



Price Supports and Climate Change

The impact of policy related to agriculture in Illinois



¹“Farm Subsidy Tradition and Modern Agricultural Realities” (Daniel A. Sumner, 2007) provides a more detailed history of U.S. agricultural policy and references to overviews from other authors. Available online at: http://aic.ucdavis.edu/research/farbill07/aei_briefs/20070515_sumnerRationalesfinal.pdf.

Price Supports and Climate Change

By Nicholas D. Paulson

Introduction

This chapter examines two current policy issues relevant to agriculture in both Illinois and the United States. The first focuses on traditional agricultural policy in examining a new commodity program recently rolled out as part of the 2008 Farm Bill. The second takes a brief look at emerging energy and environmental policy related to climate change that will have both direct and indirect effects on agriculture. The two topics illustrate two issues facing modern agriculture – the public perception of the inefficiency and archaic design of existing commodity programs, and the need for agriculture, along with all industries, to begin considering its environmental impact. Furthermore, while the issues seem to come from opposing ends of the policy spectrum, they both hold the potential to affect farm incomes and producer decisions.

The rise of the biofuels industry in the U.S., fueled mainly by corn-based ethanol, has linked energy and agricultural markets. It also has contributed, along with other factors, to an apparent structural shift in the prices of the commodities most relevant in Illinois. These increased price levels have, at least in the short-run, rendered many of the existing price-based support programs largely irrelevant. As a partial response, many lobbying efforts during the most recent Farm Bill debate were focused on the design of a new program linked to revenue based on more current market conditions rather than fixed price supports. The ACRE, or Average Crop Revenue Election, program was the result of these efforts, and represents a fundamental shift in the design of U.S. agri-

cultural policy. However, despite significant education efforts by commodity organizations and extension economists, farm enrollment numbers for 2009 were relatively low. Furthermore, by design, the ACRE program adds to the already overlapping nature of existing farm programs, potentially reducing the efficiency with which taxpayer dollars are used to support farm incomes and reduce farm income variability.

Another policy-related issue which may significantly affect agriculture is that of emerging legislation related to climate change and the regulation of greenhouse gas (GHG) emissions. The regulation of emissions will likely pose both challenges and opportunities to the agriculture industry. Mandated emissions reductions will increase energy costs, creating both direct and indirect effects on production costs in all industries, including agriculture. The exemption from emissions regulation and the potential for the generation of offsets for sale to regulated emitters may provide agriculture opportunities to recover increased costs and even enhance farm incomes.

A Brief History¹

Agriculture legislation in the United States dates back to the colonial period with trade policy being the focus of early efforts to support prices and income for farmers. Since then, U.S. agriculture policy has regularly evolved, providing support through a variety of mechanisms including both direct and indirect price and income supports, supply controls, and conservation programs. The Agricultural Adjustment Act of 1938 and the Agricultural Act of 1949 continue to serve as the permanent

basis of agricultural legislation, with all ensuing farm bills serving as amendments to these earlier laws.

The breadth of coverage and the complexity of farm legislation have increased significantly over time. The most recent Farm Bill – the Food, Conservation, and Energy Act of 2008 – includes 15 separate titles related to a diverse range of topics. The individual focus of these titles continues to include traditional agricultural topics such as commodity programs, rural development, and agricultural credit and trade. The bill also includes titles for issues such as nutrition, energy, and horticulture and organic production.

The justifications for government support of agriculture are numerous. Examples range from consumer-oriented arguments related to food prices and food security, to more producer-focused rationales including farm and rural poverty and development issues, and naturally high variability in farm incomes and commodity prices due to their large reliance on weather conditions. The need for U.S. farm subsidies to counteract the domestic support provided by other nations is another frequently-used rationale.

The criticisms of farm support in the U.S. are also numerous. Opponents are known for contrasting those who actually receive farm support to the intended recipients.² By design, payments are often tied to the ownership of the land and are proportional to the scale of production. Thus, it is argued that support does not end up in the hands of the poor, small American farmer. As an example, Scottie Pippen, former professional basketball player for the Chicago Bulls who happened to own farmland, received more than \$210,000 in conservation subsidies from 1995 to 2002.³ The overlapping nature of existing programs, and the resulting inefficient use of tax dollars in providing support, is another common critique.

Overview of Relevant Support in Illinois

Before discussing the current environment and implications of recent changes to agriculture policy, it is useful to have an understanding of the modes of support which have been historically relevant in Illinois. These include the direct payment, countercyclical and marketing loan programs. Direct payments are based on historical production and are made to producers or landowners regardless of the current level of commodity prices or farm incomes. For this reason, direct payments have been largely harangued in the press in recent years as farm incomes reached record highs in 2007 and 2008. In contrast, the countercyclical and marketing loan programs provide support when commodity prices fall below legislatively-fixed levels. For example, countercyclical payments for corn are triggered when prices fall below \$2.35 per bushel, while marketing loan gains or loan deficiency payments are triggered if prices fall below the loan rate level of \$1.95 per bushel. Disaster assistance is another source of support included in farm incomes. Historically, disaster assistance has been administered to farmers in an *ad hoc* manner.

Since a portion of the federal support programs depend on price levels, total government outlays to agriculture, and their contribution to annual farm incomes, can vary considerably over time. Figure 1 illustrates farm income and direct government payment levels in Illinois from 2000 through 2008. Total farm income in Illinois during the 2000 crop year was just under \$1.71 billion. This includes government payments, which totaled more than \$2 billion, implying that the federal support provided to agriculture in Illinois accounted for more than 100 percent of farm income in 2000. Compare that with the 2008 crop year when farm income reached record levels due to significant increases in commodity prices, totaling more than \$5.3 billion in Illinois. Government payments in



² See, for example, <http://www.washingtonpost.com/wp-dyn/content/article/2006/07/01/AR2006070100962.html> and <http://www.heritage.org/Research/Budget/bg1763.cfm>.

³ Environmental Working Group's online Farm Subsidy Database available at <http://farm.ewg.org/farm/>.



⁴ <http://www.rma.usda.gov/data/premium.html>

Another form of federal support to agriculture with a significant impact in Illinois, but not included as a direct source of farm income, is the subsidization of federal crop insurance.

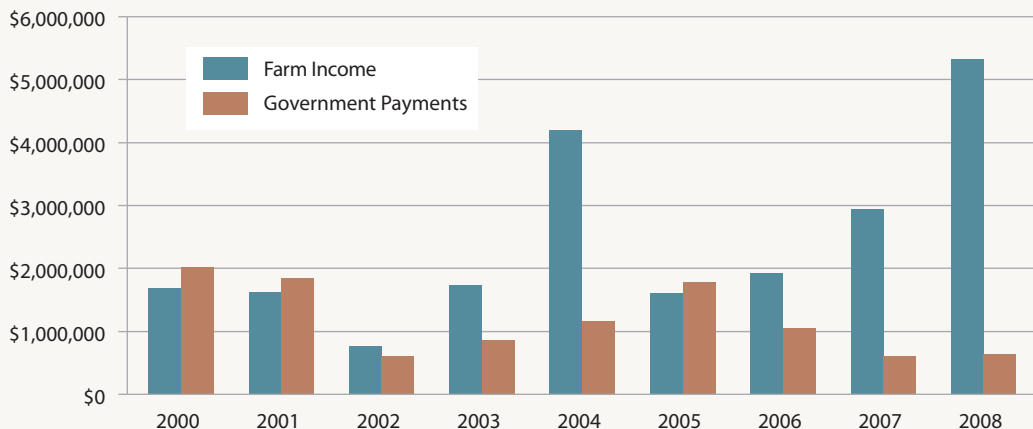
the state totaled \$636 million, comprising just 12 percent of 2008 farm income. Figure 2 provides a breakdown of the composition of the direct government payment portion of Illinois farm income over the same time period, highlighting the variation in both the levels and composition of federal support to agriculture over time.

Another form of federal support to agriculture with a significant impact in Illinois, but not included as a direct source of farm income, is the subsidization of federal crop insurance. U.S. farmers have access to a wide variety of insurance programs which cover both crop yield and revenue losses from multiple perils. Moreover, policies exist at different levels of aggregation with options for covering losses at both the farm and county levels. Crop insurance in the U.S. is operated as a partnership between private insurance companies and the federal government. The Federal Crop Insurance Corporation and the Risk Management Agency of the United States Department of Agriculture set insurance premium rates and provide premium subsidies to producers. The government also provides administration and overhead reimbursements and reinsurance to the

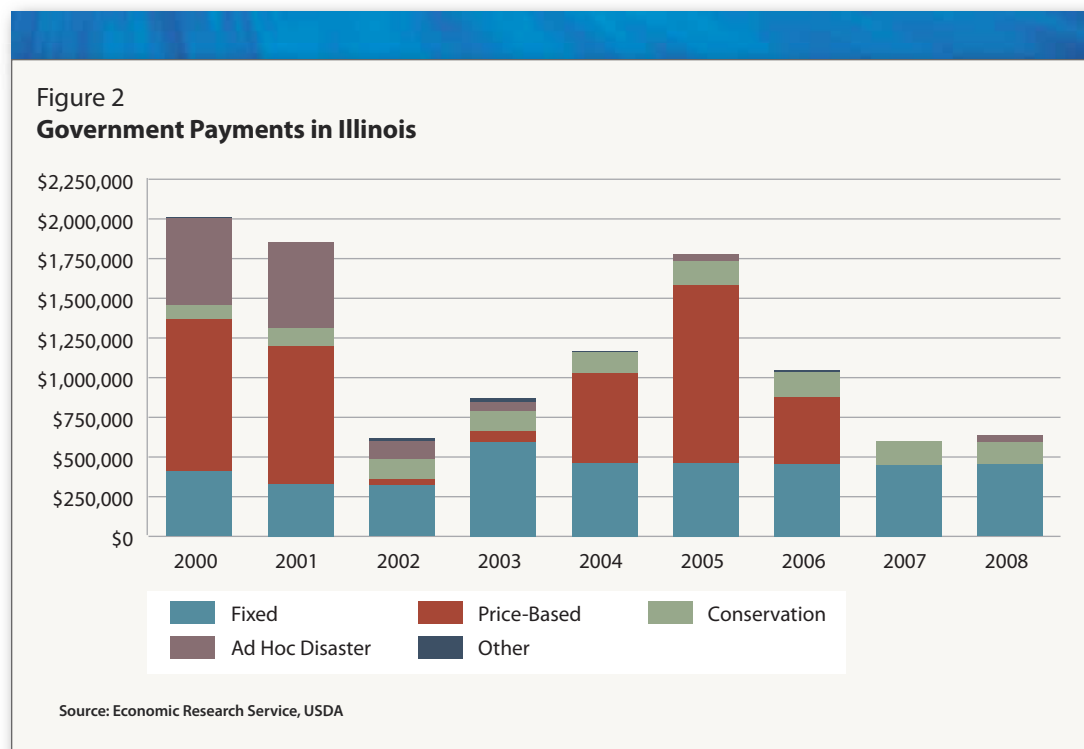
private insurance companies that work directly with producers in selling the policies and adjusting losses or determining indemnities.

The level of subsidization offered by the federal government is significant. Depending on the level of coverage and type of policy elected by the producer, federal subsidies cover between 44 and 100 percent of the insurance premium.⁴ As part of efforts to increase producer participation, subsidy rates have been increased over time leading to a sizeable increase in the number of acres insured at both the state and national levels. Insured acres in Illinois increased by nearly 14 percent from 2000 to 2008. Nearly 80 percent of the acreage planted to corn and more than 70 percent of the acreage planted to soybeans in Illinois was insured in 2008. Insurance participation by wheat producers is slightly lower, with just under 50 percent of Illinois wheat acres insured in 2008. Crop insurance subsidy outlays have also increased as a result of increased participation and higher commodity prices. Total crop insurance subsidies in the U.S. have increased from just under \$1 billion in 2000 to nearly \$5.7 billion in 2008. Illinois' share

Figure 1
Net Farm Income and Government Payments in Illinois



Source: Economic Research Service, USDA



⁵ RMA summary of business data, <http://www.rma.usda.gov/data/sob.html>

⁶ http://www.choicesmagazine.org/magazine/pdf/block_23.pdf

of those subsidy dollars has increased from 4 percent (\$38 million) in 2000 to nearly 8 percent (\$443 million) in 2008.⁵

Current Commodity Prices and the Future Relevance of Existing Programs

Beginning in 2006, the prices for corn, soybeans, and wheat began to move higher and reached record highs in the summer of 2008. A number of factors have been attributed for this price rally, including expansion of the domestic biofuels industry, export demand growth, and U.S. monetary policy. Prices have since dropped, but still remain above more historical levels. Market activity has led a number of agricultural economists to question whether agriculture has entered a new era of price levels and price volatility.⁶

If prices have indeed reached new plateaus, the future relevance of existing price-based commodity programs comes into question. From 2002 through 2006, the price floor created by the countercyclical and marketing loan programs provided a reasonable safety net near break-even price levels. However, as price levels have risen,

production costs have also increased, resulting in break-even prices well above the fixed target prices and loan rates. Farmers throughout the Corn Belt are now facing a more volatile market with more dollars at risk, emphasizing the need for sound risk management strategies and suggesting that changes to the design of federal support may be required to provide an effective safety net.

The ACRE Program

One of the most significant changes to existing commodity programs in the 2008 Farm Bill was the introduction of the Average Crop Revenue Election, or ACRE, program. ACRE is designed to provide farmers revenue protection using a crop-specific revenue index based on recent historical state-level yields and national average prices. Coverage under the ACRE program is optional and, if elected, replaces the countercyclical program for the remaining life of the current farm bill (through the 2012 crop year).

ACRE carries with it many advantages over the price-based countercyclical

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⁷ <http://www.wallacesfarmer.com/story.aspx?s=33143>

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program. First, because it is based on revenue, it can also provide support during years of low production and high prices. Second, because the ACRE revenue guarantee is based on more recent prices, it may trigger payments at much higher price levels than the countercyclical program. This is especially important for corn, soybean, and wheat producers in Illinois and throughout the Corn Belt states as production costs have increased along with commodity prices over the past few crop years.

However, there are also real costs associated with the program. The most explicit of these is the 20 percent reduction in direct payments and 30 percent reduction in loan rates levied on farms enrolled in the program. While ACRE payments are expected to exceed these costs over time, it still creates a situation where farmers are required to give up certain dollars for a contingent payment.

Despite strong support and educational efforts from commodity organizations such as the National Corn Growers Association and extension economists throughout the country, ACRE enrollment numbers were relatively low. Less than 8 percent of eligible farms and less than 13

percent of eligible acres were enrolled nationally for the 2009 crop year. As Figure 3 illustrates, enrollment numbers throughout the Corn Belt states were slightly higher than the national average. Illinois led all Corn Belt states with 16.7 percent of farms and 23 percent of eligible acres enrolled.

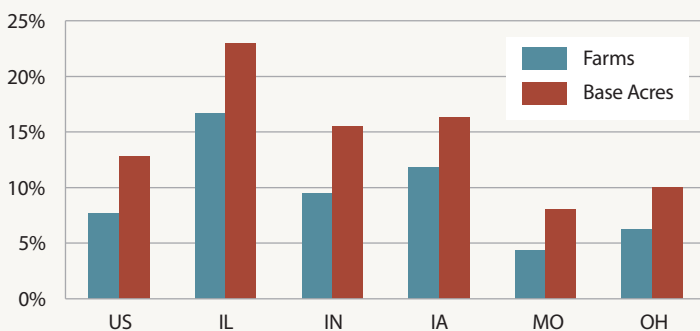
A number of reasons for low enrollment in the program have been cited, including the perceived complexity of the program, the associated reduction in direct payments, and the five-year irrevocable commitment to the program.⁷ Difficulties in working with landlords to approve enrollment decisions for tenants, the timing of payments, and the need to provide annual production records are examples of other disadvantages. Finally, many farmers view the available revenue-based crop insurance programs as more effective risk management tools and may have elected to increase insurance coverage as an alternative to foregoing direct payments by enrolling in the ACRE program. These points highlight a number of issues related to the introduction of new policy mechanisms, including the need for education and outreach and the overlap in support among existing programs.

Climate Change Legislation

The potential for regulation of industrial GHG emissions in the U.S. has been one of the hottest topics in both the general and agricultural policy arenas over the past year. At this point, the question is not if climate change policy will be enacted in the coming year, but what type of policy will be enacted and which agencies will serve as the overriding regulatory bodies.

Legislation approved by the House of Representatives – H.R. 2454, the American Clean Energy and Security Act (ACESA) – has outlined a “cap-and-trade” system for emissions regulation. The ACESA mandates emissions reductions for industries

Figure 3
ACRE Program Enrollment in the Corn Belt



Source: Farm Service Agency, USDA

including electricity producers, oil refiners, and natural gas suppliers. Cuts in emissions would be measured relative to 2005 baseline levels, and begin in 2012 with more than an 80 percent reduction in emissions targeted by 2050.

The cap-and-trade system would involve setting a cap on the industrial emissions of all GHGs. Emissions permits equal in total aggregate value to the cap would then be allocated across regulated industries. A portion of the permits would be given away, with the remainder being auctioned off to generate revenue to help in funding other climate change initiatives.

Companies creating fewer emissions than their permitted level would be able to sell or trade their permits to companies that emit more than their allocation.

As an alternative to purchasing additional emissions permits, a portion of each regulated company's emissions reductions could be met through the purchase of carbon offsets. Offsets represent a reduction in carbon emissions generated by a party outside of the regulated organization, a portion of which may come from international sources. Agriculture would be exempt from emissions regulation under ACESA, with the USDA serving to administer agricultural offsets.

Alternatively, the Clean Air Act (CAA) could serve as the underlying legislation for climate change policy. Under the CAA, the EPA could directly regulate emissions using a cap without providing for permit trading or offsets markets. The EPA could also develop a cap-and-trade system similar to H.R. 2454 through administrative measures. In either case, emissions levels targeted for regulation could be significantly lower compared to ACESA. Moreover, the Environmental Protection Agency (EPA) would carry full regulatory control over emissions and offsets (if any), and agriculture would not be explicitly exempt from emissions regulation.

A recent report released by researchers at Kansas State University summarizes the findings of a number of studies investigating the impact of H.R. 2454 on agriculture.⁸ The results of the reviewed studies are consistent in identifying that production costs would increase under a cap-and-trade system due to direct and indirect effects of increased energy prices.

Estimates of the cost increases range from less than 1 percent to more than 6 percent in the short-run. Even in the absence of offset opportunities, the negative impact on farm incomes is estimated to be relatively minimal as a portion of the cost will be mitigated through higher food prices and longer-term equilibrium adjustments to production and management practices. Reductions in farm income without offset revenue were estimated by the USDA to range from less than 1 percent in the short run to 7.2 percent in the long run.

When offset revenue is included, agriculture is estimated to receive net gains from the cap-and-trade system. However, the gains would not be distributed evenly, with some agriculture subsectors being made worse off. While the estimate of gains are relatively modest, feed grain, wheat, and oilseed producers in the Corn Belt are generally agreed to be the clear winners from offset revenue due mainly to the potential for carbon sequestration from changes in soil management practices. The USDA estimates a "substantial improvement" to farm incomes. Other studies estimated additional farm incomes of \$12 billion to \$13 billion per year from 2010 to 2025, or roughly 15 percent of average annual U.S. farm income from 2004 to 2008.

GHG Emissions and Agricultural Offset Potential in the U.S. and Illinois

Figure 4 summarizes the composition of GHG emissions across industries in the United States. Agriculture plays a relatively minor role in emitting GHGs compared with the industrial, transportation,



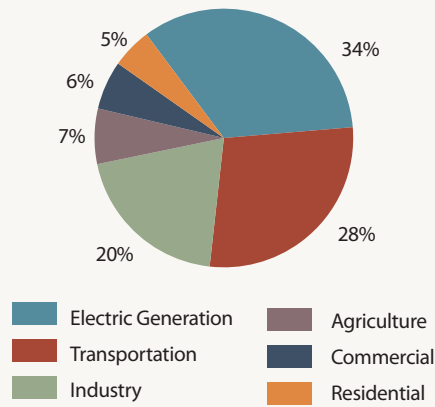
⁸ <http://www.farmland.org/documents/A-Comparison-of-Select-Cost-Benefit-Studies-HR2454-Impacts-On-Agriculture-Sector.pdf>. See also http://beag.ag.utk.edu/pp/UT_Climate_energy%20report_25x25_Nov30.pdf.

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**Figure 4
GHG Emissions in the US**



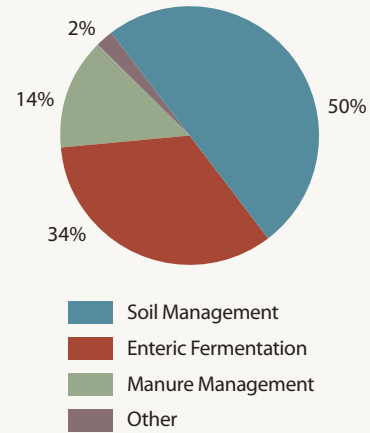
Source: EPA Inventory of US GHG Emissions and Sinks: 1990-2007

and electricity-generating industries, and thus has a smaller aggregate potential for emissions mitigation. In Illinois, emissions from agriculture account for a slightly higher percentage of state-level emissions compared with the national estimates.

Emissions from agriculture are produced from a variety of sources. Agricultural methane emissions come from ruminant animals, flooded rice fields, animal waste and the burning of biomass. The major sources of nitrous oxide emissions include nitrogen fertilizers, manure applied to cropland and pastures, and crop residues. Carbon dioxide emissions are a result of fossil fuel use and the loss of soil carbon owing mainly to intensive tillage practices.

Figure 5 breaks down agricultural emissions sources. According to EPA estimates, agricultural soil management practices account for 50 percent of agricultural GHG emissions, enteric fermentation accounts for 34 percent, and manure management practices account for 14 percent. Rice cultivation and the burning of biomass account for the remaining 2 percent of agricultural emissions.

**Figure 5
Sources of US Agriculture GHG Emissions**



Source: EPA Inventory of US GHG Emissions and Sinks: 1990-2007

Though agriculture accounts for a relatively small proportion of aggregate mitigation potential, researchers believe that the agriculture industry may be able to provide offsets through emissions reductions and sequestration at a relatively low economic cost. GHG mitigation in agriculture occurs through either reduction or avoidance of current emissions levels, or through increased sequestration in the soil. Approximately 89 percent of all potential GHG mitigation in agriculture can be achieved through improved land, water, and bio-energy management. The remaining 11 percent of additional mitigation potential can be achieved through improved livestock and manure management, and reductions in soil emissions of nitrous oxide. However, the estimates for potential mitigation are subject to various uncertainties including the scope of adoption and effectiveness of adopted management techniques, and the persistence of mitigation as influenced by future climatic trends, economic conditions, and social behavior.

Conclusions

Two current policy issues have been outlined with relevance in Illinois. The recent introduction of the ACRE program provides a new option for the revenue protection of producers within the commodity title of the 2008 Farm Bill. While ACRE represents a shift away from traditional price supports, it continues the tradition of overlapping coverage among existing farm income support programs. Emerging climate change laws, which will mandate reductions in the emissions of GHGs by U.S. industries, represents both direct and indirect impact on agriculture from energy and environmental policy. These diverse policy topics, and their potentially significant impact on agricultural producers and farm incomes at both the state and national levels, illustrate a number of critical issues.

The relatively new nature and complex design of the ACRE program calls for additional education and outreach efforts to increase the level of knowledge among producers related to the effectiveness of the program and the ways in which it interacts with other existing programs. Additionally, while ACRE represents a significant shift in the fundamental design of commodity programs, the continued existence of price-support programs, disaster assistance, and federally subsidized crop insurance calls for further overhauls to farm policy aimed at reducing the amount of overlap among programs and thus increasing efficiencies. These issues are even more relevant and important in today's budget climate.

In contrast, the issue of climate change legislation illustrates how "non-ag" policy can affect agriculture. The complexity of the climate change and related emissions and emissions-mitigation issues also calls for additional education and outreach efforts in the agricultural community. Despite analysis from both the policymakers (USDA) and academic institutions indi-



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cating net gains from cap-and-trade to the industry, there exist significant levels of apprehension and explicit opposition to emissions regulations within the ag community. Furthermore, the complexities and uncertainties associated with the biological processes of emissions sequestration and mitigation call for multidisciplinary collaboration between scientists and economists to devise policies that are both effective in meeting emissions reductions goals and transparent in design.



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