Surviving Price Deregulation

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Abstract

Theory and evidence from the past two decades demonstrate that price deregulation increases efficiency and lowers costs and prices. The impact of deregulation on profit, however, is ambiguous and depends in part on the industry's market structure. Theory predicts that, in competitive industries, price deregulation tends to reduce prices by about as much as costs, producing little change in profit. In industries with monopolistic characteristics, however, price deregulation may permit higher profits for the surviving firms. This paper argues that price deregulation itself can have a profound impact on an industry's market structure. Understanding how this change in market structure may occur is crucial in predicting the impact of price deregulation on an industry's profitability.

This paper focuses on how price deregulation is likely to impact the U.S. auto insurance industry. At present, the industry is competitive. Unlike the transportation industries, existing regulation has not seriously impeded entry into or exit from the market. In this competitive market environment, price deregulation may exert only a minimal impact on profits. On the other hand, increased pricing freedom is likely to stimulate development of new technologies for varying rates and segmenting markets, similar to those developed by the deregulated airline industry. Specifically, price deregulation will lead to more sophisticated class plans, more frequent rate changes, and more consumer shopping. To exploit these changes, insurers must integrate computer systems, increase employee skills in gathering and analyzing customer data, and offer high quality, individualized service. Price deregulation, thereby, may create new profit opportunities for the largest existing insurers, who possess the data and expertise for sophisticated analysis. Actuaries need to be prepared for these changes.

Introduction

In the late 1970's and early 1980's several industries in the energy, transportation, and financial sectors of the U.S. economy experienced significant deregulation. Price restrictions and restrictions on entry and exit were lifted for airlines, trucking, natural gas, petroleum, and brokerage. Rates for railroads and telecommunications were partially deregulated. Many banking industry restrictions on prices and entry were eliminated. The chart below lists recent major regulatory reform initiatives by industry (Winston, 1993, Table 1):

Deregulation Time Line	
Industry	Major Initiative
Brokerage	Securities Acts Amendments (1975)
Airlines	Airline Deregulation Act (1978)
Natural Gas	Natural Gas Policy Act (1978)
Petroleum	Decontrol of crude oil and refined petroleum products (executive orders beginning in 1979)
Trucking	Motor Carrier Reform Act (1980)
Railroads	Staggers Rail Act (1980)
Banking	Depository Institution Deregulation and Monetary Control Act (1980), Garn-St. Germain Depository Institutions Act (1982)
Telecommunications	AT&T Settlement (1982)
Cable Television	Cable Television Deregulation Act (1984)

Although this wave of deregulation had little impact on the insurance industry, the industry and several state legislatures have begun to show an increased interest in deregulating insurance. In 1998 Pennsylvania passed new legislation exempting carriers from rate and policy form filings involving large commercial risks. Other states plan to follow Pennsylvania's lead in 1999. Some analysts believe that deregulation of personal lines will follow. Several trade organizations, including the American Insurance Association, the Alliance of American Insurers, the National Association of Independent Insurers, and the National Association of Mutual Insurance Companies, have appealed to the National Association of Insurance Commissioners to hold a hearing on the issue of complete free market pricing. The groups argue that price controls have distorted markets, are political, deny choices to customers, and are an "artifact of industry practices and a relic of an economic theory discredited domestically and globally" (The Insurance Regulator, November 30, 1998 and December 14, 1998).

This paper examines how deregulation would likely affect the property and casualty insurance industry. Considering experiences in airlines and trucking, this paper draws implications for the impact of deregulation on auto insurance companies. We focus on airlines and trucking for two reasons. First of all, both of these industries have undergone swift and nearly complete price deregulation. Although banking deregulation is an obvious candidate for comparison with insurance, deregulation in that industry has occurred rather slowly and is not complete. Secondly, the underlying rationale for regulating the airline industry is similar to that of insurance: concern for public safety. The Federal government originally regulated the airlines to promote air safety. Airline deregulation in the late 1970's generated concern that competitive price wars would cause flying to become less safe. Similarly, one of the main justifications for insurance regulation has been to prevent reckless competition that could lead to insurer insolvency.

The paper has four sections. In Section I the paper describes the impact of deregulation on costs. The second section argues that the effect of deregulation on industry profits depends in part on market structure. In Section III the paper compares and contrasts the experiences of the top five airlines before and after deregulation. The aim is to better understand how auto insurance companies might survive deregulation. The fourth section is a conclusion.

I. Inefficiencies of Regulation

Regulation causes inefficiency by limiting competition and weakening the incentive to minimize costs. Entry and exit barriers prevent development of optimal networks and make it more difficult to shed excess capacity. Price regulation discourages efficient marketing and prevents firms from responding effectively to external disturbances. Empirical studies conclude that regulation has resulted in higher costs and prices in several industries, including airlines, trucking, railroads, telecommunications, cable television, brokerage, and natural gas (Winston, 1993, Table 3; Conference Strategy Board, July 1998). We discuss these issues below for airlines and property-casualty insurance.

Airline Industry [1]

In 1938 the Civil Aeronautics Board (CAB) began to regulate the airline industry. It immediately restricted entry. To begin servicing a new route, an airline first needed to obtain a certificate from the CAB showing that the presence of another carrier was required by "public convenience and necessity." One of the first acts of the CAB in 1938 was to grandfather in the 16 existing trunk carriers. Over the next 40 years, more than 150 applications were submitted to the CAB to add long distance routes, but not a single entry was allowed! According to critics, the CAB specifically rewarded inefficiency through its practice of awarding monopoly routes to airlines in troubled financial condition in order to "maintain competitive balance and prevent bankruptcies." The CAB also strictly controlled air fares. For a particular route, airlines could charge only coach or first class, with the fare based primarily on miles traveled. Since costs involved a heavy fixed component that did not vary with miles traveled, the long distance routes generated excess profit, while the short routes were unprofitable. The airlines responded by competing intensely for the profitable, long distance routes. Since regulation prevented competition based on price, airlines engaged in non-price competition based on flight frequency, meal quality, width of seats, and friendliness of staff. This behavior greatly increased operating costs.

Airline deregulation began in 1976 when the CAB began to allow airlines to offer discount fares ("super savers") and to make route awards to all applicants "fit, able, and willing" to compete. The Airline Deregulation Act of 1978 codified these changes. Deregulation led to several important changes in the airline industry. First, airlines developed a computerized pricing and reservation system that allowed them to vary prices according to marginal cost and differences in customer price sensitivity. Deregulation also dramatically altered airlines' route networks. Prior to deregulation, airlines traveled in a linear fashion between particular cities as required by CAB rules. This system was inefficient, often resulting in planes being flown half empty. After deregulation, airlines developed the much more efficient "hub and spoke" system for carrying passengers between cities. Third, after deregulation, airlines turned to non-unionized labor in order to reduce costs and began to use equipment more intensively. Wages of pilots fell dramatically, while time spent in the air increased. Similarly, planes were flown more hours each day. Over the past 20 years, the net impact of these changes has been a dramatic reduction in

[1] This discussion draws on Williams (1993).

operating costs. After adjusting for inflation, the average airfare has dropped about 40 percent (Aviation Week and Space Technology, November 9, 1998).

Property and Casualty Insurance

Regulation also contributes to higher production costs and prices in the insurance industry. First of all, regulated rates cannot be changed rapidly, making it more difficult for insurers to respond to cost changes or competitive changes. Since the regulatory process required for approval of rate increases can be especially time consuming, insurers are hesitant to decrease prices for fear of difficulty in increasing them later. Restrictions on classifying risks for pricing purposes also lead to higher costs. Studies show consistently that "class plan" restrictions result in an increase in the size of the "involuntary" market that insurers must support (Grabowski et al, 1989; Tennyson, 1998).

One interesting question is whether insurance regulation has created barriers to entry and/or exit akin to those present in the airline industry. If so, this is another important source of inefficiency. Although most economists assume that the insurance industry has low "natural" barriers to entry, the National Association of Independent Insurers (NAII) argues that the bureaucratic requirements that must be satisfied to enter a new state market are excessive (Harrington, 1984; NAII, undated). For example, licensing requirements for new companies can create delays of a year or more. Insurance regulation also includes exit barriers: the insurance commissioner in a state has the authority to deny a company's request to withdraw from a product line or a market. Despite these costs, many insurance companies have entered and exited the industry over the past few decades.[2]

II. Will Deregulation Increase Industry Profits?

The effect of deregulation on profits depends on the competitive characteristics of the industry. Some industries operate competitively, even under regulation. In these industries, firms enter and leave the market freely. There are no significant economies of scale. If regulators fix prices above the competitive level, non-price competition between firms eliminates any excess profits.

In this type of industry, deregulation tends to have little impact on profits. Although operating costs may fall, competition ensures that prices fall along with costs. Economists viewed the airline industry as competitive and predicted that deregulation would not increase industry profits by much (Winston, 1993). In other industries, regulation insulates firms from competition so that excess profits are made. When these industries deregulate, profits of existing firms can fall. The trucking industry falls into this category. Finally, industries with production technologies that involve economies of scale are the most likely to experience an increase in profits following deregulation. Deregulation frees these firms to exert market power and price discriminate. For example, the railroad industry, which is a natural monopoly, experienced a significant increase in profits following deregulation.

Predicting the effect of deregulation on profits is complicated by the dependence of market structure on existing technology. Deregulation of the past two decades shows that the sources of an industry's competitiveness can change rapidly because of new technology. In predicting whether deregulation will increase or decrease profits, it is important to consider how deregulation is likely to influence an industry's technology, and how the change in technology will influence market structure. The following examines these questions in the context of the airline, trucking and property-casualty insurance industries.

Airline Industry[3]

Airline industry profits suffered under CAB regulation. Despite the absence of price competition, the regulated airlines made no monopoly profits. These were dissipated through extensive non-price competition. On the eve of deregulation in the 1970's, economists generally predicted that deregulation would not increase airline profits by much, because the industry seemed so naturally competitive. Analysts assumed that deregulation would allow many new, small airlines to enter the market and challenge the established players. They believed that falling costs and fierce price wars would lead to a less concentrated, more competitive market structure.

At first, these predictions held. Initially, many new carriers did enter the industry. Most,

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[2] Between 1980 and 1993, 613 new property-casualty companies were formed and 320 left the industry voluntarily or because of merger (National Association of Independent Insurers, 1989-1993).
[3] This discussion draws on Williams (1993).

however, have not been able to survive the ensuing price wars. Instead, a few large existing carriers have held on to and strengthened their market positions. They accomplished this in several ways. First, existing airlines monopolized take-off and landing slots. Consequently, new entrants could only fly at less attractive times. Second, incumbents already had national networks and could offer attractive frequent flyer packages, which regional carriers could not match. Third, incumbents had code sharing alliances with each other that put new entrants at a competitive disadvantage. Fourth, existing carriers, particularly American and United Airlines, increased their market dominance through the development of in-house computer reservation systems (CRS's). Airlines negotiated deals to have their CRS's installed exclusively in large travel agencies. Airlines then manipulated the presentation of CRS data to their advantage and paid agents extra commission to book flights with them. Finally, incumbents protected and expanded their markets by developing "hub and spoke" networks. In so doing, they were able to drive out small companies. For example, before deregulation, one small carrier, Frontier Air, had developed a modest "hub and spoke" system out of Denver. As a small commuter airline, Frontier did not have to follow all of the CAB regulations enforced for the trunk carriers and was highly competitive and innovative. Because Frontier was small, the large airlines were not threatened. After deregulation, however, the big airlines began rapidly developing new route systems. Continental and United began operating "hub and spoke" systems out of Denver. Unable to compete with these brand names, Frontier went out of business.

Overall, airline deregulation led to a substantial increase in growth and profitability for the industry and for several of the large, incumbent carriers in particular. No one believes any longer that the ideal airline is "small, quick, and nimble." The experience of the last two decades shows that the airline industry now involves significant economies of scale, and that "big is better." This fact has led to more and more calls for re-regulation of the airline industry in order to end "monopolistic abuse" by the large carriers.

Trucking

In the 1930's, the Interstate Commerce Commission (ICC) began to regulate the trucking industry, largely in order to protect the railroads from competition. The ICC kept trucking rates artificially high and restricted entry into the industry. These regulations allowed existing truck companies to make monopoly profits. In the early 1980's, the trucking industry was deregulated.

From 1980 to 1985, trucking firms faced massive market entry and falling prices. Although 4,500 trucking companies went out of business, there were 40 percent more trucking firms at the end of 1983 than before deregulation (Zingales, 1998). In this case, deregulation reduced industry profits (Winston, 1993).

Especially hard hit by deregulation were large trucking companies specializing in carrying many small loads for different customers (Fortune, April 27, 1998). These companies had developed extensive networks of hundreds of warehouses where the many partial loads were consolidated into full loads, which could then be transported more efficiently. All the consolidation was expensive and time consuming. Trucking firms could profit despite such inefficiency because regulation restricted entry. With deregulation, small, independent trucking firms emerged. These firms were willing to work for less and could deliver small loads more quickly. The small firms drove many of the large, partial-load specialists out of business. Thus, in this case, competitive advantage due to size and networks became obsolete under deregulation.

In conclusion, the airlines and trucking industries had very different experiences under deregulation. Although analysts predicted that airline deregulation would lead to more competitiveness and less market concentration, this prediction turned out to be wrong. Deregulation encouraged the development of new technologies, such as the "hub and spoke" system, which could only be exploited by the largest carriers. These new technologies led to increased profits and greater market concentration. By contrast, deregulation of the trucking industry led to reduced profits and less market concentration. The load and delivery networks developed by large trucking companies under regulation were no longer profitable. These strikingly opposite experiences show the danger in drawing conclusions about how deregulation will affect an industry, based solely on the industry's current technology and market structure.

Property and Casualty Industry

Joskow's seminal 1973 paper on the property and casualty regulation describes the industry as including a large number of firms with low market share, entering and exiting the market relatively freely and producing nearly identical products using constant returns to scale technology. As explained above, theory predicts that deregulation of a competitive industry such as this results in efficiency gains and customer benefits but has little impact on industry profits. Empirical studies

comparing states with different degrees of auto insurance regulation generally supports this prediction. There is no consistent evidence that prices, profits, or loss ratios are consistently higher or lower in states requiring "prior approval" for rate changes. The results vary, depending on the time period and particular states being considered (Ippolito, 1979; Harrington, 1984; Tennyson, 1997; Bajtelsmit, 1998).

There is evidence, however, that the property and casualty industry does not fit the competitive industry paradigm completely. Particular insurance distribution systems do involve significant economies of scale.[4] Economies of scale clearly are important in a direct response arrangement, as most of the acquisition expenses are fixed costs associated with the start-up period. Several analysts have also suggested that economies of scale exist in production of insurance by direct writers since developing an exclusive agent distribution system entails high fixed costs (Joskow, 1973; Harrington, 1984). Once these fixed costs have been made, direct writers can produce more cheaply than independent agents. Thus, the cost of establishing an exclusive agency potentially creates a barrier to entry by small firms. Over the last few decades, concentration of the industry has increased due to faster growth by direct writers (Tennyson, 1997). Theory suggests that deregulation would most benefit the sectors of the insurance industry with economies of scale and market power.

The key question is how pricing deregulation would affect the profitability of different production and distribution strategies – and whether these strategies would benefit large established companies or new "upstarts." For example, after deregulation of the airlines, it became both possible and profitable to develop "hub and spoke" networks. Only the largest airlines could manage this on a national scale. Thus, a new economy of scale emerged after deregulation. On the other hand, the networks developed by the trucking industry became obsolete after deregulation, eliminating a source of competitive advantage to large firms. In both cases, these changes reflect the increased emphasis on competitive pricing following deregulation. The "hub and spoke" airline system allowed prices to fall – even though the system is less convenient for air travelers. A similar shift in emphasis may occur following deregulation of auto insurance. Considering the experience of the airline industry, the production and distribution strategies most

likely to succeed in auto insurance will be those that permit the lowest prices, even at the expense of customer convenience.

Deregulation is likely to have a profound effect on insurance pricing. Deregulation created incentives for the airlines to vary prices. This in turn made complex pricing technologies profitable. Since the pricing technology was so expensive, it provided an opportunity for the largest airlines to exploit new economies of scale. A similar situation could occur if insurance is deregulated. With more pricing freedom, it will become more profitable to invest in risk assessment knowledge and systems. The class plans of personal auto insurers already reflect a wide variation in risk assessment capabilities. At present, those class plans are subject to regulatory filing and approval in most states. With deregulation, such plans would become proprietary information and thus potentially more important. This proprietary information will become a crucial new source of competitive advantage for companies large enough to make the investment.

Even if presented with new growth opportunities, the incumbents in an industry must move quickly to take advantage of their insider status. In Britain, traditional insurers failed to respond vigorously to the opportunities presented by price deregulation in the 1970's and 80's (Westall, 1997). At the end of the 1980's, a new company, Direct Line, began to sell insurance directly to policyholders over the telephone. This direct marketing pioneer has become extremely successful. Although the initial cost of advertising was very high, Direct Line has reduced costs dramatically by eliminating agents and branch expenses. Database management allows fine discrimination between risks and rapid premium rate adjustments. As Direct Line's market share grew, it began to operate its own body shops. These shops, which reduce claims costs through better management of the repair process, are only feasible for a company with a large market concentration. Currently, Direct Line's market share is 13 percent, about the same as Allstate's.

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[4] Economies of scale also appear to be important in handling of claims, particularly in controlling use of body shops and local defense attorneys.

III. Surviving Deregulation: Experiences of the Airline Leaders

The table below shows market share leaders in the airline industry, before and after deregulation in 1978 (Aviation Week and Space Technology, 22 December 1986; Williams, 1993). Market share is measured as a percentage of revenue passenger miles (RPM):

Top Five Airlines' Domestic Market Share Comparison (% RPM)					
Market Share	1970	1978	1983	1993	1998
1	United	United	United	American	United
2	TWA	American	American	United	American
3	American	Delta	Delta	Delta	Delta
4	Pan Am	Eastern	Eastern	Northwest	Northwest
5	Eastern	TWA	TWA	US Air	US Air

As the table shows, the two market share leaders in 1978, United and American, are still the top two airlines today. The combined market share of the two airlines has increased from 34.6 percent in 1978 to about 40 percent in 1993, and 36.9 percent in 1998. The market share of Delta, the third largest airline, rose from 12 percent to 15.7 percent. TWA's market share has dropped from 14 percent to under 5 percent. Pan Am and Eastern Airlines went out of business in 1991 (Aviation Week and Space Technology, January 28, 1991). We discuss TWA, Pan Am, Eastern, and Delta in more detail below.

TWA and Pan Am [5]

Both airlines specialized in domestic long distance and international travel, which are the most competitive segments of the market. On the eve of deregulation, the market shares of TWA and Pan Am were falling. The airlines were especially hurt by the recession and fuel crisis in the 1970's. During the 1980's, they continued to lose market share because they did not have a good domestic system to feed their international routes. Unlike United, American, and Delta, TWA had only a small hub in St. Louis, while Pan Am had none. Pan Am sold its international routes in a desperate effort to survive. TWA sold its profitable London routes to raise money and allowed its air fleet to deteriorate. By 1990, TWA had diversified into real estate, fast foods, and hotels. The non-airline portion of the business continues to absorb capital, making it difficult for TWA to upgrade its planes. By 1992, TWA had survived two bankruptcies and Pan Am was gone.

[5] This discussion comes from The Times (July 19, 1996) and Business Week (May 19, 1980).

Eastern Airline[6]

By 1975, Eastern was already in deep trouble. At the time, analysts predicted that the airline could not survive deregulation. Eastern's problems were many. It operated many short flights between small cities, requiring too many planes and too many people. The planes used for these routes were too big. Eastern's balance sheet included considerable long term debt. Its corporate offices were split between Miami and New York, leading to confused management. Eastern had a reputation for poor quality service. The airline ceased flying in 1991.

Delta[7]

Delta is a profitable airline with a strong balance sheet. The source of its strength is its conservative approach to finance and management. Delta has always engaged in consistent capital spending on its fleets. It buys steadily and carefully, in good times as well as bad. In this way, it keeps its fleets relatively young, and avoids excessive spending in any year. During the 1980's, Delta had the highest retained cash flow as a percentage of long term debt of any U.S. carrier. Another strength is Delta's hub in Atlanta. At its hub, Delta consolidates all of its operations, which generates economies of scale for the airline. Delta also has a reputation for its loyal, well paid, but non-union workforce. Delta, however, has been slow to seize new opportunities. Following deregulation, Delta hesitated to buy international routes and was slow to develop CRS's. The airline allowed American to beat it out in developing a second major hub in Dallas. Finally, in 1986, eight years after deregulation, Delta became a transcontinental airline when it merged with Western Airlines. At that point, its market share (including international passenger miles) shot from sixth place to third. In 1992, when other carriers were advertising price cuts, Delta increased spending to promote its good service! Delta remains strong because it stays out of too much debt and focuses on long term strategies.

Analogies Between the Airlines and Private Passenger Auto Insurers

It is instructive to draw an analogy between these experiences and what might happen to the major players in the personal auto insurance industry should deregulation occur. The chart below

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[6] See Business Week (Dec. 22, 1975) and Aviation Week and Space Technology (January 28, 1991).
[7] Forbes (Sept. 15, 1980), Aviation Week and Space Technology (Oct. 14, 1991), Brandweek (May 18, 1992), Business Week (Nov. 8, 1982), and Air Transport World (June, 1993).

shows market shares for personal auto for the five largest insurers (One Source Information Services, Inc. Market Share Application):

Market Share: Personal Auto (%)			
Insurance Group	1993	1995	1997
State Farm	21.8 %	21.7 %	20.8 %
Allstate	11.7	11.9	12.2
Farmers	0.0	5.8	5.9
Nationwide	3.5	3.7	3.9
Progressive	1.4	2.4	3.7

The two largest insurers, State Farm and Allstate, can be compared to United and American, the two largest airlines. Like United and American, State Farm and Allstate have dominated the industry for years. Both are national insurers with a long history of excellence in risk assessment. The companies are large and financially stable. They are both in a strong position to take advantage of new opportunities presented by deregulation. The third and fourth market share players, Farmers and Nationwide, are both regional companies who have attempted in recent years to become more national. These companies resemble Delta, also a regional company prior to deregulation. Deregulation may well lead to a battle between these companies to become the third largest auto insurer.

Who will be the Pan Am and Eastern of auto insurance after deregulation?

IV. Final Comments

Although deregulation clearly increases efficiency, the impact on the profits of existing firms in the industry depends on market structure and competitiveness:

- If an industry behaves competitively, consumers are the main beneficiaries of deregulation, as efficiency gains are passed on to them in lower prices. The effect on existing firm profits may be minimal.
- To the extent that deregulation protects industry profits by fixing prices above the competitive level or by restricting entry into the market, existing firms may be worse off after deregulation.

Faced with new competition, the existing firms may lose profits or go out of business.

- Existing firms in industries with barriers to entry tend to be more profitable after deregulation. Essentially, deregulation allows the firms to exploit monopolistic power.

The wild card in this analysis is technological change. The experience of the last two decades shows that deregulation stimulates technological change. This paper has tried to show how deregulation, by freeing firms to pursue new pricing and distribution strategies, suddenly makes new technologies much more profitable than before. These technologies may give rise to new economies of scale and may make traditional economies of scale obsolete. Thus, in predicting how deregulation may influence profits of existing firms in an industry, it is important to consider how deregulation may influence the sources of competitive advantage.

How would deregulation influence the property and casualty industry? The property and casualty insurance industry has many of the characteristics of a competitive market. There is no consistent evidence showing that regulation allows insurers to make excessive profits or that it seriously restricts entry and exit from the industry. Ignoring technological change, this suggests that deregulation might not affect the profits of existing insurers very much. Deregulation, however, would give insurers the freedom to develop new market segments and rate relativities and to respond quickly to external shocks. Technologies that permit this will become much more profitable. Insurers with the capital to develop and implement new pricing capabilities will experience new competitive advantages. Insurers who do not respond quickly may find that traditional sources of competitive advantage, such as branch offices, agent networks, and relationships with regulators, are no longer profitable. One piece of evidence suggesting that these changes may be coming: in the last 26 months, Progressive Insurance reduced its rates in Texas, a state allowing flexible rating, on seven separate occasions (PR Newswire, May 14, 1998). By contrast, in Illinois, the state with perhaps the most pricing freedom, State Farm, Allstate, and Nationwide changed their rates only five or six times in the past seven years. Actuaries need to prepare for these changes.

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