

# FEED PRICES AND THE UK PIG INDUSTRY



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## Executive summary

Feed prices have been very high since the autumn of 2006. The indications are that this is more than a temporary blip and that feed prices in the future are likely to remain relatively firm. This report examines the factors driving these changes, what the implications are for the costs of producing pig meat and what the industry can do to mitigate some of the effects.

High cereal prices over the past year have been due to a number of factors: poor harvests in Europe and Australia, growing import demand from developing countries and low world stocks.

The increasing drive for biofuels is beginning to have a significant impact on feed prices, as these compete with feed for animals and humans. Worldwide, the single most important factor influencing prices in the next 10-20 years will be the continued expansion of biofuels.

World cereal production is forecast higher in 2007/08 but current indications are that world cereal prices will again be higher due to increased world demand and continuing low stocks. High maize prices in the United States caused by the increasing switch to industrial use, will also have a knock-on effect on cereal prices worldwide.

The increases in feed costs in the year to July 2007 equate to a rise in the costs of pig meat production of 16p/kg dw (approximately 16%). On the basis of expected feed price movements through to July 2008, total costs of production are forecast to increase by a further 5p/kg. The report contains a table that shows the estimated impact of changes in prices of the three major ingredients of pig rations on the total cost of production. Increases in costs of production are also being experienced in other countries and in other sectors, especially poultry.

Despite finished pig prices increasing since the end of February, the average retail price for pork has remained relatively stable. If in the future there are going to be higher feed costs then we need to develop sustainable supply chains, where producers/processors do not carry an unfair share of the burden of extra costs.

The final section of the report examines strategies that producers can adopt to minimise the negative impacts of high feed costs. There are two types of strategy: short-term strategies to reduce exposure to price fluctuations and long-term strategies to reduce the costs of production.

Strategies to reduce exposure to price fluctuations involve "locking in" prices by buying feed forward or using the futures market. Long-term strategies for reducing costs involve improving technical performance and/or reducing inputs costs. It is shown that if the performance figures for a producer move from average (based on Agrosoft results) to top-third, nearly 10p/kg can be stripped off production costs.

# FEED PRICES AND THE UK PIG INDUSTRY

## Introduction

This is the third in a series of BPEX reports that have examined the impact of high feed costs on the British pig industry. The previous two were both published when feed costs were particularly high, during the 2003/04 and 2006/07 cereal seasons.

When the second report was published in December 2006, market expectations were for lower prices in the 2007/08 season. However this does not now look likely to happen. A combination of relatively poor harvests, increasing import demand from fast-developing countries and the global push towards biofuels means that prices are likely to remain high over the next year.

This will be the first time in many years that feed prices have been high for two consecutive seasons. But it is not likely to be the last. Changing market fundamentals mean not only that prices in future years are more likely to be high than low but also that there could be increased volatility in the market.

These factors underline the need for two things:

- Producers to take action to reduce their exposure to higher feed costs
- Retailers/processors to be aware of the background and implications of higher pig meat production costs.

## Feed prices during the past 12 months

### Cereals

In the first half of the 2006/07 season, cereal prices rose strongly throughout Europe. The dominating feature of the UK, world and European grain market was the tight supply and, with weather problems in Argentina and Australia, expectations of poor southern hemisphere harvests.

The hot weather that affected most parts of Europe in July 2006 meant cereal production in the EU-25 was about four per cent less than the previous year, when drought also affected yields – especially in South west Europe. Germany, Poland, the UK, France and Italy were the countries most affected by this year's drought.

Cereal prices rose in most European countries, particularly in Northern Europe. Price movements in some of the main markets are shown in Appendix 1.

In addition there is growing demand in other areas of the world, for example in India, which is seeking to import significant quantities of wheat. It was reported in September by the news agencies that India has bought 1.7m tonnes of wheat, 550,000 tonnes of it from Australia.

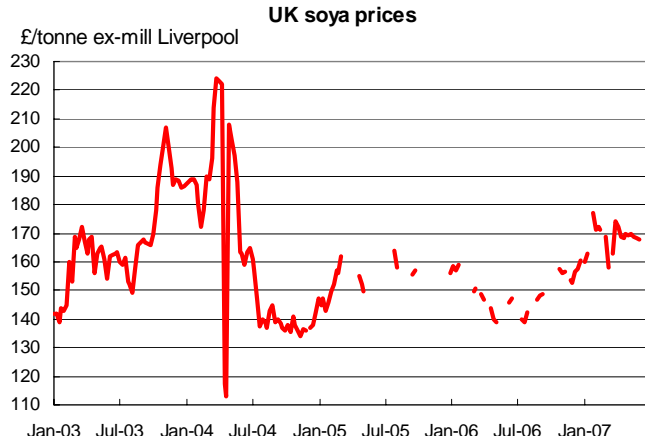
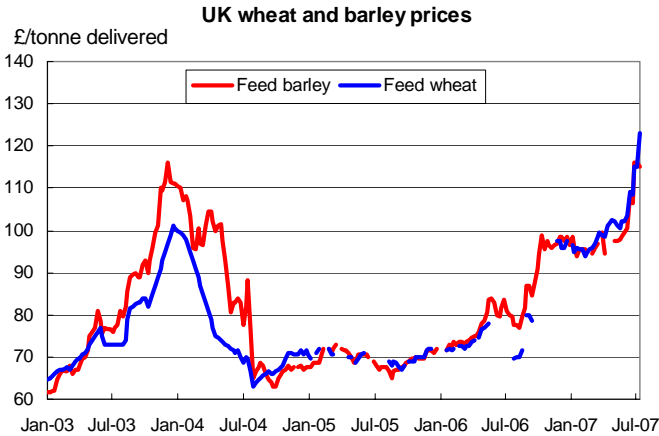
UK cereal prices, both wheat and barley have remained high since the beginning of 2007. Prices increased further in June and July with concerns over this year's harvest and world supply/demand in 2007/08 having an impact on the spot market. Delivered prices of feed wheat in the week ended 20 July averaged £126/tonne, 51 per cent higher than a year earlier, while feed barley was up 39 per cent to £116. These prices were the highest for 11 years.

Soya

The major protein ingredient of pig rations is soya. From the point of view of pig producers, soybean market trends were the one bright spot in late 2006. Prices had been weakening on the back of expectations of one of the largest ever US soya harvests. In addition, UK import prices had been held down by the weakening US dollar.

However soya prices have begun to rise in recent months, although they are still lower than the peaks of 2003/04. The spot price of Liverpool bulk HIPPRO soya pellets at the end of July was £161/tonne, compared with £140 a year earlier. These prices compare with a peak of over £200/tonne reached in the spring of 2004.

US soya prices are beginning to be affected by the increase in biofuel production. Bioethanol production in the United States is based on maize (it is based on wheat in the United Kingdom) and the increased demand for maize is being partly met by a switch in land use away from soya production. Soya plantings this autumn are consequently forecast to be down.



**Feed prices over the next 12 months**

Cereals

Cereals production in the United States and the EU is forecast higher in 2007/08. The International Grains Council forecasts that world grain production is forecast to increase from 1.568 million tonnes in 2006/07 to 1.658 million tonnes in 2007/08. The southern hemisphere harvests of Australia and Argentina are also expected to recover from the drought-affected conditions of the 2006/07 season. The 2007

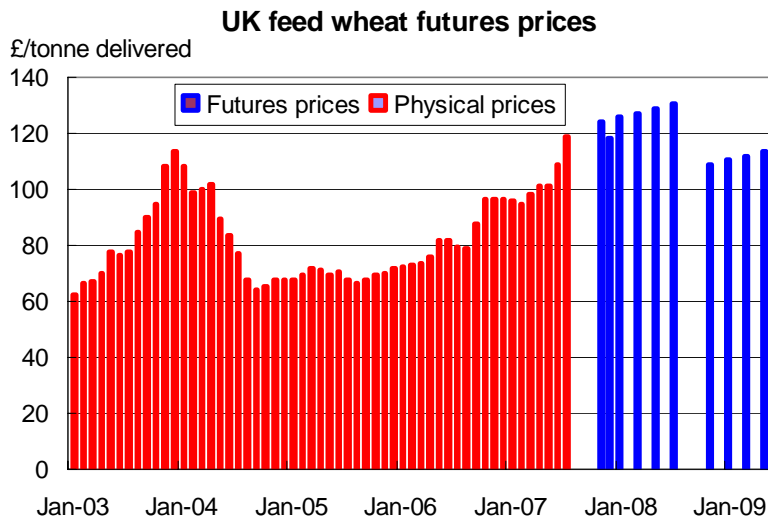
harvest in the United Kingdom and some other parts of Europe has not been helped by the very wet weather conditions during June. Despite increased production, the current indications are that world cereal prices will again be higher in the 2007/08 season due to increased world demand and continuing low stocks.

Some other key drivers in 2007/08:

- High import demand from India.
- High maize prices in the United States caused by the increasing switch to industrial use, which will have a knock-on effect on cereal prices worldwide.
- Potential export ban by the Ukraine, as a result of drought conditions. No details have emerged yet in Kiev, but the authorities were prepared to arbitrarily halt exports last year.
- Russia has cut 1.5m tonnes off its wheat export potential.

The Australian harvest this December is likely to be double the drought-affected harvest of last year. However, more rains will be necessary over the next few months and there is therefore a considerable range of uncertainty around the forecasts.

Futures prices on the UK's Liffe market have strengthened in recent months. The July 2008 price in late July 2007 was £131/tonne. This is even higher than the peak delivered price of £114 that was reached in December 2003.



### Soyabean prices

Soya prices are forecast higher over the next year as a result of reduced plantings and an expected smaller United States harvest. Current "near" futures prices in Chicago are \$296/tonne while the July 2008 price is \$319/tonne.

## **Feed prices in the longer-term**

Some of the factors that have been responsible for higher world prices over the past year will continue, and are almost certain to increase in importance. In the biofuels sector, both the EU and the United States have legislation in place to increase biofuel production substantially over the next 10-20 years. If EU countries meet the renewable transport rule obligation, the EU will cease to be a net exporter of cereals.

Import demand from industrialising countries, especially China and India, will increase as consumers switch to animal-based proteins. There will be a massive rise in the middle class outside the United States, doubling by 2020 to a billion households.

The EU's Zero-Tolerance policy towards biotech (GM) feed imports could well cause problems. The EU is becoming an oasis of non-biotech crops in a genetically modified world. As new cereal and soyabean types emerge from North and South America, they will have to pass Brussels zero tolerance. However these testing procedures can take several years. Zero Tolerance has in fact already led to a decline in maize gluten imports, which has contributed to higher EU prices.

Increasing competition for feed supplies from the biofuels sector is likely to mean that prices could be inherently more volatile, as the quantities available for animal use could fluctuate proportionately more from year to year. This problem could potentially be made worse if investment in biofuels moves in line with oil prices.

## **Impact of feed prices on pig meat production costs**

### Production costs in 2007

In July 2007 delivered feed wheat prices for the month averaged 49 per cent more than a year earlier, while feed barley prices were up by 65 per cent and soya prices by 15 per cent. If these are weighted by typical incorporation rates in pig rations, and assuming prices of other ingredients remain unchanged, the indicative increase in feed costs is estimated as:

- Sow rations 30 per cent
- Rearer rations 35 per cent
- Finisher rations 33 per cent

Based on Agrosoft results for average producers, these increases in feed costs would equate to an increase in the costs of production of 16p/kg dw.

In reality, the effect of higher feed ingredient prices will impact on individual producers differently and at different times. This is because the overall impact on production costs can be influenced by a number of factors, including:

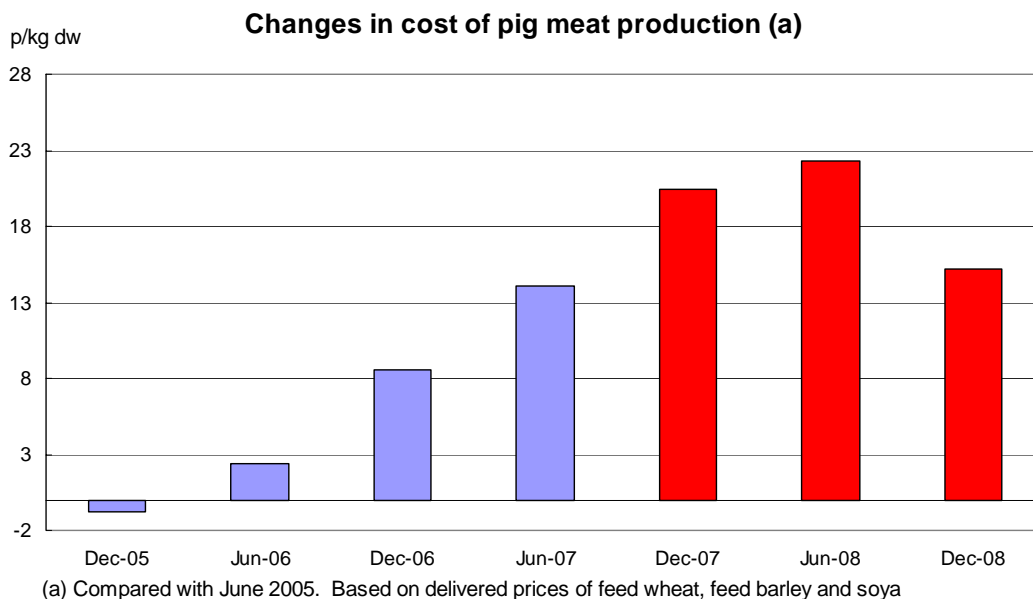
- Whether the producer purchases compound feeds or mixes rations from straight feedingstuffs
- How far forward compound manufacturers have bought the ingredients
- What time of year producers make contracts for feed purchases
- How far forward they buy
- The potential for substitution in pig feed in an attempt to get least-cost rations

The impact of higher feed costs on producers coming off one feed price contract and going on to a new contract will not be gradual but will be a sudden sharp increase.

Pig producers in other countries are also facing higher feed costs. Production costs for other species are also affected, especially broiler producers.

### Production costs in 2008

The futures markets are predicting further increases in cereal and soya prices in 2007/08. At the time of writing these suggest that in the year to July 2008 feed wheat prices will increase by a further 10% and soya by 7%. Assuming feed barley prices increase by the same as feed wheat, this indicates an increase of 5% in total costs of production, equivalent to 5p/kg.



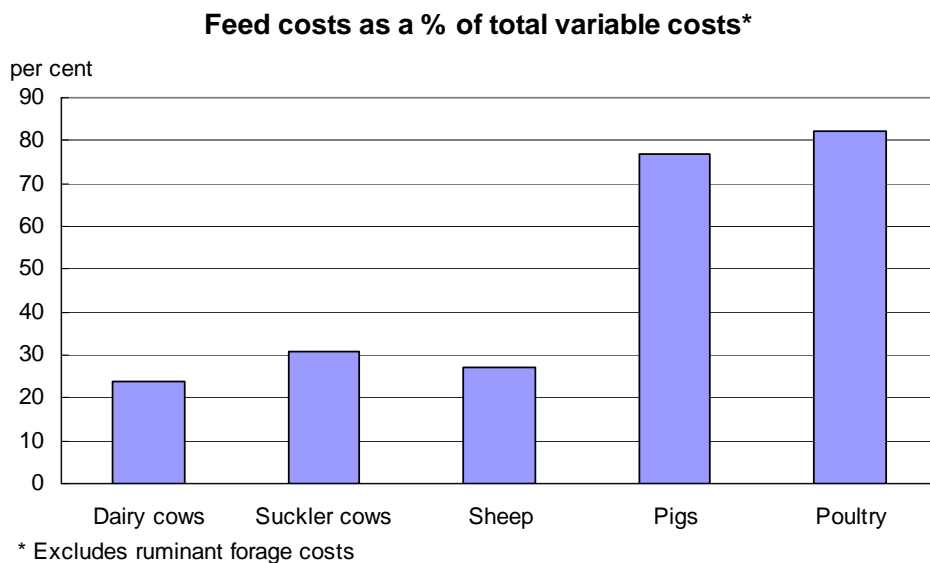
### Impact of higher input prices on the cost of production

The following table shows the estimated impact of changes in prices of the three major ingredients of pig rations on the total cost of production. The information is additive, reading across the table. So, for example, an increase of £35 in feed wheat prices (+8.4p/kgdw), £30 in feed barley prices (+3.1p) and £25 in soya prices (+2.3p) will result in an estimated increase in production costs of 13.8p/kg dw.

Feed wheat		Feed barley		Soya	
Price change £/tonne	Prod costs p/kg dw	Price change £/tonne	Prod costs p/kg dw	Price change £/tonne	Prod costs p/kg dw
+5	+1.2	+5	+0.5	+5	+0.5
+10	+2.4	+10	+1.0	+10	+0.9
+15	+3.6	+15	+1.5	+15	+1.4
+20	+4.8	+20	+2.1	+20	+1.9
+25	+6.0	+25	+2.6	+25	+2.3
+30	+7.2	+30	+3.1	+30	+2.8
+35	+8.4	+35	+3.6	+35	+3.3
+40	+9.6	+40	+4.1	+40	+3.7

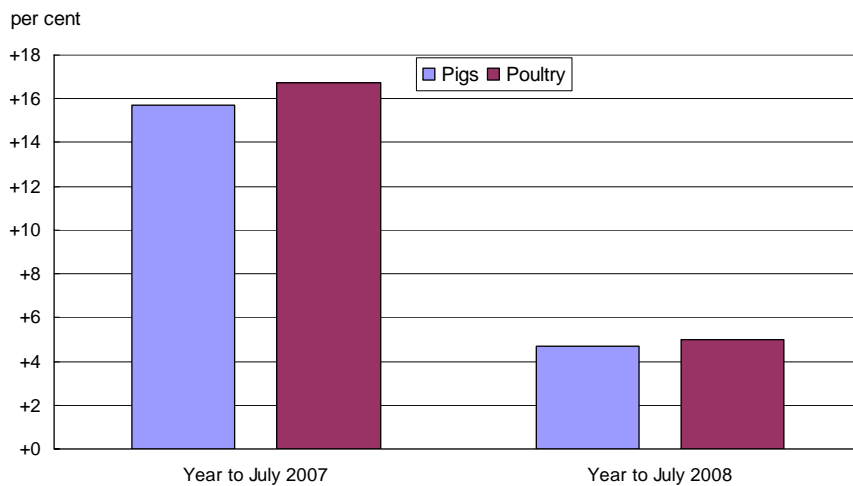
### Impact of feed prices on production costs: pig meat against other species

The impact of higher feed costs on the total cost of production will vary considerably across species, as shown by the following diagram. Feed costs for ruminants (excluding forage costs) typically represent 20-30 per cent of total variable costs, although there will be some variation between systems. Feed costs are much higher for the non-ruminants, accounting for 77 per cent of pig meat variable costs and 82 per cent of poultry meat variable costs.



A 10 per cent increase in feed ingredient prices can therefore be expected to push up beef and sheep meat production variable costs by two per cent and pig meat and poultry meat costs by around eight per cent. The relatively greater importance of the feed input costs in poultry production means that total costs will increase by slightly more than pig meat due to the higher feed prices.

### Changes in pig and broiler production costs



### Retail price spreads

Despite finished pig prices increasing since the end of February, the average retail price for pork has remained relatively stable. This has meant that the spread between the retail and producer price has narrowed to 64 per cent, ie the producer is receiving 36 per cent of the retail value.

### Pork price spreads



If in the future there are going to be consistently higher feed costs than in the past due to the growth of biofuels then we need to develop sustainable supply chains, where producers and processors do not carry an unfair share of the burden of extra costs.

Market trends in the past year do however indicate that this is what is happening. In the year to July 2007, key indicators moved as follows:

- ❑ Costs of production +16%
- ❑ Producer prices +3%
- ❑ Retail prices +4%

Unless retail prices begin to reflect more closely changes in costs of production, incomes will be further squeezed in a sector that is already under a lot of pressure.

### **Management strategies to combat feed price volatility**

On present evidence, the future for pig feed costs is set to differ from the past in two ways:

- ❑ Prices could fluctuate more
- ❑ Prices in general could be higher

Intelligent pig producers need to adopt management strategies to deal with the changing market situation. The management strategies they need to adopt can be classified as:

- ❑ Short-term strategies to reduce exposure to price fluctuations
- ❑ Long-term strategies to reduce the costs of production

#### Reducing exposure to price fluctuations

Feed costs represent roughly 70 per cent of the variable costs of producing a pig, and 50 per cent of total costs. Consequently fluctuations in feed prices will have a greater potential impact on production costs and on profitability than any other single factor. The increasing importance of biofuels means that changes in supplies of feed quality grains could change proportionately more from year to year, leading to an inherently greater fluctuation in prices.

It is clearly to the advantage of the pig producer to minimise the variation in future feed costs. This is essentially done by “locking in” prices. Although future prices may be locked in at higher than current prices, this should be more than outweighed by the knowledge of what your future feed costs are going to be. This knowledge is essential to successful business planning.

“Locking in “ prices involve paying for future supplies in some way There are several methods of doing this:

#### *For straight feedingstuffs*

- ❑ Buy all feed requirements forward at today’s prices.
- ❑ Buy all forward with a “put” option. The put option (which has a cost) means that you have the option to buy the contracted feed in the specified delivery month. So if spot prices had declined below the forward price by the delivery month you would not exercise the call option but would be able to take advantage of lower spot prices.
- ❑ Buy half forward and buy half on the spot market when required.

- Buy on the futures market (although these don't exist for all commodities). Futures markets do not usually involve physical delivery, as an offsetting Sell contract will be taken out near the delivery month. Gains/losses on the physical market should be offset by losses/gains on the futures market.

*For compound feeds*

- Buy all forward.

For more information on hedging options in the cereals markets contact the Home Grown Cereals Authority.

Reducing the costs of production

Although reducing costs of production can take the form of reducing input prices, for example by switching to a cheaper ration or by purchasing in larger quantities, it can more often involve improvements in technical performance.

Considerable savings in production costs can be achieved from these technical improvements. Shown in the table below are some of the Agrosoft results relating to average and top-third producers for 2006.

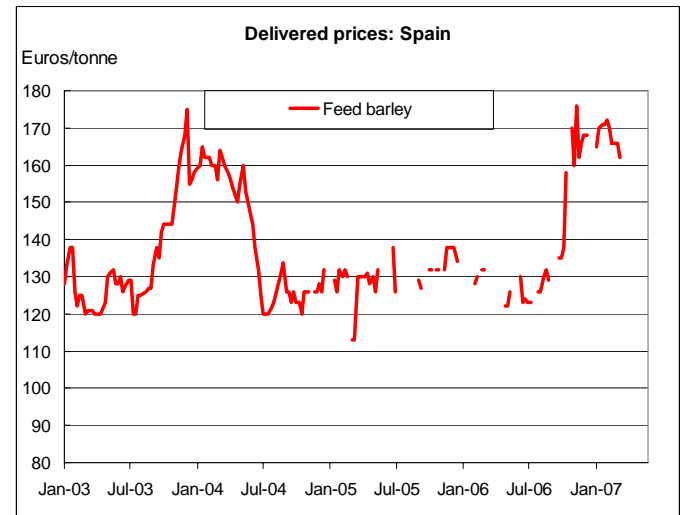
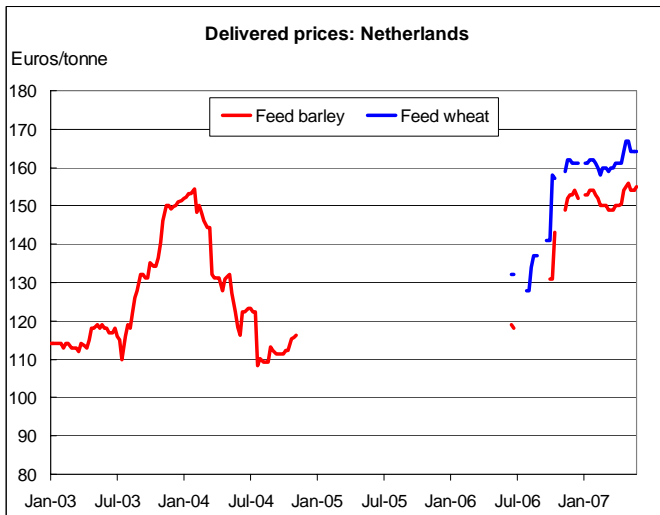
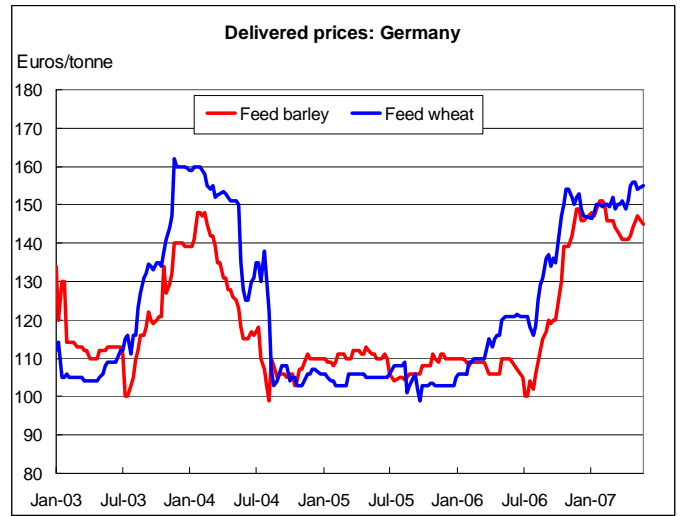
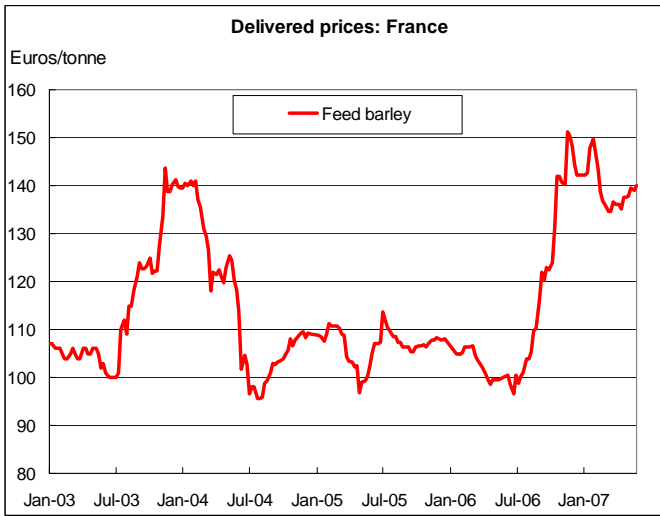
**Results from average and top-third producers, 2006**

	<b>Average</b>	<b>Top-third</b>
<b>Breeding herds</b>		
Litters/sow/year	2.26	2.34
Pigs born alive/litter	10.90	11.60
Pre-weaning mortality (%)	13.3	11.5
Sow feed cost (£/tonne)	111.27	109.17
<b>Rearing herds</b>		
Mortality (%)	2.5	2.7
Feed conversion ratio	1.71	1.66
Daily liveweight gain	493	487
Feed cost (£/tonne)	192.04	181.83
<b>Feeding herds</b>		
Mortality (%)	5.6	4.9
Feed conversion ratio	2.75	2.84
Daily liveweight gain	655	706
Feed cost (£/tonne)	119.87	101.42

The cost of producing 1kg of pig meat for the average producer in Great Britain is provisionally estimated at 106.1p/kg dw for 2006. However, if the top-third figures in the table above are substituted for the average results, the total cost of production falls to 96.6p. This gives an indication of the scale of savings that can be made from improvements in productivity.

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**Economic and Policy Analysis Group**  
**26 July 2007**

## APPENDIX 1: CONTINENTAL PRICES



## **APPENDIX 2: BIOFUELS AROUND THE WORLD**

### **United States**

The Renewable Fuels Act of 2005 set a target of 7.5 billion gallons of renewable fuel use in gasoline by 2012. According to USDA, high oil prices, blender tax credits (51 c/gal of ethanol and \$1/gal of biodiesel) and import tariffs have provided an economic incentive for an expansion beyond that target. There have also been recent proposals to step up biofuel use even further, to 35 billion gallons in 2017.

### **European Union**

The EU has recently taken its commitment to biofuels one step further. On top of the reference target of 5.75% for biofuels in petrol by 2010, it has agreed a legally binding target of 20% of energy consumption to come from renewable sources and 10% of petrol and diesel to be replaced by biofuels by 2020. In the EU total biofuels production in 2005 was just under 4 million tonnes, of which 80% was biodiesel. To help meet the 2020 target, imports of biofuels and feed are expected to supply 30% of demand. The EU has also set targets on the use of renewable energy in heating and cooling.

### **Brazil**

Seen as the pioneer in biofuels, Brazil already derives 29% of energy from biomass compared to 11% globally. In 2006/07, around 50% of sugar cane was devoted to ethanol production. Brazil is expecting to more than double its ethanol production and exports over the coming decade as well as expanding its biodiesel production.

### **Asia**

Asian governments are also promoting biofuels through obligatory targets. In 2002 the Chinese government introduced a compulsory 10% ethanol blend in gasoline in several provinces (80% of which is maize-based).

Malaysia - the second largest palm oil producer after Indonesia and the world's largest exporter in 2006/07- will shortly introduce legislation on the use of B5 diesel (5% blend palm oil and 95% diesel). By 2010 Malaysia hopes to export 300-350,000 tonnes of biodiesel to the EU, which could mean a 50% expansion of palm oil area by about 2 million hectares. Environmentalists claim that palm oil is responsible for 90% of deforestation in Malaysia.