Airlines used cheaper fares to stimulate demand on less profitable routes and maintained high profits on demand routes by keeping the number of discount fares limited (Smith, Leimkuhler, Darrow 1992).

3) The deregulation of airline schedules and fares in 1979 which allowed airlines to set their own prices for tickets and choose their own schedules. Setting prices was crucial in the development of yield management since airlines could optimize their revenue by setting different price points for different categories of passengers.

Discount allocation is the process of determining how many discount fares to offer on each flight. Airlines tend to limit the number of discount fares on high demand flights in order to not lose the high quantity of last-minute passengers willing to pay full fare and tend to offer more discount fares on lower demand flights to stimulate customer purchase. For each flight a protection level is determined. The protection level is the number of seats that will be “protected” from discounts and sold at full fare. This level varies from flight to flight and depends on forecasts. Demand forecasting is crucial to make sure this technique works.

American Airlines is considered the pioneer of yield management. The SABRE system (1960) allowed for collection and analysis of data; the first application of yield management techniques took place in 1968 when American introduced the “Flight Load Predictor” which automatically determined overbooking levels based on data (Smith, Leimkuhler, Darrow 1992).

In 1976 the SABRE system was replaced with a more sophisticated tool named “Reservations Inventory Planning and Control System” (RIPACS). It took a mathematical approach to overbooking matters, by accounting for revenues and costs associated with overbooking decisions. As competition intensified post-deregulation, Crandall devised a system of discount allocation that allowed a variation of full-price and discount fares on flights. Initially this process was performed by employees who would set a predicted rate of bookings for a flight for each category of passengers, compare them with the actual bookings and adjust the prices accordingly.

Later, this process became automated, with American Airlines installing the DINAMO system in 1988. The automated system increased efficiency and reduced risk of making mistakes in calculation. The yield management process is based on many variables that are subject to frequent changes such as demand, sales and cancellations. Therefore, automating the process makes it much

more efficient. Computers make calculations with consistency and precision, reducing the risk for error. They also allow to analyze big amounts of data with speed and accuracy.

The system performed various tasks:

- As its predecessor SABRE, DINAMO allowed both staff and customers real-time and up-to-date information on seat availability, flight fares and flight schedules.
- It allowed effective management of seat inventory. Adjusting availability of seats and prices based on bookings demand and market conditions allows the company to identify and exploit opportunities to increase revenue.
- It provided the tools needed to adjust prices according to market conditions using both historical data and real-time information.
- It provided information about routes, aircraft assignments and crew assignments improving overall coordination within the company.
- It is integrated (according to the company) with other systems at American Airlines, such as finance, accounting and data report systems. This allows for better coordination across departments.

By using the power of technology and advanced yield management techniques, American Airlines was able to better coordinate and streamline its operations, improve customer service and optimize its revenue.

The DINAMO system was very influential and prompted other airlines to adopt similar systems. The benefits of yield management techniques started to be recognized industry wide. American credits yield management strategies for additional revenue of \$500 million dollars per year in the 1990s and Delta credits yield management for an additional \$300 million dollar per year in revenue during the same decade (Neteissine and Schumsky 2002).

Yield management has become a core capability of the airline industry, and successful airlines credit part of their competitive advantage to yield management strategies.

Today, all airlines have implemented systems that tackle at least four major aspects of yield management:

- Overbooking
- Discount seat allocation
- Determining multiple fare types
- Traffic management

At present day, ever evolving technology, the introduction of machine learning and of artificial intelligence gives companies the chance to analyze more data than ever before and price adjust instantly, making the yield management process ever more efficient.

4.3 Yield Management in the Hospitality Industry

The hospitality industry was the first to adopt yield management strategies after their introduction in the airline industry. The two services, airlines and hotels, share many characteristics. The capacity is fixed; this means that a hotel will always have a fixed number of rooms at a given time just as a plane will have a fixed number of seats at a given time. Customers can be divided into different segments. Inventory is perishable. The product can be sold in advance. Demand is subject to ample fluctuations.

In the 1980s, after seeing the success of yield management in airline companies, hotel chains started to adopt yield management strategies to maximize revenue. Marriott International is credited as the pioneer in the hospitality industry. In 1989 it installed the Marriott Reservation system, which analyzed booking data and demand fluctuations and adjusted room prices accordingly. Before the late 1980s, hotel room prices were regulated in Europe: a hotel room would have a set price for peak season and a set price for off-peak season. In Italy, regulation of the hospitality industry was introduced with law number 2049 of October 24, 1935 and it was eliminated with law number 284 of August 25, 1991. During the regulatory period of hotel fares, each room had a maximum and minimum price (their difference could not exceed 100 cent of the minimum). Those prices weren't subject to regular change like they are today. Regulation of hotel fares along these lines was typical of continental Europe up until deregulation of the hospitality industry in the 1980s and 1990s.

In the 1990s and 2000s yield management techniques became of widespread use throughout hotel chains of all sizes.

Other than Overbooking and dynamic pricing, yield management techniques used in the hospitality industry are:

Development of other products and services. In most cases, hotels don't offer just rooms but can offer many other services including breakfast, dining, fitness and wellness centers, parking, transportation, entertainment opportunities. Exploiting and maximizing the revenue coming from these services by targeting the right customers is a crucial part of yield management for hotels.

Keeping rack rates high. Rack rates are the maximum room rates that are charged to one segment of the market: walk in "chance" arrivals (Donaghy, McMahon, McDowell 1995).

Minimum length of stay. Hotels can impose length of stay restrictions to its customers. This is done in order to optimize room availability. For example, a minimum length of stay can be imposed during periods of high demand in order to maximize the occupancy rate of the hotel. During these periods, one-night stays or short stays are discarded in favor of customers willing to reserve for longer.

Yield Management techniques have been a great success in the hospitality industry; Marriott Hotels credits yield management for additional revenues of \$100 million per year over a total of \$1.2 billion in the late 1990s (Neteissine and Schumsky 2002).

Overall, Yield management has been and continues to be an effective management tool contributing to profitability and business growth (Donaghy, McMahon, McDowell 1995).

Conclusions

The principles of yield management were born out of necessity.

The removal of the rigid regulatory framework exposed airlines to an ever-increasing degree of competition.

The historical context is crucial in understanding the birth and success of yield management strategies. Deregulation created an environment in which firms were motivated to innovate their strategies and optimize their revenues in order to remain afloat. It is a successful example of how firms have adapted to transformational change within an industry.

Thanks to analysis of historical data, techniques such as overbooking and dynamic pricing were born, helping airlines thrive in an intensely competitive market.

Yield management established itself as a discipline that increased the economic and social utility of perishable goods that would otherwise be unused and would signify a loss in revenue.

By analyzing the history of yield management, it becomes clear that it has had a lasting impact on the airline industry and other industries that offer perishable goods, such as the hospitality industry.

The use of these strategies has enabled these industries to better manage their inventory, increase occupancy rates, decrease costs and increase profits. Not only firms benefit from these strategies, but consumers also benefit from overall lower prices. After deregulation, increased competition caused firms to start competing on prices. In the airline industry, this led to a decrease in average air fares and therefore lower prices for consumers.

Yield management has proved to be a sustainable and profitable tool and will continue to characterize business endeavors for decades to come. The advancing technology – especially the progress in artificial intelligence – is making yield management ever more efficient. The quicker analysis of larger amount of data makes the process more precise and dynamic, which can lead to even greater increases in revenue for firms. Airline deregulation has been the catalyst for the birth of strategies that are successfully employed today in many industries and will continue to be employed in the future.

BIBLIOGRAPHY

Bailey E. (1992) *Airline Deregulation: Confronting the paradoxes*. Cato Review of Business and Government 15, no. 3.

Bailey E. (1985) *Airline Deregulation in the United States: The benefits provided, and the lessons learned*. International journal of Transport Economics, Vol. 12, no.2, p. 119-144.

Borenstein S. (1992) *The Evolution of U.S. Airline Competition*. Journal of Economic Perspectives, Volume 6, no.2.

Brown J.H. (2014) *Jimmy Carter, Alfred Kahn and Airline Deregulation. Anatomy of a policy success*. The independent review, Volume 19.

Cook G. N. (1996) *A review of history, structure and competition in the U.S. airline industry*. Journal of Aviation/aerospace Education and Research, Vol.7.

Daniels W. (1983) *The origins and impact of deregulation*. Hofstra Labor Law Forum.

Donaghy K., McMahon U., McDowell D. (1995) *Yield management: an overview*. Int. Journal of Hospitality Management, Vol.14, no. 2, p.139-150.

Donovan A.W. (2005) *Yield Management in the Airline Industry*. Journal of Aviation/Aerospace Education and Research, Volume 14, no.3, Article 9.

Douglas and Miller (1974) *Economic Regulation of Domestic Air Transport: Theory and Policy*. The Brookings Institution.

Friedman M. (1962) *Capitalism and Freedom*. University of Chicago

Friedman M. (1968) *The Role of Monetary Policy*. American Economic Review 58(1): 1-17.

Goetz A. R. (2009) *The good, the bad and the ugly: 30 years of US airline deregulation*. Journal of Transport Geography, Volume 17, no. 4, p. 251-263.

Kahn E. A. (1970) *The Economics of Regulation: Principles and Institutions*, Wiley and Sons.

Netessine S., Shumsky R. (2002) *Introduction to the Theory and Practice of Yield Management*. INFORMS Transactions on Education 3(1):34-44.

Posner R. A. (1974) *Theories of Economic Regulation*. Bell Journal of Economics v5(2) 335-358.

Rose N.L. (2012) *After airline deregulation and Alfred E. Kahn*. The American Economic Review, Volume 102, no.3, p. 376-80.

Smith B.C., Leimkuhler J.F, Darrow R.M. (1992) *Yield Management at American Airlines*. Interfaces vol. 22, no. 1, p. 8-31.

WEBSITES

U.S centennial of flight commission- *Deregulation and its consequences*

https://www.centennialofflight.net/essay/Commercial_Aviation/Dereg/Tran8.htm#:~:text=The%20most%20important%20effect%20of,freedom%20to%20set%20their%20fares.

Worlddata.info – Inflation Rates in the United States of America

<https://www.worlddata.info/america/usa/inflation-rates.php#:~:text=During%20the%20observation%20period%20from,year%20inflation%20rate%20was%203.2%25.>

The Geography of Transport Systems – Annual Passenger Plane Load Factor, World and the United States, 1950-2021

<https://transportgeography.org/contents/chapter5/air-transport/plane-load-factor/>

Bureau of Transportation Statistics, Air Fares.

<https://www7.bts.dot.gov/air-fares>

Wikipedia, 2000s Energy Crisis

https://en.wikipedia.org/wiki/2000s_energy_crisis

Wikipedia, Airline hub

https://en.wikipedia.org/wiki/Airline_hub