

*Contracting in the U.S. Pork and Beef Industries: Extent, Motives, and Issues**

by

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Extent, Motives, and Issues

ut its extent is growing in some commodity sectors, among them the livestock meat sector. This paper provides a snapshot of the extent of and motiva contracting in the U.S. beef and pork industries. Following that is a discussion of issues raised by

Pork Industry Contracting – Extent

A survey of the 22 largest porkpacking firms in 1992 concluded that production and marketing contracts with pork producers would expand rapidly in the next decade (Hayenga and Kimle 1992). The conclusion would prove to be prophetic. The largest porkpackers procured 87% of their hogs through spot market arrangements and the remaining 13% via various types of contracts in 1993 (Hayenga, Rhodes, Grimes, and Lawrence 1996).

Already by 1997, the extent of contracting had increased sharply. A survey of pork producers found that 40% of hogs farrowed and 44% of hogs finished occurred under some type of production contract (Lawrence, Grimes, and Hayenga 1998). A significant percentage of this contracting was among producers, i.e., horizontal production contracts, rather than contracts typically considered a type of vertical coordination. Most of the growth in contracting from just three years earlier was in the 50,000 head or more size category. At least 50% of hog production contracting was accounted for by the 18 largest pork producers. The same survey found that nearly 57% of the market volume of hogs in 1997 were marketed under some form of contract, up 20 percentage points from three years earlier. Buhr and Kunkel (1999) identified and described several types of marketing contracts; formula price, cost plus, price window, and price floor. And as noted later, the motivation for each differs. Producers in the largest size category, 50,000 head or more, were most heavily engaged in using marketing contracts, just as they were production contracts.

A January 2000 survey of the twelve largest porkpackers found procurement of hogs under marketing contracts increasing further (Grimes and Meyer 2000). As Table 1 shows, the types of contracts reported by the eleven respondents varied. Clearly in just a few years, packer procurement of hogs has switched from being predominantly dependent on spot price methods to being heavily dependent on various forms of contracts.

Table 1. Hog Procurement Methods, 1999

Procurement Method	Percent
Cash market purchase, live basis	8.0
Cash market purchase, carcass basis	18.8
Formula-priced contract based on cash market	32.3
Fixed price contract based on futures	8.3
Fixed agreement based on feed price	5.7
Formula contract with window	7.9
Other purchase methods	1.4
Self production	17.7

Pork Industry Contracting – Motives

Contracting involves at least two parties and their motives may be distinctly different. Similarly, motives for entering into different types of contracts likely vary by the contract type as well as by the parties to the

contract. Some of the motives for use of contracts in the pork industry are discussed here. Clearly, motives overlap and one contract may satisfy several individual motives.

Producers

- Access to capital Production contracts between producers is a means for one producer to obtain efficiency. There is growing anecdotal evidence at least pork production or to obtain more favorable lending arrangements, i.e., lower interest rates or lower equity requirements.
 - Growth and expansion Production contracts between producers also can be a means for a producer availability becoming an increasing wider geographic area via production contracts with producers provides access to a much needed, but
 - Margin assurance Cost plus contracts enable producers to lock production costs. These may involve a “standard” cost of production for an area and set of returns by achieving better than the standard performance. Cost plus contracts may incorporate risk
 - Price risk management (inputs and output) Seasonal and cyclical prices for pork production inputs (feed hogs) make pork production a risky business. Thus, price risk market, whether a cash market, futures market, or wholesale market, is not price risk management. The transaction price increases and decreases along with the reference market. However, price from extreme prices. Producers benefit when prices rise above the ceiling. Price floor contracts also provide risk protection from low prices but
 - Higher prices Some However, the extent this occurs is unknown. Some analysts believe the extent that higher prices especially between the largest producers and packers, was a prime reason why some producers use allegedly noncompetitive pricing contracts, also contract hogs for some of the other reasons identified here.
- ing contracts have an express or implied motivation
- excess capacity in hog slaughtering puts some producers at risk. They may have hogs to market with place to market them without a severe penalty in terms of higher transportation costs or lower is needed. Slaughter capacity near to or less than hog slaughter concern to many. Some producers “caught” without a home for their hogs at that time may since situations in the

- Reduced transaction costs – The cost of negotiating a price and terms of trade for every truckload of hogs produced by the largest producers is real and can be significant. In addition, some producers might say that negotiating prices is one of their least enjoyable pork production tasks. Therefore, negotiating one or a series of contracts may significantly reduce transaction costs compared with the costs involved with marketing many sale lots of hogs regularly.

Packers

Table 2 shows the relative importance to eleven survey respondents of various motives to increase coordination in the pork industry (Hayenga et al. 2000). Some of the motives for increased use of contracts by packers are discussed here.

a

a

1=not important to 5=very important

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 varying levels of capacity utilization for packers. Unused capacity contributes to higher per unit
 cost and lower net margins for a margin driven firm. Contracts can ensure

–
 with rivals for limited supplies of hogs at certain times. Contracts can enable more tight
 coordinating the flow of hogs to packing plants to better utilize labor and fixed physical resources.

–
 that are deficit the volume of hogs required to meet demand in
 North Carolina and Oklahoma.

–
 processors as they develop case ready, branded pork products to meet
 the results in Table 2, quality considerations are the driving force toward increased coordination in

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 carcass specifications
 etc. In the future, there will be more focus on such specifications as pH, pork color, water holding
 capacity, etc. with pork producers can enable

–
 This will become increasingly important as packers designate plants and their output to a single retail
 chain buyer.

–
 safety. Food borne illnesses, especially of a significant magnitude, involving deaths and/or children,
 and large sums of money, sometimes even resulting in the

further. Some consumers will demand a system to trace food to its source on the farm or ranch. Aga

Price risk management Packers are margin businesses and so to a limited extent have less need for price risk management than do pork producers. Still price variability addition, as packers offer producers risk transfer alternatives, they assume risks from producers. Packers, in turn, need to transfer the assumed risk from producers to others, e.g., futures market f marketing contracts can enable both pork producers and packers to decrease or better manage price risk.

- Reduced transaction costs – by packers. Packers procure hogs from about a 150 mile radius around each plant. Large plants require about 80 truckloads of hogs daily to operate at capacity. Locating market ready hogs and negotiating prices individually for that many transactions daily is costly. Thus, contracts negotiated several-coordinating the flow of hogs to plants in a timely manner.
- – Some would allege packers use contracts to reduce the procurement price for hogs. According to packer-important reasons for contracting (Table 2). Carlton (1979) argues that lower prices can be expected from contracts relative to spot markets. As noted, s negotiated transactions that what they receive with contracts, thus lending support to the allegation. However, a study of the Western Cornbelt hog market found that hogs purchased via marketing n 1996 received higher prices than hogs purchased in the cash market (Grain Inspection, Packers and Stockyards Administraion 1998). Pork quality was higher for marketing contract hogs as ble economists to determine price differences by procurement method and whether packers benefit by paying lower prices for

packers. Contracts involve two consenting parties, so contracts could be expected to involve mutual to suggest benefits are shared equally, as that is one of the concerns to be discussed later. And there is the whole. However, there is not overwhelming evidence contracting is being used exclusively as a tool of this point.

Beef Industry Contracting –

The first year the U.S. Department of Agriculture (USDA) collected data on contracting by the four est beefpacking firms (1988), forward contracts and marketing agreements accounted for 15.8% of steer and heifer slaughter (Grain Inspection, Packers and Stockyards Administration 2000). Since then s was 19.3% the following year (1989). It was 18.9% for the last year reported (1998). Contracts in the beef industry are of two primary types; forward term supply contracts to looser forms of supply contracts.

What constitutes contracts in the beef industry is a significant question. First, many contracts are oral -1990s, grid pricing or carcass merit pricing has increased in Many of these transactions are formula-often the spot-

more weeks prior to the slaughter date, they are grouped with contracts by Grain Inspection, Packers and Stockyards Administration (GIPSA) and the Agricultural Marketing Service (AMS). Transactions with delivery within two weeks of the sale date are considered spot-market purchases, though some could also be contracts. AMS reports non-cash-market purchases in their breakdown of feedlot volume as “additional movement” and this category of shipments is increasing sharply. Figure 1 shows the GIPSA data for contracts and marketing agreements since it began reporting the data in 1988 along with the AMS data for additional movement since it began reporting the data in 1994. In addition, Figure 2 shows weekly data for the additional movement series and documents the rapid increase in this portion of feedlot shipments over time.

A survey of the fifteen largest beefpacking firms in April 2000 (Hayenga et al. 2000) provides a breakdown of procurement for the ten respondent firms (Table 3). Various forms of contract purchases accounted for about 27% of respondents’ cattle purchases in 1999.

Figure 1. Estimated Contracting of Fed Cattle

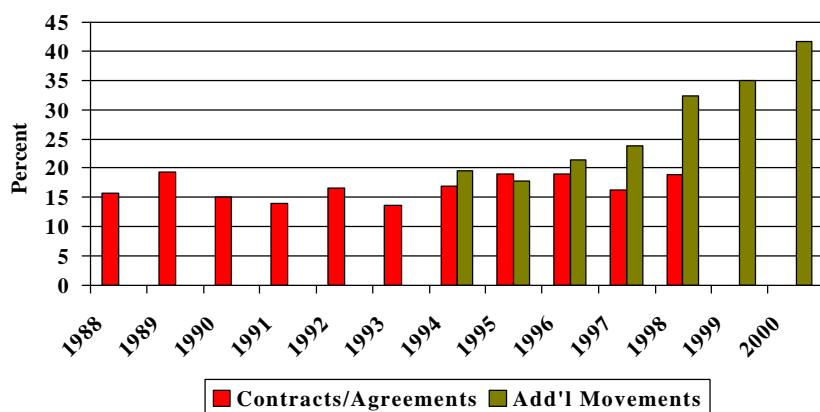


Figure 2. Trend in Weekly “Additional Movement” of Fed Cattle

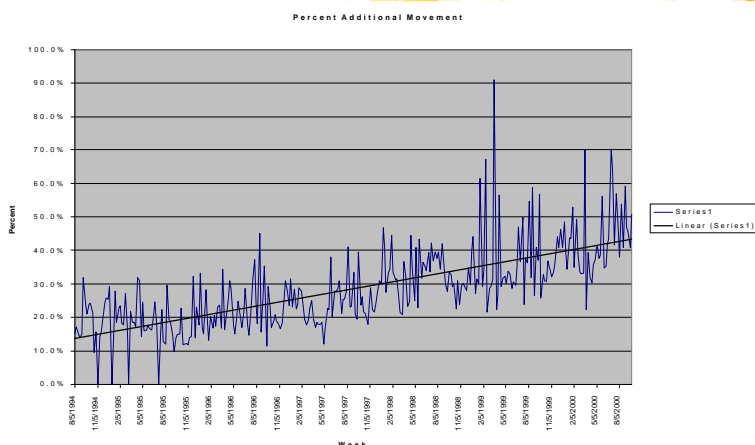


Table 3. Percentage of Cattle Procured via Various Methods, 1999

Purchase method	Percentage
Cash market purchases on live weight basis	36
Cash market purchases on a carcass-weight or grid basis	29
Formula-priced contract purchases based on a reported live cash market, reported dressed price, plant average, CME cattle futures price, quoted boxed beef or retail beef price	20
Packer-fed cattle	5
Fixed price or basis contract purchases based on CME futures	4
Risk-sharing contract purchases	3
Other purchases	4

Beef Industry Contracting – Motives

Like the pork industry, contracting in the beef industry involves two or more parties and their motives may differ. Likewise, motives may vary for different types of contracts. Some motives for using contracts in the beef industry are discussed here. Many are similar to those found in the pork industry but differences can be noted.

Producers

- Access to capital – Cattle feeding is an inherently risky business. In the late 1980s, basis forward contracting grew relatively rapidly in the beef industry. A survey of cattle feeding lenders revealed financing ease as a key advantage from contracting (Eilrich 1990). With basis contracts, lenders were willing to lend capital, provide capital at a lower interest rate, or require less equity for the loan. Since then, little has been done to determine the influence of lenders on increased use of contracts for cattle feeding.
- Price risk management – The cattle feeding industry is subject to cyclical and seasonal price swings plus almost unpredictable short-run price volatility. Thus, price risk management is nearly essential to remain in cattle feeding and earn positive profits over a long time period. Basis forward contracts

are one means of providing partial price risk management for cattle feeders. Anecdotal evidence suggests the increase in basis forward contracts in the late 1980s was spurred more by cattle feeder requests of packers than imposition of contracting onto feeders by packers. Clearly, among the “big 3” packers at that time, there were competitive advantages for one or more firms with extensive commodity trading experience to offer forward price and basis contracts. Basis contracting alone does not provide adequate price risk management since it only establishes a known basis, not the price level. Supply contracts do not necessarily have any form of price risk management incorporated into the contract.

- Higher prices – Basis contracts do not necessarily achieve higher prices by themselves. They may be used as part of the risk management program that has higher prices as a goal. Higher prices may be a goal of marketing agreements or supply contracts with packers. In the opinion of respondent packers (Hayenga et al. 2000), receiving carcass merit premiums and higher prices are the primary motives for producers to use contracts and marketing agreements (Table 4). For a time, marketing agreements enabled cattle feeders to market fed cattle on a carcass merit or grid pricing system and to receive carcass data. Today, cattle feeders may not need a supply contract to market cattle with grids or to receive carcass data. However, initially, higher prices were likely a goal of using supply contracts because it was believed cattle would be paid more in accordance with their quality components and that receiving carcass data would enhance purchasing and feeding cattle that would earn premiums with grid pricing.

Table 4. Packer Survey Responses of Importance of Contract and Marketing Agreement Incentives to Cattle Producers^a

Importance for Producers	1999 Average	2004 expected Average
Secure a buyer for cattle	2.6	2.8
Secure a quality premium/discount	4.0	4.0
Reduce price risk	3.3	3.3
Reduce costs of searching for a cattle buyer	2.4	2.8
Able to sell cattle for higher price	3.8	3.8
Easy to get loans	3.1	3.4
Provide detailed carcass data	3.4	3.6

^aScale of 1 to 5, 1=not important to 5=very important

- Market assurance – Having a “home” for fed cattle is a benefit from and motive for using contracts. However, the market environment differs somewhat for fed cattle than for hogs. For cattle, there is less fear of not having enough shackle space since there is more excess capacity in steer and heifer slaughter than for slaughter hogs. The bigger concern is that packers will use their leverage from consolidation in the industry and their use of so-called captive supplies. With only a few large beefpackers and with most cattle feeders able to obtain bids from only a subset of the few on a regular basis, sometimes only one or two, the fear exists that cattle will be ready for slaughter but no bids or only a single bid will be received. Thus, negotiating strength transfers to the packer because cattle feeders are maintaining a perishable commodity. Few bidders, combined with some packers having significant numbers of owned or contracted cattle, cause many cattle feeders to worry about market access. Therefore, contracts provide assurance of a “home” for cattle when they are market ready.
- Reduced transactions costs – About 250 cattle feedlots each with a one-time capacity of 16,000 head or more accounted for nearly 70% of fed cattle marketings in the major cattle feeding states in 1998. Average annual marketings for these feedlots are about 63,250 head of fed cattle. For these large

feedlots, the transaction costs of negotiating prices and terms of trade for each pen of cattle are substantial. This fact alone is a motive to enter into marketing contracts with packers.

Packers

- Supply assurance and coordination – Beefpacking is a margin business where cost control is important for profitability and competitiveness. Contracting provides packers a means of ensuring an adequate supply of fed cattle on a regular basis to achieve a minimum desired level of plant utilization. Inherent in capacity utilization is the need for coordinated timing of the supply flow to the plant. Packers have for at least two decades purchased fed cattle with a seven-day delivery period, enabling them to control the flow of deliveries to the plant. Contracting improves on that scheduling capability. Especially for larger cattle feeding firms, deliveries can be coordinated and scheduled for a specific shift on a specific day, thereby enhancing planning by cattle feedlots and packing plants. Estimates of coordination benefits to packers place them at \$6.59/head (Anderson and Trapp 1999). And other research has indicated that increased plant utilization is associated with lower operating costs and higher prices paid for fed cattle (Slaughter Cattle Procurement and Pricing Study Team 1996).
- Quality assurance and control – According to packer respondents (Hayenga et al. 2000), the primary motives for increased contracting by beefpackers are securing higher quality and more consistent quality cattle (Table 5). Several beef processing plants are being built with the intent to produce case-ready products exclusively for a single customer. Case-ready, branded, fresh beef products require quality consistency that has plagued the beef industry over the past couple decades. Therefore, contracts may be a means of ensuring the quality level and consistency needed for the beef industry to further develop branded, consumer demanded beef products.

Table 5. Packer Survey Responses of Importance of Contract and Marketing Agreement Incentives to Beef Packers^a

Importance to Packers	1999 Average	2004 Expected Average
Reduce plant operating costs due to improved Slaughter plant capacity utilization	2.9	3.5
Secure higher quality cattle	4.0	4.2
Secure more consistent quality of cattle	4.0	4.2
Assure food safety	3.0	3.7
Improve long run price risk management	2.8	3.1
Improve week-to-week supply/price management	2.2	2.9
Reduce costs of searching for cattle to procure	2.3	2.4
Able to purchase cattle for lower price	1.8	1.8

^aScale of 1 to 5, 1=not important to 5=very important.

- Food safety assurance – Examples of single plants closing and firms going out of business are found in the beef industry as well as other meat sectors. Increasingly for beef, consumers are concerned about food safety and will likely seek greater assurance products are safe. Part of food safety assurance includes plants devoted exclusively to single customers, contracts with suppliers, and an identification system from cow-calf producer to retail or food service distributors. Increased contracting will be driven more by food safety concerns in the future according to respondent packers (Table 5).
- Price risk management – Price volatility may be an increasing problem in the beef industry. As long as the focus is on margins, price volatility in cattle procurement is not a significant problem if the

same volatility occurs in wholesale beef and byproducts markets. However, there is a trend toward longer-term supply contracts with retail and food service customers. Pricing in some of those arrangements involve some “average” price over a given time period. Price risk management then becomes critical to keeping costs in line with contract prices in order to meet long-term profit objectives. Current contracts by themselves may not provide that degree of price risk protection. Thus, price risk management is not considered a primary motive for increased contracting according to packers (Table 5).

- Reduced transaction costs – having to negotiate prices and terms of trade on all sale lots of fed cattle entails substantial transaction costs for beefpacking firms. Basis forward contracts do little to reduce those transaction costs. However, long-term marketing agreements or supply contracts can significantly reduce transaction costs, even though anecdotal evidence suggests negotiating contracts or extensions is a costly, time-consuming process.
- Lower prices – Many cattle producers, similar to pork producers, allege that a primary motive for packers’ use of contracts is lower prices paid by packers for livestock. Research to date is somewhat mixed. Research by Ward, Koontz, and Schroeder (1998) found that basis forward contract prices were significantly lower than cash prices. Whether or not the difference was justifiable for the added risk absorbed by packers was not addressed. In the same study, higher prices were found for fed cattle procured via marketing agreements. Similar results were found in a more recent study (Schroeter and Azzam 1999). While an attempt was made to adjust for quality differences between procurement methods, the higher prices for marketing agreement cattle might have been due to higher quality cattle, more consistent cattle quality, or enhanced coordination. As in the porkpacking survey, beefpacker-respondents did not indicate lower prices paid for fed cattle to be a primary motive for using contracts (Table 5).

Contracting Issues in the Pork and Beef Industries

Contracting issues are grouped here into six categories, but not independent categories. Contracting issues are clearly interrelated. While each is discussed, some may be associated more directly with either the pork industry or beef industry. However, all are related to both industries to some degree.

Structure of Agriculture: Control vs. Independence

An overriding issue is really more of a philosophical and political issue than an economic issue. What is the desired structure of U.S. agriculture? Who will control agriculture was a popular question in the 1970s and equally relevant in 2000. Who is driving the trend toward consolidation, efficiency, and coordination? Lenders? Processors? Input suppliers? If left to economic forces, most economists would argue the structure will continue evolving toward more consolidation, more cost-efficient firms, and increased coordination via non-spot-market means, i.e., more contracting and vertical integration. Such a trend simply continues that of the last decade, or last century. Many see such a trend, evidenced in the structure existing today, as a threat to traditional family farm agriculture and the viability of rural America with its implicitly “better” value system. Albeit, one unanswered question in the debate is how should we define “control” and “independence.” Some producers see certain types of contracts as an acceptable form of independence or degree of control. Others only see an agricultural structure void of contracts as the acceptable degree of independence and control. Does contracting inject a constraint to the efficient markets theory? Are there adequate, efficient markets for renegotiating contracts or changing contractors?

Micro-Macro Conflicts: Firm vs. Industry

Contracting raises a real conflict for many individual producers, and potentially packers as well. What is best for the individual firm may not be best for the industry. As mentioned earlier, some producers negotiate hog prices for a percentage of their production because they believe they have a role in

preserving the spot market and because experience suggests they earn higher prices in the spot market. However, a majority of their production is contracted. Why? Because one or a combination of the reasons for contracting outweigh the alternative of negotiating all transactions. What happens when all producers and processors behave individually in their best interest?

Risk Transfer

Several types of risk can be transferred between producers and packers. Is the risk transfer generally recognized at the time contracts are executed? Often not. Producers may later learn certain production practices are not acceptable, that production standards can be changed during the contract period, or that the formula prices can be changed by the contractor without notifying the producer. Some contracts contain clauses that the contract cannot be shown to an attorney. Can producers understand the complexity of contract clauses written in legal language to fully comprehend the transfer of risk or control? Generally, increased risks transfer to producers from contractors. Producers may have as much or more production, financing, price, and liability risk with contracting as without contracts. This is an area for expanded educational efforts and further research.

Returns and Potential

Related to a transfer of risk is the return to risk. Typically, the more risk assumed, the greater the potential return. However, this may not be the case with some contracts. For example, production standards may be set so high that the risk of not meeting them is equally high. Without reaching the performance standards that trigger premium returns, below-standard or even par performance may only yield an average return. This, too, relates to the structure of agriculture issue. Many producers fear becoming piece-rate or wage-rate employees of large agribusiness contractors, rather than agricultural entrepreneurs. Contracts may be written so that liability for environmental accidents or food safety accidents rests with producers. Is there a “fair and equitable” distribution of costs and benefits with existing contracts?

Deterioration or Disappearance of Spot Markets

Increased contracting, almost by definition, reduces the viability of spot markets. What may result are thin spot markets that are highly volatile. There is evidence already that higher quality hogs are marketed via contracts and lower quality hogs are marketed through spot markets (Grain Inspection, Packers and Stockyards Administration 1998; General Accounting Office 1999). However, as was discussed, a high percentage of contracted hogs are tied to the spot market price. There is increasing evidence that the same situation exists for fed cattle as well. Market access concerns may exacerbate with thin markets. But how thin is too thin? Economists have not adequately researched this crucial question but as it relates to the producer level but also to the wholesale level.

Consolidation and Market Power vs. Coordination and Efficiency

Another key issue relates to the potential tradeoff between increased consolidation with its resulting increase in market power to depress livestock prices versus the efficiency and coordination gains from increased consolidation and non-spot-market coordination. This issue has been at the heart of the “captive supplies” question in the beef industry and is becoming an increasing issue in the pork industry. Is the drive toward increased contracting simply a means of creating leverage in the spot market to reduce competition and decrease livestock prices? The evidence to date suggests a relationship exists between captive supplies of fed cattle and modest reduction in spot market prices (Ward, Koontz, and Schroeder 1998; Schoreter and Azzam 1999). However, there are potential reasons for the statistical association other than use of market power (Schroeter and Azzam 1999). In a study of the tradeoffs between efficiency gains and oligopsony losses from structural changes in beefpacking, Azzam and Schroeter (1995) found that efficiency gains exceeded market power losses. However, one could question whether that will remain the case in the future as structural changes continue.

Conclusions

As noted at the beginning, contracting in the pork and beef industries is increasing. And clearly there are many economic motives for producers and packers to engage in contracting. There are also many sticky, contentious issues surrounding contracting in agriculture.

Ideally, agricultural economists will be actively involved in addressing these issues. As a profession, we need to provide educational materials for producers and packers to evaluate contracts and contracting, identify pros and cons for firms and industries, estimate short-run and long-run costs and benefits, specify implications for contracting participants and the broader rural economy, and actively provide objective input into the policy-making process. While there is a need to work on theoretical issues related to contracting, much of the important work should be of an applied, empirical nature targeted to those industries where structural and coordination changes are occurring rapidly, as in the beef and pork industries.

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