How Important is Agriculture and the AgriFood Sector in Ireland?

Alan Matthews
Jean Monnet Professor of European Agricultural Policy
Trinity College Dublin
Email: Alan.Matthews@tcd.ie

Abstract

Conventional estimates of the economic contribution of agriculture and the agri-food sector suggest that the overall sector still accounts for around 10% of total employment, GNP and exports, even after the structural changes brought about by the Celtic Tiger economy in the 1990s. These estimates, however, conceal the extent to which primary agriculture, in particular, is now dependent on public policy transfers. This article undertakes a statistical deconstruction of agriculture's contribution to the Irish economy to highlight its dependence on subsidies. It goes on to query the sustainability of these subsidies to commercial agriculture in the light of WTO agricultural negotiations and EU enlargement and argues that more vigorous steps are now needed to prepare a more competitive agriculture which would be viable at world market prices.

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Introduction

Agriculture's role in the Irish economy has come under increasing scrutiny in 2001 for a number of reasons. Farmers have taken action to close down milk plants, beef factories and the country's only sugar processor in disputes over prices paid. The measures put in place to prevent a major outbreak of foot-and-mouth disease hit farmers and non-farmers alike. Protection of Europe's agricultural sector became one of the 'make or break' issues at the Doha, Qatar meeting of the WTO Ministerial Council in November 2001 and nearly prevented the launch of a new comprehensive round of trade liberalisation negotiations from which other economic sectors in Ireland expect to benefit significantly.[1]

These various attempts to maintain or improve farm incomes and to safeguard agricultural production put the spotlight on the role of agriculture and the agri-food sector in the modern Irish economy.[2] This article begins by reporting the conventional estimates of the economic contribution of the agri-food sector. It argues that these estimates overstate the contribution of primary agriculture and, in particular, conceal the extent to which value added in agriculture arises as a result of public transfers. While there is widespread agreement on the need to continue public transfers to secure the environmental and rural development benefits of farming in marginal areas, this article questions the sustainability of subsidies to commercial agriculture in the light of the ongoing WTO agricultural trade negotiations and EU enlargement. If support for productive agriculture is reduced in the future, how well prepared is Irish agriculture to meet the challenge of producing at world market prices? The article concludes by calling for a more vigorous structural policy to ensure that Ireland continues to have a successful agriculture in the decade ahead.

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[1] "Ireland has a greater interest in launching a new trade round than most WTO members". See comments by Mr Tom Kitt, T.D., Minister of State at the Department of Enterprise and Trade, *Irish Times*, November 12, 2001.

[2] The argument draws on Matthews (2000). One of the themes of that book was the contribution made to farm incomes by the total support provided to agriculture and the measurement of the transfer efficiency of current support mechanisms. It also defined a measure of agriculture's economic contribution similar to that developed in this article.

Table 1. Employment in agriculture and the food industry, '000s, 1996-2000

	1996	1997	1998	1999	2000
Agriculture	136.9	136.9	129.6	132.9	123.8
Food Drinks & Tobacco (FDT)	44.6	52.5	52.7	53.3	54.4
Total agriculture + FDT	181.5	189.4	182.4	186.2	178.2
Total Employment	1 329	1 426	1 521	1 616	1 692.4
Agriculture as % of Total	10.30%	9.60%	8.50%	8.20%	7.30%
Agriculture Food Drinks & Tobacco as % of Total	13.70%	13.30%	12.00%	11.50%	10.50%

Source: DAFRD Annual Review and Outlook 2000/2001, 2001

Table 2. GVA in agriculture and the food industry

	1996	1997	1998	1999	2000
	£m	£m	£m	£m	£m
Gross Domestic Product (GDP) at factor cost	40 978	47 142	53 910	61 263	71 550
GVA in Agriculture at factor cost	2 886	2 589	2 632	2 376	2 538
GVA in Food	1 604	1 684	1 630	2 039	-
GVA in Drinks & Tobacco	1 727	1 773	1 888	2 016	-
Total (Agriculture Food Drinks & Tobacco)	6 018	6 046	5 830	6 103	-
GVA in Agriculture as % of GDP	7.0%	5.0%	4.0%	3.0%	3.0%
Agriculture Food Drinks & Tobacco as % of GDP	14.7%	12.0%	11.0%	10.0%	-

Source: DAFRD Annual Review and Outlook 2000/2001, 2001

Table 3. Agriculture and Agri-Food as a percent of total exports, 1996-1999

	1996	1997	1998	1999
	£m	£m	£m	£m
Total Export of Goods	30 84.5	35 27.1	45 160.2	52 061.6
Agricultural exports	2 504.1	2 515.3	2 651.4	2 906.4
Agri-Food Drinks & Tobacco	4 720.2	4 206.0	4 530.2	4 982.7
Agriculture as % of Total	8%	7%	6%	6%
Agri-Food Drinks & Tobacco as % of Total	16%	12%	10%	10%

Source: DAFRD Annual Review and Outlook 2000/2001, 2001

Agriculture's role in the Irish economy

The standard measures of agriculture's economic importance are its share of total employment, GDP and exports. Around 124,000 people had their principal occupation in farming in 2000, and a further 54,000 in the food industry. They accounted for 7.3% and 3.2% of total employment, respectively, or a total of 10.5% between the two sectors (Table 1). In fact, around double the number of those whose principal occupation was farming make a labour contribution to the sector. In 1999,

the latest year for which agricultural structures data are available, it was estimated that around 270,000 persons worked in agriculture accounting for 191,700 'annual work units' in total (DAFRD, 2001). In employment terms, agriculture remains a substantial activity.

The contribution of agriculture and the food industry to GDP is of a similar order of magnitude, amounting to 10.5% in 1999. However, the relative importance of the components is reversed, with agriculture contributing 3.9% of this and the food industry (including drinks and tobacco) accounting for the remaining 6.6%. The implication is that average labour productivity in agriculture is low and in the food sector high relative to the national economy.

Finally, agricultural exports amounted to about 6% of total exports in 1999; if processed foodstuffs are included the proportion increases to about 10%. A feature of agri-food exports is that their import content is lower than industrial exports and the share of profit repatriations and other outflows is smaller. Measured in terms of net foreign exchange earnings from exports of goods, the importance of the agri-food sector increases to 27% of the total (1997 data) (DAFRD, 2001).

Deconstructing agriculture's contribution

The role of subsidies

The measure of agriculture's GDP contribution used in Table 2 is Gross Value Added (GVA) at factor cost. In 2000, it amounted to £2,538 million. It is a measure of the returns to the factors of production employed in agriculture including any subsidies paid to producers net of taxes. Two types of subsidies to farmers are distinguished in the agricultural accounts: those directly linked to a product and non-product-specific subsidies. The former are mainly arable and livestock premium payments paid as a result of the MacSharry (1993) and Agenda 2000 (1999) CAP reforms. They averaged around £650 million in the past three years. Subsidies under the latter heading averaged a further £320-340m in recent years. Much of this is accounted for by payments under the Rural Environment Protection Scheme (REPS). Subtracting

these subsidies gives GVA at market prices, which measures the contribution of agriculture valued at market prices in the absence of subsidies.

The role of market transfers

Because of the operation of the EU's Common Agricultural Policy, market prices in Ireland are maintained at considerably above world market levels. The exact size of the price gap is not easy to establish because of the need to take into account differences in the quality of products sold on domestic and international markets, transport costs, etc. Furthermore, world market prices are not necessarily an appropriate benchmark against which to measure the contribution of agriculture because they are themselves distorted by the significant protection still provided to agricultural producers in most OECD economies. Various attempts have been made to estimate the impact of multilateral agricultural trade liberalisation on world market prices. The results suggest much stronger price effects for livestock and dairy products than for crop products.

The Department of Agriculture, Food and Rural Development (DAFRD) produces annual estimates of the price gap coefficient (defined as 1 minus (estimated world price/Irish price)). The price gap averages around 40% for the main livestock and livestock products (Table 4). This is the proportion of the Irish market price which represents a transfer from consumers to producers because of the way the market for food is protected by the CAP. The DAFRD estimates take existing world prices as their benchmark. In order to obtain a more realistic set of estimates of what world market prices might be in a liberal market environment, an adjusted set of price coefficients based on the 1999 values is calculated assuming that free market world prices would be some 20% higher for livestock products and 5% higher for crops, in line with the results of trade liberalisation models. The implication of the figures is that, in a situation of multilateral free trade in agriculture, Irish farmers would face cattle prices 30 per cent lower, sheep prices 38 per cent lower and dairy farmers 23 per cent lower than is currently the case. On this basis, an estimate of the market

support element in agricultural revenues is shown in Table 5.[3] Using these figures it is possible to calculate the GVA of agriculture at *world* market prices.

Table 4. Price gap coefficients for major agricultural commodities in Ireland

	1998	1999
Beef	57%	42%
Cattle	49%	49%
Sheepmeat	53%	48%
Pigmeat	22%	12%
SMP	11%	34%
WMP	23%	51%
Butter	46%	39%
Cheese	16%	36%
Casein	4%	3%
Wheat	19%	-4%
Coarse grains	19%	-4%

Source: DAFRD 2000, 2001

Table 5. Calculation of value of CAP market transfers, £m, 1998-2000

	Value of output, £m			DAFRD price gap 1999, %	Adjusted price gap, %	Value of market support due to the CAP, £m		
	1998	1999	2000			1998	1999	2000
Cattle	1134	1088	1126	42	30	344.7	330.8	342.3
Sheep	177	172	178	48	38	66.6	64.7	66.9
Pigmeat	211	182	214	12	0	0.0	0.0	0.0
Milk	1140	1112	1133	36	23	264.8	258.3	263.2
Total						676.1	653.8	672.4

Note: Price gaps are given in the DAFRD source for individual processed milk products. They have been weighted by the relative export values to derive a single price gap for milk.
Sources: Value of output from CSO, 2001; DAFRD price gap from DAFRD, 2001.

Adding back the EU element in subsidies and market transfers

To this point agriculture's contribution at world market prices has been calculated on the assumption that the subsidies received and market transfers are funded by Irish taxpayers and consumers and thus should be netted out as an internal transfer. In fact, a significant proportion of the subsidies and market transfers are paid by other EU taxpayers and consumers. Because they are tied to the level of agricultural production

[3] Because the price gap given in the DAFRD source for cereals is negative, implying that cereals prices in the EU in 1999 were held below world market prices which was not the case in that year, the adjustment for cereals has been omitted.

in Ireland, and would not be received in the absence of such production, they are appropriately acknowledged as a contribution of agriculture to the economy.

The DAFRD *Annual Review and Outlook* contains tables showing the net budget transfer and the net trade transfer arising from the operation of the CAP which allow the value of these transfers to be calculated. The Net Budget Transfer represents the net transfer of resources to Irish agriculture through the EU budget. It is calculated by adding FEOGA Guarantee expenditure to Guidance receipts and deducting Ireland's estimated contribution to the FEOGA budget. The Net Trade Effect is calculated by using the estimated price gap which exists between Irish and world prices for each commodity and applying this price gap to the balance of trade between Ireland and the rest of the EU for those commodities.

Table 6. Net budget and trade effects, £ million

	1997	1998	1999
Net budget effect	1,267.1	1,111.3	901.0
Trade effect	490.0	658.3	546.9
Net budget and trade effect	1,757.1	1,769.6	1,447.9
Adjusted net budget effect	1,108.9	922.3	832.6
Adjusted trade effect	352.8	474.0	393.8
Adjusted net budget and trade effect	1,461.7	1,396.3	1,226.4

Source: DAFRD, 2001 Table 8.3 for top three rows; adjustments as described in the text.

The combined budget and trade effect as estimated by DAFRD for 1997-1999 is shown in Table 6. To arrive at an appropriate measure of the value of the EU element in subsidies and market transfers, two adjustments must be made to these figures. The Net Budget Effect includes FEOGA Guarantee expenditure on both intervention and export refunds which has the effect of maintaining the level of market prices above world market levels in Ireland. Intervention payments are excluded (on the grounds that they are a cost of operating the transfer system rather than part of the transfer itself). Export refunds are adjusted to take account of the fact that the implied transfer should be measured relative to free market world prices and not those prices which actually obtained on export markets. As discussed earlier, free market world prices for livestock products are assumed to be 20% higher than those actually prevailing in recent years. The size of the Net Trade Effect is calculated using the adjusted price

gap coefficient for similar reasons. The results of these calculations are shown in the bottom half of Table 6.

Agriculture's net economic contribution

The results of this recalculation of agriculture's net economic contribution are shown in Table 7. A final adjustment to be made is to recognise that GVA at world market prices does not make an allowance for the value of fixed capital used up in production. Agriculture is a capital-intensive activity, and a further deduction of £450-500m representing annual depreciation on this capital should be made in arriving at its net economic contribution to the economy. Agriculture's true contribution is around £1.6-1.8 billion, or about two-thirds of the GVA at factor cost figure which is usually quoted. Even this figure may be on the high side as many of the costs of services necessary to sustain agricultural production are not borne by farmers themselves but by the taxpayer through the DAFRD budget. These costs are not deducted in Table 7.

Perhaps more important than the absolute figure, however, is the proportion of the total accounted for by net EU transfers. This amounts to over 75% on average in the past three years. This is the proportion of agricultural value added which represents policy transfers arising from agricultural protection and support rather than production activity. The implications of this heavy reliance on transfers is considered in the final sections of the paper.

Table 7. Agriculture's net economic contribution, £m, 1998-2000

	1998	1999	2000
GVA at factor cost	2 631.9	2 376.4	2 538.3
- subsidies less taxes on products	694.5	562.3	664.4
- subsidies less taxes on production	320.5	328.6	341
GVA at market prices	1 616.9	1 485.5	1 532.9
- CAP market transfers	676.1	653.8	672.4
GVA at world market prices	940.8	831.7	860.5
- depreciation	446.6	455.6	497.3
NVA at world market prices	494.2	376.1	363.2
Net EU transfers through budget and trade effects*	1 396.3	1 226.4	1 226.4
Net economic contribution of agriculture	1 890.5	1 602.5	1 589.6

* The same figure has been assumed for 2000 as in 1999

Is agriculture's contribution undervalued?

It might be argued that these figures undervalue agriculture's contribution to the economy in that this includes not just its supply of food and raw materials, but also takes the form of environmental public goods. This aspect is sometimes referred to as the multifunctionality of agriculture. Agricultural activity creates habitats, protects biodiversity and contributes to the amenity value of a varied landscape. The popularity of rural pursuits such as rambling, hiking or just walking in the countryside testifies to the value the public at large places on these environmental benefits. Production subsidies might be considered a legitimate return for these non-market benefits of agricultural production.

There are two counter-arguments. First, there is still only limited integration between CAP payments and environmental pay-offs (Matthews, 2001). The Rural Environment Protection Scheme, which is the most direct example of an integrated policy, is mainly designed to encourage farmers to avoid pollution (for example, through better nutrient management) than to produce positive externalities. There is some evidence that the scheme has had a positive environmental effect, but it is not possible to assume that the public values these benefits made by the amount of expenditure on the scheme or that the scheme is designed in the most efficient way to achieve these benefits . Other CAP payments, such as to sheep producers, have led to considerable environmental damage particularly in hill areas of the country. Only in the past year are farmers in receipt of government payments required to abide by a Code of Good Farming Practice – an example of cross-compliance (Matthews 2001).

Equally important, agricultural production is also associated with negative environmental effects, including water and air pollution. While water pollution due to nitrogen and phosphorous run off is due to poor agricultural practices and is not inherent in the levels of production intensity prevalent in Ireland, air pollution is a more complex story. Agriculture accounted for 34 per cent of Ireland's greenhouse gas emissions in the mid-1990s, compared to an EU-15 average of 11 per cent, with livestock production being the main reason for this (OECD, 2001). If the EU ceiling on greenhouse gas emissions agreed as a result of the Kyoto Convention becomes

binding as now appears likely, greenhouse gas emissions will be associated with a negative contribution to economic welfare. On balance, it may not be unreasonable to suggest that the negative effects offset the positive effects, and thus that the net production subsidies should be omitted from agriculture's contribution to the economy.[4]

Additional costs were borne by the non-farm sector in 2001 as a result of the measures necessary to prevent the spread of foot-and-mouth disease following the discovery of a single outbreak in the Cooley Peninsula in Co. Louth. No estimate of the cost of tackling the FMD threat in Ireland has yet been made. In the UK, which suffered a much more severe outbreak, the costs have been estimated at around 0.3-0.5% of GDP (Countryside Agency, 2001). Both farm and non-farm costs are involved. The restrictions imposed on animal movement will have had an adverse effect on farm incomes in the early part of the year and input costs will have increased due to increased usage. As in the UK, the costs to the non-farm sectors, particularly tourism and distribution services in rural areas, were probably of a greater order of magnitude. Hotels reported an average decline in tourism business of between 10 and 15 per cent on the previous year, partly due to the FMD threat at a critical time for bookings, although the economic downturn in the US was also a factor (Irish Hotels Federation, *Irish Independent* 30 July 2001).

These costs were borne by the non-farm economy in order to safeguard the continued viability of livestock farming in the State. The wider public accepted the necessity of bearing these costs in return for the presumed benefits. These benefits are largely private to the agricultural industry. FMD does not pose a threat to human health. It is a nasty virus which is extremely unpleasant for those animals infected by it, but the main justification for the draconian measures taken to prevent the disease is that, if the disease took hold, export markets for Irish livestock (and possibly dairy products) would be closed. Given the dependence of the Irish livestock industry on export markets, their closure would cause a very major crisis. In reviewing agriculture's

[4] A recent UK study conservatively estimated the environmental and health costs imposed on the rest of society by agricultural production in the UK in 1996 at around £2.343 billion sterling, or more than £200 sterling per hectare of arable land and permanent pasture (Pretty, J. et al, 2000).

contribution to the economy, the awful prospect of a recurrence of FMD and its implications for the non-farm sector must be borne in mind.

The figures on agriculture's economic contribution in Table 7 represent by how much worse off the economy would be if agriculture ceased and the resources employed in the industries servicing agriculture in both downstream and upstream industries were re-deployed. The notional 'removal' of agriculture from the economy would clearly impact on the demand for inputs and services and on the scale of the food processing sector. Recent calculations of the multiplier effects of changes in final demand for agricultural production suggest that, depending on the sectors involved, a GNP multiplier of around 1.7 would be appropriate (O'Toole and Matthews, 2000). However, it is only appropriate to impute this value-added as part of agriculture's contribution if the economy is demand-constrained resulting in unemployed resources. In the Irish economy of recent years, where shortages of labour have been reported and where immigrant workers are required to operate meat plants, horticultural enterprises and other businesses, the multiplier argument has much less force.

Challenges to continued agricultural support

Agriculture's contribution to the economy remains important, even though it now takes the form of attracting EU transfers rather than adding value to Irish resources. Even if this were thought to be a desirable situation, is such a highly-subsidised agriculture sustainable? The WTO Uruguay Round Agreement on Agriculture which entered into force in 1995 introduced disciplines on the domestic agricultural policies of WTO Members for the first time. So far, these disciplines have had no effect on the total amount of support received by farmers. However, the Uruguay Round Agreement mandated WTO members to begin a further round of negotiations to liberalise agricultural trade in 2000 and these negotiations are currently underway.

Following the meeting of the WTO Ministerial Council in Doha, Qatar in November 2001, these negotiations will now be incorporated into a more comprehensive round of trade liberalisation negotiations. The difficulties in agreeing on the negotiating mandate for agriculture in Doha highlighted that the EU's continued reliance on

export subsidies will come under severe challenge. In the end, the participants agreed to negotiations aimed at reducing, with a view to phasing-out, export subsidies, without prejudging the outcome of the negotiations. A time-frame for completing the overall negotiations by 1 January 2005 was agreed at Doha. Although there may be some slippage from this deadline, it may not be unreasonable to argue that exporters will be competing in a more market-oriented environment by 2010.

By that date, the first wave of new entrants will have been successfully absorbed into the EU. It is well known that the budget calculations in Agenda 2000 did not make provision for the extension of direct payments to farmers in these countries. It is also clear that these countries are unwilling to accept this notion of second class agricultural citizenship, and the EU Commission has begun to show some flexibility on this issue. Thus it is highly likely that in the successor agreement to Agenda 2000, if not already in the Mid-Term review of this agreement planned in 2002, some form of cutbacks in direct payments will be necessary. This could take either of the forms discussed in the Agenda 2000 negotiations, i.e. modulation whereby payments are reduced for larger farms or, more likely, degressivity in which the compensation payments are phased out over a period of time.[5] In any event, even without any reduction in the absolute size of direct payments, they will be much less coupled to production in future. The decoupling of headage payments paid in less favoured areas is just the first step and by the end of this decade it is probable that the compensation payments will be similarly decoupled. Effectively, this means that farmers' incentive prices will be much lower than they are today.

Preparing Irish agriculture for a more market-oriented environment

The future economic framework for Irish agriculture is thus likely to imply significantly less support for productive agriculture than is currently the case. How

[5] The UK government has announced that it intends to pursue the abolition of milk quotas, the removal of compulsory setaside, decoupling and degressivity in direct payments, and the phasing out of these payments in the long term (*Irish Farmers' Journal*, 6 October 2001). The German agricultural ministry has also proposed that all CAP direct aids should be reduced by 2% annually (*Agra Focus*, November 2001).

well prepared is Irish agriculture to meet this challenge? Certainly, in many of the less favoured areas of the country, farming could not survive at world market prices. In these areas, some form of continued direct support, for environmental and rural development purposes, will continue to be needed and can be justified. But in the better farming areas of the country, a more optimistic picture is possible. It is very likely that dairying output would expand with the removal of quotas even if prices fell to world market levels. The outlook for beef is less clear. It is hard to believe that, in a country which in 2000 was the third largest exporter of beef in the world, beef production does not have a future at world prices. But it will require a radical rethinking of systems and it will be a huge challenge for researchers and advisors as well as farmers themselves. Pig and poultry producers, as well as specialist fruit and horticultural producers, will continue to thrive as they do at more or less world prices now. Grain and sugar beet farming will undoubtedly contract, as even though yields are among the highest in the world, grain farmers barely cover their costs even at supported prices. Forestry will expand, though this will partly depend on the level of competing subsidies as forestry is not an economic enterprise in the absence of support.

The transition to farming at world prices will not be an easy one. It can be made more difficult by ignoring the challenge and failing to prepare, by wishing that the world will be a different place to what we can foresee. Alternatively, by planning for the future, by preparing for the challenge, the transition can be made less painful for all concerned. The current buoyant economic climate in Ireland provides the ideal conditions for the vigorous adjustment policy which is necessary. Many useful individual policy measures were suggested in the recent AgriFood 2010 Report (DAFRD, 2000).

The commercial sector of farming will only be competitive at world market prices with fewer and larger farms. A much more aggressive structural policy is required to enable this restructuring to take place. Smaller holdings will, of course, continue to be viable where the occupier or spouse has off-farm employment. The Agri-Food 2010 Committee believed that by 2010 it was likely that there would be 20,000 full-time and 60,000 part-time farmers, with a further 20,000 in transitional groups even without any radical change in the support environment. However, the pace of

structural adjustment in the 1990s actually slowed down relative to our competitors. Between 1992 and 1999 farm numbers declined on average by 1.7% per annum, compared to an average decline of 2.7% p.a. in the EU12 between 1989 and 1995. The accession of the Central and Eastern European countries will bring into membership countries with quite different farm structures to those normally found in Western Europe and will further highlight the need for structural adjustment. Yet the collapse of land sales during the 1990s is symptomatic of the negative direction of structural developments in Ireland. The average land price has increased substantially since 1990, while the aggregate area sold each year has declined sharply. Subsidy policy is making structural adjustment more difficult, not the reverse.

Technical innovation and research is another key to enabling agriculture to compete at world market prices. Much has already been done, under successive rounds of Structural Funds, to renew the infrastructure and scientific capacity of the research support for Irish farming. What is needed is greater focus on developing those systems and techniques which will enable farming to compete at much lower prices than today.

The quality of managerial resources in agriculture also needs to be greatly improved. The situation in the early 1990s where 85% of all farmers (65% on farms above 50 ha) had practical experience only and no formal agricultural training or education is no longer viable. There is a symbiotic relationship here with structural change. The attempt to keep the maximum number of family farms in existence at barely attractive incomes is unlikely to attract the quality of new entrant into farming which will be necessary to sustain a more competitive agriculture in the future.

Adequate farm structures, technical innovation, managerial skills, and tight links to consumer markets – these are the ingredients for a successful agriculture in the decade ahead. However, much Irish debate on farm policy still focuses on support levels and maximising the subsidy take. It is surely time to change the terms of the debate.

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