
The logo for CIVITAS, featuring the word in a white serif font on a dark blue rectangular background. A thin grey horizontal line is positioned above the logo, and a thin red vertical line is positioned to its left.

CIVITAS

'Rock Solid?'
**An investigation into the
British cement industry**

David Merlin-Jones

November 2010

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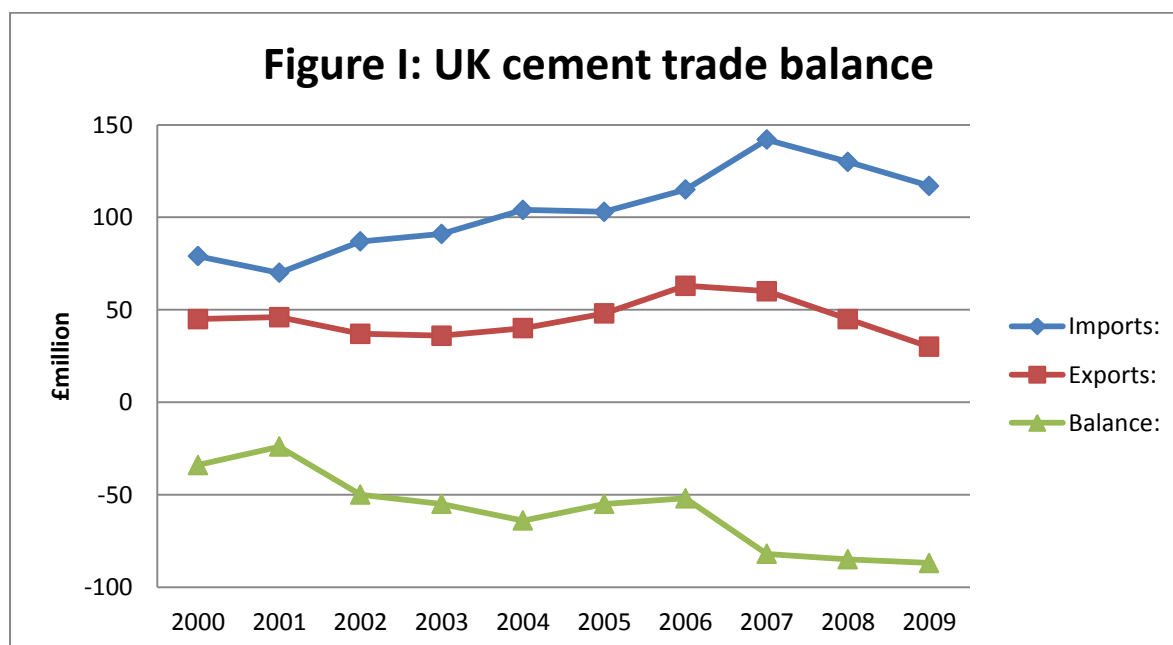
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An overview of the situation

Until the Energy Crisis of the 1970s, Britain enjoyed a position as one of the biggest net exporters of cement in the world. The rise in energy costs after this event led to the steady decline of UK cement production in terms of the balance of import/export levels. This decline continued until the 1990s and it is only in the last two decades that imports have substantially increased and rapidly so during the last nine years to the current level. Chris Clear of the Mineral Products Association (MPA), the representative body for the UK's cement industry, stated that:

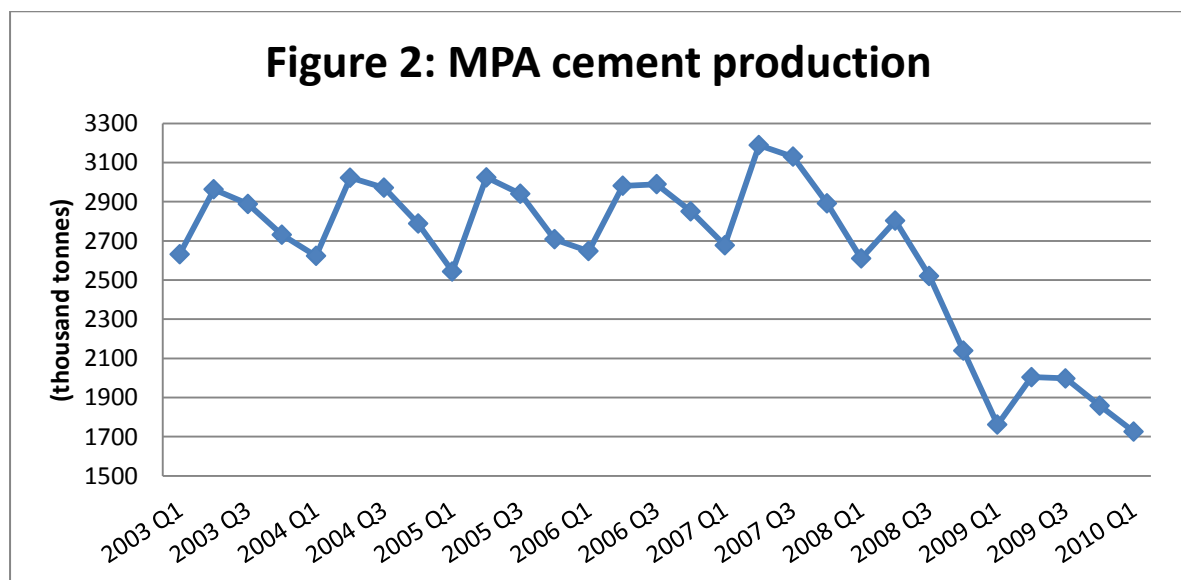
When the market crashed in 1992, cement firms closed their older, more inefficient works and upgraded the better ones. Since then, UK production has grown, at least until 2008. This is the boom/bust cycle of the cement industry.

As seen in Figure I, imports have had to increase to satisfy cement demands and this incurred a £87 million trade deficit in 2009. Since the global recession began in 2007, overall demand for cement has declined due to the decrease in construction activity, but the actual trade deficit itself has risen by £2 million (2008-09) as domestic production has fallen faster than imports. The MPA hopes that demand for cement will start to increase by 2015.



(Source: UK Trade in Goods Analysed in Terms of Industries Quarter, February 2010, p.22)

The MPA represents the four biggest British manufacturers of cement accounting for over 90% of all UK production. This analysis of the cement industry will therefore concentrate on the MPA and its four associates. The graph below shows the MPA’s levels of production prior to the recent recession and the rapid decline since. The MPA had also been exporting cement at a modest level until the second quarter of 2009 when this rate dropped to 1,000 tonnes from 14,000 in the previous quarter. Since then, there has been little improvement and in the first quarter of 2010, the MPA didn’t export any cement at all.ⁱ



(Source: MPA Quarterly Cementitious statistics)

The four firms represented by the MPA are: Tarmac, Lafarge, Hanson and CEMEX. Of these, only the smallest, Tarmac, is still a British-owned company. The others are French, German and Mexican-owned respectively. The implications of this foreign ownership will be discussed later in this report, but it is noteworthy to say here that of the four firms, only Tarmac has not shut down or ‘mothballed’ any factories in response to the recent economic downturn. The four companies use the MPA as a mouthpiece through which to lobby government departments with whom their relationships have steadily improved in recent years as a result of reducing pollution and improving the impact of their actions on the local area. Indeed, Dr. Richard Leese, the Director of Energy and Climate Change at the MPA feels that popular support for the industry has recently increased because: ‘most people see the need for some kind of industry, the benefit of a manufacturing sector, especially when you have a financial sector that has gone down’.

The production process

The process of making cement is relatively standardised. The key component is limestone while smaller quantities of sand and clay are also needed. Between these three ingredients, the four essential elements of calcium, silicon, aluminium and iron are all found. The need for limestone means that cement works are always situated near to a quarry where this can be mined. The large boulders are then transported from the quarry to the cement works where they are crushed into much smaller pebble-sized chunks. It is only at this point that the other ingredients are added, the proportions changing according to the type of cement desired. Before being heated, the mixed pieces are then pulverized into powder. Once inside the furnace, this powder is heated to 2700°F (1480°C) and the chemical reactions this induces causes the powder to amass into glass-like remains known as clinker. It is this stage of the process that the most energy is used and large quantities of carbon dioxide are released. Once broken down again, the clinker forms the base component of cement. It is stored in silos until required, at which point it is mixed with minerals such as gypsum to decide the final form of the cement. If kept dry, the clinker has a shelf-life of many months so is suitable for international trade alongside ready-mixed cement.

The manufacture of cement is a process without much scope for comparative advantage other than in terms of cost. Due to the stringent EU-wide laws governing the quality of cement used within the European Union (therefore requiring non-EU imported cement to comply), the production procedure differs little from country to country and this basic cost is effectively the same worldwide according to Leese.

There are two main models within the supply process, one used in Britain and the other in mainland Europe (the 'continental' method). The British method is to create the basic clinker then transport it to be mixed with other ingredients to form the final concrete mix. The continental method sees the different forms of cement being made at the main cement works before then being shipped to the concrete plant. The British method has the advantage of minimising transport movements and therefore it has a minor cost (and pollution minimising) advantage.

EU issues

The central problem facing the cement industry is the *European Union Emissions Trading System* (EU ETS). The nature of cement production is such that carbon dioxide is inevitably released through the process and while CO₂ emissions can be minimised, they cannot be prevented. However, the cutting

of CO₂ emissions is not in itself problematic, and the MPA firms have jointly reduced their emissions by 58% and are well on the way to fulfilling their contribution to the 80% emissions cuts that the EU hopes for by 2050. The problem posed by the EU ETS is the manner in which permit allocation is being decided.

The cost of carbon emissions trading will determine the fate of cement producers and is the 'biggest influence with the potential to significantly affect the industry', according to Leese. If the industry is forced to buy all its emission permits, the cost of production will rise significantly, depending on the permit's cost. The MPA hired the Boston Consulting Group to conduct research into the impact of purchasing permits. It found that depending on the price of these, significant areas of Britain's cement industry will be forced to halt production, as they will be unable to afford the emission permits and offset the costs of CO₂ generation. This is because the most energy intensive part of the cement making process, producing the clinker, was too energy consuming to be sustainable under a high tariff system. Current costs are around €13-€14 per tonne of CO₂ but the Boston Consulting Group found that if the price rose to €19 per tonne then production would be unviable within a 150km radius of the coast, a significant geographical limitation. If the cost were to reach €24 per tonne, the whole industry would be unviable. Richard Leese stressed that current forecasts from Deutsche Bank predict tariffs will be traded at €30-€40 per tonne for the third phase of the EU ETS, which will run from 1 January 2013 until 2020.

The cement industry is currently recognised as a special sector with relaxed emission penalties due to it being at high risk of 'carbon leakage'. Such 'leakage' is the rise in emissions from one country due to another country implementing stricter emission regulations. In the real world, this would see companies move to countries outside the EU to take advantage of their flexibility and lack of regulation. In this scenario, overall global emissions are not reduced and are even increased due to logistical costs and less efficient cement works. Meanwhile, the EU country suffers unnecessarily for its good intentions through loss of employment and increased imports. Clearly, this will occur in the cement industry in Britain and the EU as a whole, if the EU ETS costs continue to rise and production transfers to less regulated countries, such as Turkey and China. However, cement is only one of 164 such special case sectors, and they are all due to be reviewed on the basis that too many industries have been given leniency. Despite concerns about carbon leakage, the cement industry is now vulnerable and will have to fight effectively to retain its special sector status within the EU.

The current concern for the cement industry is that while its unique circumstance is recognised, the allocation of free permits is based on a benchmark that does not allow increased output, unless firms choose to pay increased costs. The third EU ETS phase will lead to a further shortfall in the

allocation of free permits. However, the cement industry faces a further problem. The benchmark for carbon output allocation is based on averages of output since 2005, but as the MPA production graph above (Figure 2) shows, this has fallen sharply in recent years due to the recession, leading to an average that will not reflect the normal levels of output that would occur the other side of the recession. As it is, Leese feels the EU ETS will 'essentially act as a cap on further production', but if the cement companies' permitted level of CO₂ output is too low, the industry will be badly damaged and unable to regain its normal levels of production, let alone expand. If this does occur, by the time demand picks up again around 2015, the EU ETS will render the cement industry unable to supply cement from domestic production, forcing it instead to increase imports.

Despite the advantage of the British model of cement production as discussed above, the EU target to reduce carbon emissions will have negative consequences for the UK's cement industry, which will be 'disadvantaged, quite significantly with no environmental benefit,' according to Leese. There is a desire to standardise the production process of cement across the EU and this is to be based on the model the majority of mainland producers already use, which is less efficient than the unique British model. Leese feels that the effect of this manoeuvre will be the allocation of carbon emissions allowances to the cement industry in a manner less useful to British cement firms, as compared to those abroad.

The EU regulations could affect the cost of cement and therefore Leese predicted that, 'if the overriding financial benefit is to mean that the cement firms will import their product from outside the EU then that will override any other decision'. Currently, the best placed country to take advantage of EU regulations is Turkey, which is situated outside EU regulatory territory, but is geographically close to it. It can therefore export cement cheaply by avoiding the expensive tariffs the EU imposes. At the current rate, the EU rules will simply serve to drive cement out of European production.

A potential concern for British cement production can be seen in the trade relationships between Italy and Egypt, as well as between Morocco and Spain. The European countries lack significant domestic cement production and as such, they rely on their non-EU partners to supply cement to meet their needs. For the UK, while the financial cost of importing heavy cement from non-EU producers is high due to the larger geographical distance, this price has the potential to be less than the eventual cost of domestic production if carbon tariffs continue to rise. If possible, the UK should avoid being forced into this situation due to the higher import/export imbalance this would create.

Problems caused by the UK Government

The British Government is not directly harming the cement industry but is doing so indirectly. Leese argued that the Government is 'not supporting the cement industry in the UK in terms of how they negotiate with continental colleagues for the amount of CO₂ that the UK industry needs'. The Government needs to realise that the UK model is better for the environment and to put more pressure on the EU to ensure that British cement firms are allocated more favourable CO₂ quotas as a result.

As part of the UK's wider commitment to combating climate change, the 'Renewable Heat Incentive' was announced in the 2010 Spending Review, but part of this £860 million fund may be sourced from a new tax that will penalise high energy users, which the cement industry clearly is. This new tax in itself may not have much effect on the production levels of cement, but the cumulative effect of the new tax on top of other government policies and EU tariffs could amount to the 'straw that broke the camel's back', undermining the cement industry and, Leese believes, manufacturing more widely.

While EU tariffs will affect all EU cement producers and thereby constrain them equally, the UK is more stringent than other countries in enforcing environmental legislation. Chris Clear argued, 'the problem is that if anything slips, the environmental agency comes down on you too quickly, so the environment consideration cost is higher here than in other parts of the world'. The UK's stance on the EU's *Taxation of Energy Products Directive* is an example of this. The directive sets down the minimum cost of different energy types across Europe and the cost is due to be increased by a review no later than 1 January 2012.ⁱⁱ However, while the directive specifically excludes 'mineralogical processes' (which covers cement production), the UK Government already taxes the cement industry at this level through the Climate Change Levy. This means that British production will be put at a comparative disadvantage. Clear stated, 'Britain is still a more expensive place than Europe in which to produce cement, let alone the rest of the world. On top of this, if an EU CO₂ tax occurred, this would damage the industry badly.'

Barriers to expansion

The growth of the cement industry is reliant on the economics of supply and demand, specifically within the construction sector. Leese stated that this has a 'massive influence' and that any rise in cement production would depend on an upsurge in construction. However, the Spending Review will

mean less money to spend on buildings such as schools and hospitals, which will reduce a vital source of long-term revenue for the cement sector.

There is a sense within the MPA that the cement sector does not need to expand further, even once the recession has ended. Leese felt there is already ‘a good amount of capacity within the UK at the moment’, due to the number of plants being ‘mothballed’, rather than decommissioned. In the last 18 months, while four plants have stopped production, two were ‘mothballed’ and of the other two that were closed, only one has actually been dismantled. Therefore there is still an unused latent capacity.

Once the existing cement industry’s maximum potential has been realised again, there will be the possibility of limited further growth. Planning permission has been granted for a new cement works in the south of England and another is being planned on behalf of Tarmac. This is in preparation for the expected economic upturn, but the growth of the industry will rely on a steady demand that may not occur. For example, an increase in exports is not likely to happen. Diane Mellor of Tarmac’s Buxton Lime and Cement division stated, ‘we get regular enquires into exports but simply don’t need to at the moment’. The domestic demand is enough to keep the existing British cement industry in business but further expansion to meet export demand is not seen as worth the cost. Mellor said, ‘there is always the possibility that we would start exporting, but this would require a huge investment and we aren’t interested in it at the moment’.

There is not likely to be an increase in the number of new cement companies starting up. This is due to the prerequisites of new companies having a huge tract of land with at least 50 years’ worth of limestone reserves and of their attaining planning permission for a new Greenfield site. These prerequisites will not be easily met, even if demand improves. The future for the UK cement industry therefore really lies in the MPA firms building new factories near to their existing sites.

Foreign ownership

Three of the biggest cement firms in the UK are part of wider international conglomerates. For example, Lafarge bought out Blue Circle in 2001, making it the largest cement producer in the world. Hanson, originally Castle Cement, was bought by HeidelbergCement and it produces 25% of the UK’s output. Finally, CEMEX bought the RMC group in 2005.

Leese has said that such foreign ownership has ‘considerable impact on what those plants [British cement works] can invest, because the decisions are taken elsewhere’. This can be seen clearly in

CEMEX's investment in a port dedicated to cement importing in Tilbury. However, while beneficial to the company, this is not the sort of investment the UK as a country really needs. Cement demands will be met by importing cement from other CEMEX factories abroad, rather than producing cement here, causing a further trade deficit. There is a worrying trend here: CEMEX has transformed its Rochester cement plant into another import hub while Hanson has created two main import sources in Avonmouth and on the Humber. An inherent (and increasing) issue with the large, foreign-owned conglomerates is that they require stronger incentives and more favourable conditions than are currently available in Britain in order to start investing in new factories rather than relying on imports.

While the effects of foreign takeovers have not been particularly negative so far, there is a potential that they could lead to British production being halted if changing circumstances make it untenable. Leese predicts that, 'the French would probably stick by Lafarge and that localism is to be expected... new works can be expected to be built in France'. In terms of the current risk of plant closures, Leese felt this was something 'very much so' to be worried about. This is in part due to the nature of cement production, which sees works either run at full capacity, or not at all. If demand is low, it is cheaper to import cement than to create a British supply surplus.

It is therefore worrying that the UK's three biggest cement companies have already closed at least one cement works since being taken into foreign ownership. CEMEX closed its South Cambridgeshire plant, leading to 87 redundancies in November 2008 while Lafarge followed suit in February 2009 by making 68 workers redundant when it 'mothballed' its Westbury plant, and then later demolished it. Hanson has been the most recent firm to close a plant, in July 2009, when its Flintshire plant cut 93 jobs and stalled production.

It is important to refrain from making generalisations about the behaviour of these foreign owners because it cannot be denied that they have invested a large amount in UK production. Compliance with EU carbon regulation has required these owners to invest vast amounts without seeing any growth in output, and so much of their spending has had no visible improvement on the balance sheet. Hanson's plant at Padeswood has been improved in this manner. The company advertises that:

The opening of the new kiln has resulted in the closure of three existing kilns at Padeswood and two wet kilns at the company's Ribblesdale works in Lancashire. This will reduce the company's carbon dioxide emissions by 17.5 per cent per tonne of cement produced against 2004 performance. Acid rain gases at Padeswood will be reduced by a staggering 75 per cent.ⁱⁱⁱ

Here, and more generally in the cement industry, the upgrading of one plant in terms of its output ability often appears to lead to the closure of less efficient plants that have smaller production and that emit proportionally greater levels of pollution. The aim of owners appears to be to stabilise cement production, rather than increasing it, and this is due to the draconian conformist policies enacted by the EU. From 2002-08, amongst all cement companies an estimated £250 million was invested in this manner, to maintain rather than increase production, according to Leese.

New plants have also been opened but the intention, again, was to improve the production process rather than expand production. The new CEMEX works at Rugby was built at a cost of £200 million and has been made into one of the world's leading cement plants, which is hopefully an indication of CEMEX's commitment to British production. The plant at Rugby is capable of producing 1.8 million tonnes of cement per annum, as opposed to the decommissioned Cambridgeshire plant that was only able to produce 250,000 tonnes per annum. Again, this closure was designed to cut back on the most inefficient production.

Tarmac, the only British firm of the big four represented by the MPA, is a special case in that it does not have the ability to reduce its cement production. This is because it only has a single cement work, so closing it would be the end of its entire production. That Tarmac is looking to open a new plant in the future is a good sign. Foreign owners have honoured their commitment to British cement production and have certainly not engaged in practises to eliminate old rivals, such as asset stripping. However, the reality is that future production in the UK cement industry is increasingly restricted by the context of high energy and carbon costs that no business would try to work within. This is especially true if, as the three biggest UK companies are finding, there are places abroad that can produce cement at a lower cost and have better prospects in the long-term.

Conclusion

The cost of producing cement will soon rise due to EU regulations, regardless of what the UK Government does. However, if the Government decides to place its own taxes on energy supplies above the general European levels of tax, this will render UK cement production unviable and lead to a further decline in the industry, if not its complete dispersal overseas. As it is, cement is often cheaper to import and this trend is unlikely to abate until the Government acknowledges that it is a great problem.

The cement industry does produce a significant amount of carbon dioxide emissions, but this is being dealt with ever more efficiently. Rather than rewarding this reduction of CO₂ emissions, the EU

and the British Government have been penalising the industry disproportionately. Cement manufacturers have to contend with the EU ETS, climate change agreements, carbon reduction commitments and a carbon levy, all on top of the regular taxes that businesses face. If anything, it is remarkable that the cement industry still exists in the UK. The Government needs to recognise that small taxes and regulatory measures accumulate to create an unfavourable atmosphere for industry.

The circumstances of the cement industry are typical of many other UK manufacturers, especially energy intensive ones, and the problems facing it also extend beyond cement production. Therefore, the solutions to these issues faced by the cement industry could also be used as models to help other industries sustain themselves. It would be harmful enough to worsen the £80 million deficit in the cement trade as it is, but to allow the deficit increase throughout manufacturing in general would be disastrous.

The fluidity of the cement industry, like much of the manufacturing sector, is also a cause for concern. The ownership of the biggest three UK-based companies by foreign firms means that production can be taken overseas if necessary, which would leave the UK entirely reliant on imports. The 'tipping point' for this exodus of cement firms is unknown at present, but that doesn't mean the risk is not clear. In the first instance, Lafarge's European companies and Hanson's HeidelbergCement would be likely to relocate from Britain to France and Germany respectively. This would be the climax of British government policies making UK cement production less attractive than in mainland Europe. If the Government instead refrains from penalising the industry further and instead allows its regulations to be replaced by incoming EU ones, the EU rules would affect all firms within the EU equally. In this case, production would presumably continue in Britain, unless the EU tariffs were so draconian as to see all production outsourced to beyond the EU.

The key issue for the cement industry is that whilst it is currently running below its potential level of production and can therefore expand up to a point, further expansion beyond its potential limit is currently unlikely. This is due to the huge investment required at a time when the EU and government policies are making the future of British cement production uncertain. The Government should not necessarily be looking to encourage new cement companies to start up, but instead it should ensure that existing companies do not transfer production overseas. In the long-term, the cement industry has been continually reducing production levels and there has been no real recovery each time this has happened. The UK has transformed from the world's leading producer of cement fifty years ago, to manufacturing only 0.5% of global output by 2005. If the industry declines any further, this decay could be permanent. The Government must not price British cement out of the market.

Notes

ⁱ MPA Quarterly Cementitious statistics, Table 2,

<http://cement.mineralproducts.org/documents/Table%20%20Quarterly%20Cementitious%201%20Jul%2010.pdf>

ⁱⁱ http://europa.eu/legislation_summaries/internal_market/single_market_for_goods/motor_vehicles/interactions_industry_policies/l27019_en.htm

ⁱⁱⁱ www.heidelbergcement.com/uk/en/hanson/products/cements/works_and_depots/padeswoodsworks_.htm