

**ING Economics Department**

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# **Dutch Industry Outlook 2010**

Is the crisis over?

# Colophon

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# Foreword

ING monitors the fortunes of Dutch industry very closely. The industrial sector is and will remain important for the Netherlands and the national economy. This is one of the reasons why ING publishes an extensive study and outlook on Dutch industry each year.

This outlook sketches the prospects for a number of important sectors in Dutch industry. We have compiled this outlook from statistical data and from input received from companies, organisations and employees of ING. We would like to thank the individuals concerned for their contributions and wish them every success in these challenging times.

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# Summary

**Dutch manufacturers are climbing out of the deepest recession of the post-war period. This will lead to more industrial production in 2010. However, growth will remain sluggish for some time as consumers and companies remain cautious.**

## **Economy and industry emerge from recession**

As a cyclical and highly export-oriented sector the manufacturing industry has suffered badly from the international recession. Industry sustained the largest increase in the number of bankruptcies and the greatest decline in the volume of production of all business sectors in 2009. A record number of industrial concerns went out of business in the first half of 2009. The global downturn has bottomed out however. Producers and consumers are less pessimistic and world trade is picking up again. A number of industrialised countries emerged from recession in the second quarter. After five quarters of contraction, the Dutch economy expanded again in the third quarter, albeit slightly.

## **Production expanding again due to build-up of stocks and export demand**

The improvement in sentiment has halted the slide in industrial production. Although turnover and orders are still well below their levels of a year ago, they are rising again. Industrial production revives slightly as stocks are built up again. In 2010, industry will benefit mainly from growing foreign demand. Dutch exports will pick up again in response to the return of international business confidence. The stock building and export revival will eventually have to be followed by increased consumer spending to solidify the improved prospects for industry in the longer term.

## **Investment and consumption lagging behind**

The overcapacity that has been created is forcing manufacturers to do everything they can to reduce costs. Producers are more likely to continue reducing production capacity than expand it in 2010. Industrial investment will therefore decline further. Companies will also continue to downsize their workforces. The worsening labour market will have a negative impact on consumers' finances. Consequently, although consumer confidence has improved significantly since the beginning of this year, no significant upsurge in private consumption is expected in the short term.

## **Improved margins in sight**

The recent rise in commodity prices is indicative of a worldwide increase in industrial activity. More expensive raw materials could delay a recovery in Dutch industry because they will drive up prices for industrial companies and increase the pressure on margins. However, selling prices have again been rising faster than industrial consumption prices since May, which can yield some desperately needed improvement in margins. Rising price levels could in time dampen demand but there is no immediate risk of this since the prices are still well below the peak level of 2008.

## **Improvement in all branches in 2010**

Whereas production will shrink in every branch of industry in 2009, the scenario for 2010 is a mixture of growth and contraction. The outlook for industry as a whole in 2010 is more positive than in 2009. Early cyclical and export-oriented branches will perform best. In branches that manufacture basic products and semi-manufactures, production has already recovered slightly in the course of this year. The sustained decline in business investment means that manufacturers of capital goods will have to wait a little longer for recovery.

In the food industry the tougher competition between supermarkets is putting a strain on the relationship between retailers and food manufacturers and is leading to lower selling prices for the industry. Because basic products account for a large share of its activities, the chemical industry is among the earliest cyclical and trade sensitive branches of industry. The sector therefore suffered relatively early and heavily from the fall-off in demand. However, the chemical sector is also leading the recovery due to renewed stock creation. After a steep downturn, the plastics industry is also on the verge of recovery. Up to now, production in the printing and allied industries has fallen by less than the average for industry as a whole. However, there is a risk that the slump in this sector will last longer. Although it will be less badly affected by the contraction of exports this year, the printing and allied industries will also benefit less from the recovery of global trade. The metal processing industry has fallen from high peaks to deep troughs, but demand for metal semi-manufactures will gradually improve. The machinery industry is generally showing a slight improvement but no strong recovery is anticipated for the time being because of persistent pressure on business investment. The cyclical character of the transport sector combined with the thrift being shown by consumers has caused the production of transport equipment to decline by twice as much as the average industrial production this year. The export recovery and premiums for scrapping old cars will generate some additional demand and improve prospects for 2010. The building materials industry will experience the steepest fall in production. Because the building sector experiences the consequences of economic developments at a late stage, suppliers of building materials still face a severe drop in production in 2010.

## **Industrial production under long-term pressure**

Industrial production will not immediately return to the heights of the autumn of 2007 in the coming years. Given the imbalances in the economy it is highly likely that the knock-on effects of the crisis will continue to depress production growth for some time. The build-up of capital and reduction of debt will take priority over consumption and investment in the coming years. This trend will probably be apparent not only among households, companies and financial institutions, but also among public authorities. The effects of the crisis will also be reinforced by its international scale.

### Further automation and sustainability remain essential

Further automation remains vital for industrial companies if they are to take on the international competition and address the eventual return of labour shortages due to the ageing of the population. Furthermore, sustainable products and socially responsible production processes are not only increasingly necessary, more importantly they offer new market opportunities. The growing demand for a greener society and the higher costs of non-sustainable activities mean that the sustainable investments pay for themselves more quickly.

**Table 1 Economic indicators**

|  | 2006 | 2007 | 2008  | 2009   | 2010  |
|--|------|------|-------|--------|-------|
| <b>Netherlands:</b>                    |      |      |       |        |       |
| Economic growth                        | 3.4% | 3.5% | 2.0%  | -4.0%  | 1.0%  |
| Private consumption                    | 0.0% | 2.1% | 1.3%* | -2.7%  | -0.5% |
| Business investment                    | 8.3% | 4.6% | 4.7%  | -15.4% | -7.1% |
| Exports                                | 7.3% | 6.7% | 2.7%  | -8.9%  | 3.6%  |
| Industrial production                  | 2.7% | 3.3% | -0.8% | -9.5%  | 3.4%  |
| Economic growth euro-zone              | 2.9% | 2.6% | 0.6%  | -3.9%  | 1.4%  |
| Economic growth US                     | 2.9% | 2.0% | 0.4%  | -2.5%  | 2.1%  |
| Dollar/euro exchange rate (\$, end of) | 1.32 | 1.46 | 1.40  | 1.55   | 1.35  |

Source: ING Economics Department

\* distorted upwards by 0.5% in connection with health insurance (policy excess instead of no-claim bonus)

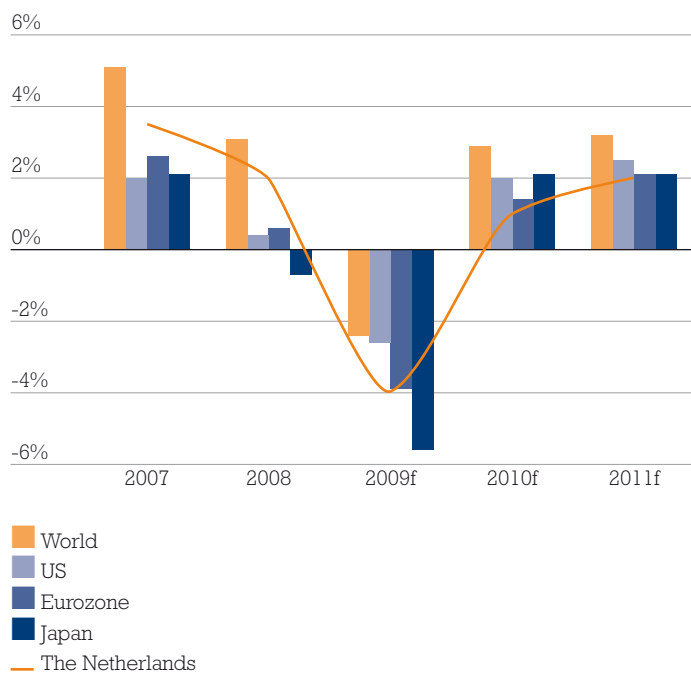
# Industrial developments in an international context

**The prospects for industry have improved with the growing number of 'green shoots' appearing in the economy. Manufacturers are climbing out of the deepest recession since the Second World War. Stocks are being replenished again and global trade is picking up. This will lead to an increase in industrial production in 2010, although the pace of growth will be slowed for some time by the cautious attitude of consumers and companies.**

## Improved prospects for 2010

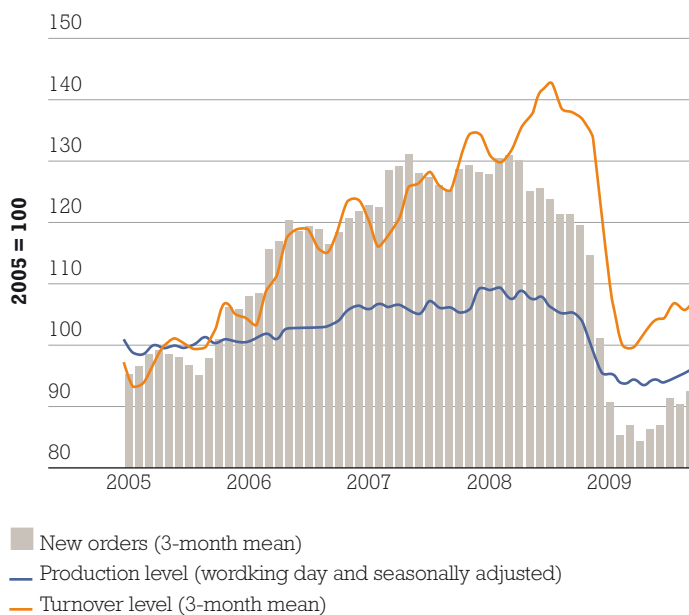
The storm clouds of the crisis are slowly but surely clearing. After the abrupt and lengthy fall-off in demand, more and more 'green shoots' have been appearing since the spring. Producers and consumers are less pessimistic and a number of industrialised countries emerged from the recession in the second quarter of 2009. The growing number of economic bright spots is good news for industry. The global downturn has bottomed out. Nevertheless, it is possible that the recent revival in the industrialised countries reflects nothing more than the end of a severe reduction of inventory. For a sustained improvement of economic prospects consumers will eventually have to follow the lead given by the revival in the build-up of stocks. Private consumption in the US and the Eurozone remains weak, however, as unemployment rises and people continue to reduce their debt. Consequently, after reaching a historic low in 2009 the pace of economic growth in the Netherlands and other developed

**Figure 1 Development of economic growth**



Source: ING Economics Department, f = forecast

**Figure 2 Development of industrial production, turnover and orders**



Source: CBS

economies will still be lower in 2010 and 2011 than we were accustomed to before 2008 (figure 1).

## Heaviest blows for industrial sector in 2009

The deepest recession since the Second World War had a global impact, with all of the ensuing consequences for Dutch industry. With transport and logistics leading the way, industry headed the list of worst affected business sectors in 2009. It is not surprising that these two cyclical and highly internationally oriented sectors sustained the heaviest blows from the economic storm. Industry suffered the largest increase in the number of bankruptcies of any business sector. A record number of companies failed in the first half of 2009. Publishers and printing companies, metal companies and machine builders were the hardest hit. The 'Made in Holland' stamp of quality was unable to prevent exports falling by more than 13% in the first half of 2009 compared with 2008. The uncertain outlook deterred companies from making major investments. Because consumers also cut back on their spending, governments stepped in with stimulus measures to bolster demand in the short term.

## Orders and turnover starting to climb

Almost every enterprise is confronted with the negative consequences of the economic downturn to one degree or another. Liquidity is under pressure from lower turnover and margins, later payment by customers and tighter credit from suppliers. Companies that are unable to keep up with the changes in the market and had failed to put extra flesh

on their bones in recent years have been the hardest hit. For many companies the flow of orders had practically dried up as customers waited for the situation to improve. Consequently, the pace at which production levels have been reduced has also accelerated until the second quarter of 2009.

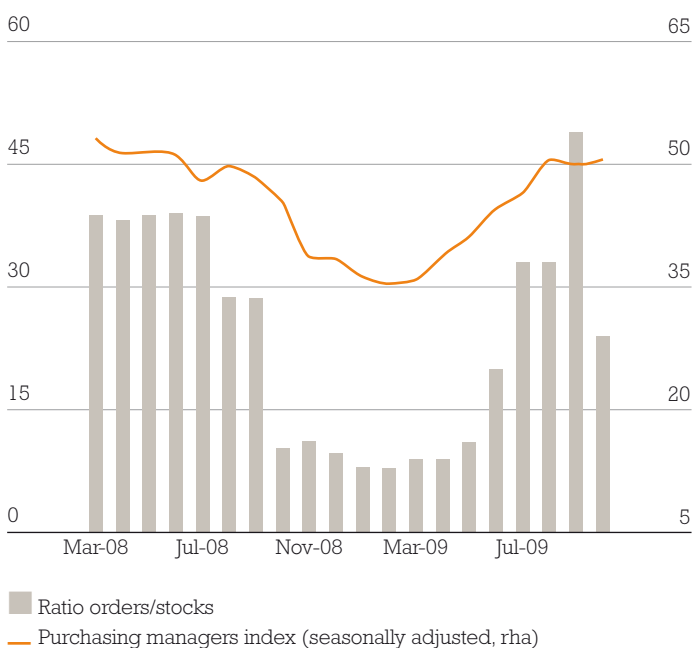
In the first half of 2009, the volume of production was 13% lower and turnover almost 26% lower than in 2008. Sales volumes and prices both declined. Producers have offered sharply discounted prices in order to reduce their stocks and bring them into line with lower demand. An additional effect of the fall-off in demand is the decline in commodity prices, which has somewhat eased the pressure on margins by lowering purchasing costs.

The industrial picture in the Netherlands is similar to that of the rest of the Europe. Industrial production was under intense pressure worldwide in the first six months of 2009. Nevertheless, the slide has been halted. Production levels have stabilised and orders have increased slightly. Turnover is climbing again and, although still well below the level of a year ago, was around 6% higher in the third quarter of 2009 than in the first quarter (figure 2).

### Activity in factories increasing again

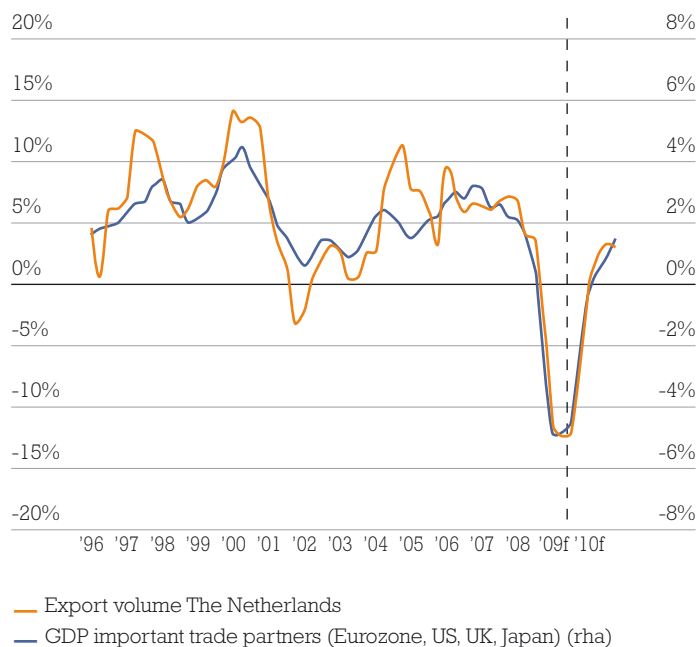
The sentiment among producers has brightened considerably in the course of 2009. Since falling to an all-time low in February, the index of producer confidence has subsequently made up more than half of the loss it sustained since

**Figure 3 Development of purchasing managers index and orders in relation to stocks**



Source: CBS, NEVI

**Figure 4 Development of export volume for the Netherlands and economic growth of major trading partners (year-on-year)**



Source: CBS, f = forecast

the beginning of 2008. In a survey in October 2009 purchasing managers reported an increase in new orders and production for the fourth consecutive month. The volume of new orders is small, but is gradually climbing. Since August the composite PMI index is at a level suggesting increased industrial activity for the first time in fourteen months (figure 3).

Since August the ratio of order levels to stock levels has again been higher than a year ago. The volume of goods that are ready for sale has been reduced to a level similar to pre-recession levels. A majority of producers is positive about production in the next three months (until February 2010), which gives a strong indication for further production growth.

### Recovery driven by exports

The economic outlook for the Netherlands has improved since the summer of 2009. After five quarters of contraction, the economy has grown in the third quarter. This means that the recession has officially ended. Foreign trade has contributed to the growth, along with the government's stimulation packages. Also important is that companies are no longer massively drawing on their stocks. Confidence is recovering in the rest of the world and Dutch exports are picking up. Having receded to 2005 levels, international trade and global industrial production are reviving again

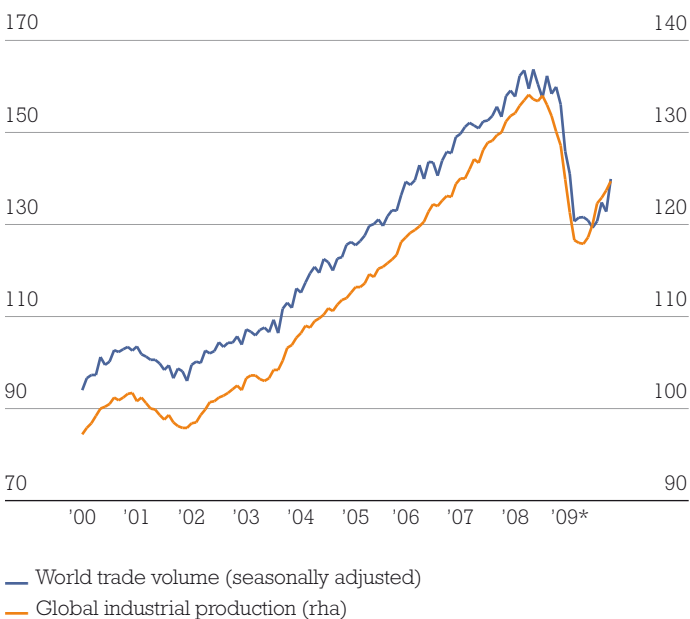
(figure 5). Although the average export level in the first half of 2009 was a fifth lower than in the first six months of 2008, export volumes since May have been higher than in January. Exports by Dutch companies to India and China have already been rising sharply in recent months. There are also encouraging signs in larger export markets. Germany and France – which together account for a third of Dutch exports – reported positive economic growth in the second and third quarter. Dutch exports gradually improved since the summer of 2009. We expect exports to grow by over 3% in 2010 (figure 4).

### Asian industry leads the way

Although global industrial production is still well below the historic peak of March 2008, the recovery has clearly started (figure 5). For six months now, global industrial production has grown at an average rate of 1%. The Asian 'tigers' have returned to their steep growth path, thanks in particular to the enormous investments by the Chinese government. Helped by fiscal and monetary stimuli, China's economic growth rose again in the third quarter to 12% year-on-year. While the traditional industrialised countries only just seem to have turned the corner, Asia has been reaching new peaks almost constantly since February. The turnaround in global production and trade provides a clear indication of a further expansion of trade flows.

The Dutch economy's dependence on other countries is constantly increasing. In the last forty years the share of exports

**Figure 5 Development of world trade and global industrial production (2000=100)**



Source: CPB, \*preliminary data

in GDP has increased from 42% to 77%. As Europe's second largest exporter, the Netherlands profits directly from stronger economic growth in the rest of the world.

Industry is the most export-oriented sector of Dutch business. Producers of bulk products in the metal and chemical industries and manufacturers of transport equipment and plant and machinery are the most active in international markets. The sharp increase in orders from German factories is the clearest sign for the Netherlands that industry will lead the recovery.

**Table 2 Top 10 export markets for the Netherlands**

|                   |     |
|-------------------|-----|
| 1. Germany        | 24% |
| 2. Belgium        | 13% |
| 3. United Kingdom | 9%  |
| 4. France         | 8%  |
| 5. Italy          | 5%  |
| 6. United States  | 5%  |
| 7. Spain          | 3%  |
| 8. Poland         | 2%  |
| 9. Russia         | 2%  |
| 10. Sweden        | 2%  |

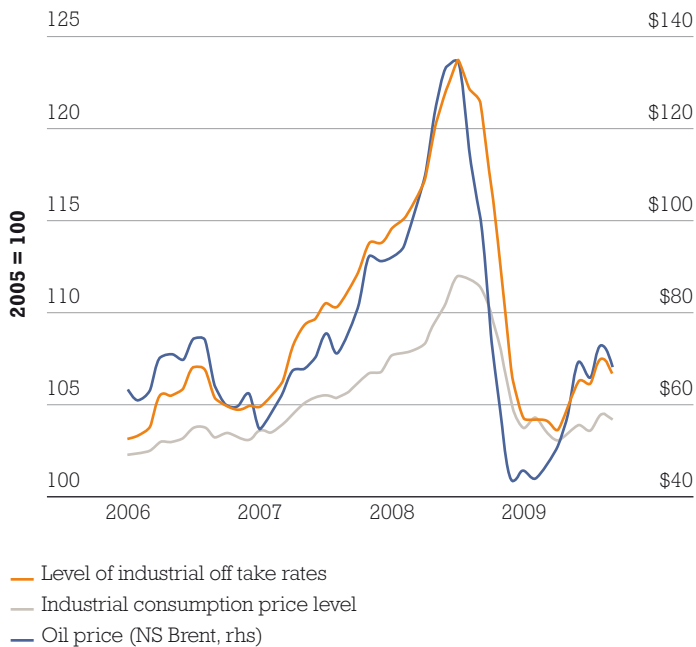
Source: CBS

### Roller coaster ride for commodities

It's still 'all hands on deck' for many companies because of the generally low profit margins in recent years. The steep fall in commodity prices was until recently one of the few benefits of the fall-off in demand for manufacturing industry. After reaching historic highs in the summer of 2008, commodity prices began to plummet in the autumn of that year. The prices of most raw materials bottomed out or started to pick up again in the first half of 2009. The broad commodity index of S&P and Goldman Sachs (GSCI) rose by almost 50% in 2009 and oil and copper prices are now more than twice as high as at the beginning of the year. Given its many applications this metal is also regarded as one of the barometers of the global economy. The prices of other metals have also risen sharply. The growing demand from China seems to be mainly responsible for this. The higher commodity prices are another indication of the upsurge in global industrial activity. However, more expensive commodities could delay a recovery by driving up prices for industrial companies and putting additional pressure on margins.

The more expensive products of the oil processing industry accounted for two-fifths of total industrial inflation in 2008. The chemical industry and the food industry each contributed roughly a fifth to the increase in sales prices. The share of other branches of industry in industrial inflation was small.

**Figure 6 Producer prices and oil prices**



Source: CBS

**Margins set to improve**

How real the risk of pressure on margins is depends on the extent to which higher raw material costs can be passed on to customers. The response to the extreme volatility of commodity prices in the last year has been to temporarily raise and lower selling prices in time (figure 6). The steep fall in this cost component was reflected in lower consumption prices<sup>1</sup> at the end of 2008, whereupon producers reduced their selling prices. The selling prices first rose faster than consumption prices and then fell relatively strongly. Producers seem to have been relatively successful in passing on higher raw material prices to customers. The advantage is that commodity prices, like selling prices, largely rise and fall in line with the economic situation. The other cost components do not do so, or only after a certain delay. They are also far more difficult to adjust in the event of an unexpected deterioration in market conditions. It takes some time to reduce the workforce, stocks and depreciation costs and the result is pressure on margins.

Since May selling prices have again been rising faster than consumption prices. The second half of 2009 could therefore be accompanied by the desperately needed improvement in margins. Although rising price levels could in time have a negative effect on demand, there is no immediate danger of this since prices are still well below the level of a year ago.

<sup>1</sup> The prices of all products used in the production process, including raw materials, semi-manufactures, fuels and services.

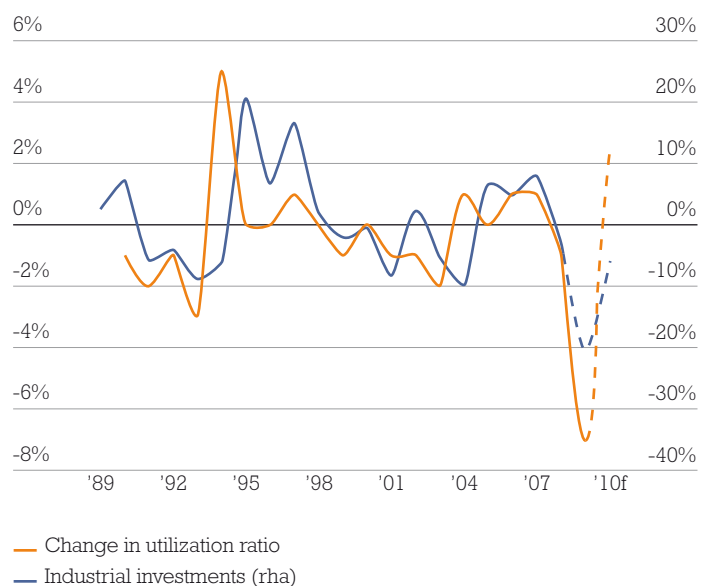
**Idle machines disastrous for investment**

A lot of machinery is standing idle because of the deferral and cancellation of orders. The capacity utilisation rate has declined by more than 10% since the autumn of 2008 (figure 7). Although there was an evident revival in the second and third quarters, in October almost a quarter of the available production capacity was still not being used. For the time being, producers are more likely to further reduce their existing production capacity than expand it, in order to reduce their cost base. They can extend the useful life of existing machinery with additional maintenance and revision. At the moment, only the most essential replacement investments are being made. The capacity utilisation rate is also unlikely to return to the long-term average in the short term. This is affecting industrial investment. Investment is only likely to pick up when the economic situation provides more certainty, but this will not be before the second half of 2010. We expect a strong contraction in industrial investments (-20%) in 2009, with a less severe decline in 2010 (-6%).

**Consumption lags behind**

Consumers have curtailed their spending in the first half of 2009, although not by as much as companies. The ING Economics Department's own research shows that consumers are slightly negative about their personal finances. Although consumer confidence has improved a great deal since the beginning of 2009, consumption is not likely to recover until the second half of 2010.

**Figure 7 Development of industrial investment and capacity utilisation rate**



Source: CBS, f = forecast

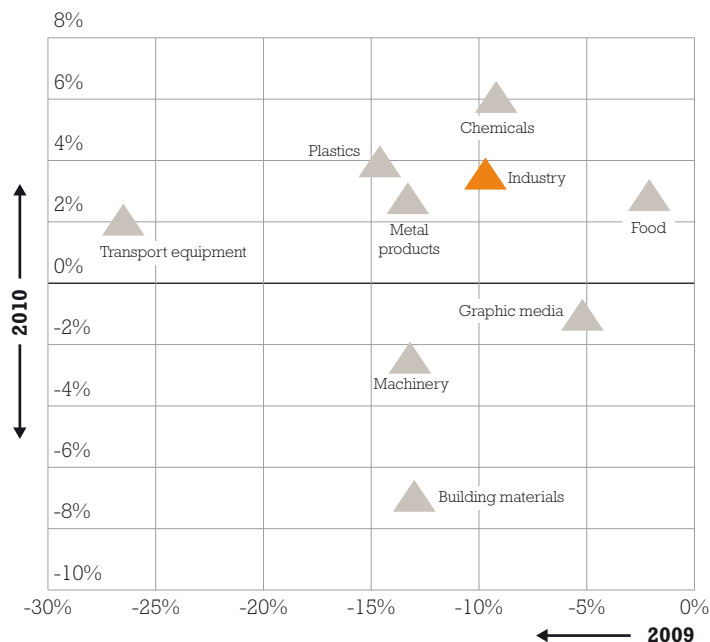
Household incomes will have the biggest influence on spending power in the next six months. The rally in share prices has not completely repaired the loss of wealth sustained by households and the deteriorating labour market will have a big impact on consumers' finances. The weakness of the housing market also undermines consumption since fewer people moving house means fewer sales of new kitchens, sofas and other home furnishings. Facing the threat of unemployment, consumers also reduce spending as a precaution. However, the number of people that are concerned about the risk of unemployment is greater than the number that will actually lose their jobs. The additional money that is being saved will not all be needed to cushion the effects of unemployment. The rest of the reserves that are being set aside may ultimately find their way to the shops and the purchases that are being deferred now will then be able to aid the economic recovery. Consequently producers of consumer goods, but also suppliers, must expect demand to remain weak for the time being.

### Improvement for all branches in 2010

The great diversity of the industrial sector is already apparent from the major differences in production growth in different branches (figure 8). Although growth was negative in every sector in 2009, there will be a mixture of growth and contraction in 2010. Production will already recover further in sectors that produce basic products such as metals, oil and chemical products. Producers of basic goods and semi-manufactures have experienced hard times since the autumn of 2008 because of the massive reduction of stocks. The various links have quickly scaled down procurement in almost every production chain. The companies at the beginning of the chain have been worst affected.

Particularly in the transport equipment industry, the decline in business investment has been reflected in lower demand. This branch, along with branches that produce basic products, experience the greatest drop in turnover and production in 2009. The construction industry, by contrast, is still in the middle of the downturn so that manufacturers of building materials face a difficult period in 2010. The picture is mixed for the transport equipment industry. Producers of passenger cars and their suppliers lead in the cycle since consumers put off major purchases first. The car industry has benefitted from the scrapping schemes for old cars that many European countries have introduced. Improving trade flows herald a recovery for transport companies, but because of the size of the investment and the under-utilisation of existing vehicle fleets, truck manufacturers have not immediately profited. Machine builders are also feeling the effects of under-utilisation, although this sector supplies not only to all branches of industry but also to the care, energy and recycling sectors. The same applies for suppliers of metals and plastic semi-manufactures, a substantial share of whose products are used as input in the manufacture of machines and packaging as well as in buildings and cars.

**Figure 8 Estimate of industrial production growth 2009 and 2010**



Source: ING Economics Department

The impact of the economic downturn is far less severe in other segments. For example, although food manufacturers have seen their orders decline due to falling sales in the hospitality sector, the bulk of their sales are to supermarkets which have withstood the crisis reasonably well. There has been overcapacity in the printing and allied industries for some time and they will only profit to a limited extent from the export revival. Production in this sector will only pick up again later as domestic spending increases.

### Production will remain under pressure for some time

The level of production will not immediately return to its peak of the autumn of 2007 in the coming years. Although production will pick up, the structural rate of increase will probably not exceed the average of the last twenty years, never mind being higher than in the four years preceding the crisis. This means that the average long-term annual growth will not structurally exceed 2%, which is roughly the same as the potential growth of the economy. Based on this hypothetical scenario, production might only surpass its historic peak in 2013 or 2014 (figure 9). Given the imbalances in the economy, however, it is entirely possible that the after-effects of the crisis will depress growth for longer than is assumed in this scenario. The build-up of capital and reduction of debt will be at the expense of consumption and investment in the coming years. This is likely to be the trend among households, companies and financial institutions, but

also among governments. The perception of risk is sharper than before in every section of the economy. Furthermore, because of the international nature of the crisis these conclusions also apply to most large industrialised countries, which reinforces the effects. Consequently, it seems that any compensation from abroad will have to come from emerging markets. Most of these countries still have large trade surpluses. Demand from these countries could gradually be stimulated by their growing middle class. But that is not expected to be enough to enable the developed economies to return to a similar boom period as before the crisis within the foreseeable future. Experience with earlier financial crises show that the economic after-effects can last several years.

### Costs of working capital have risen quickly

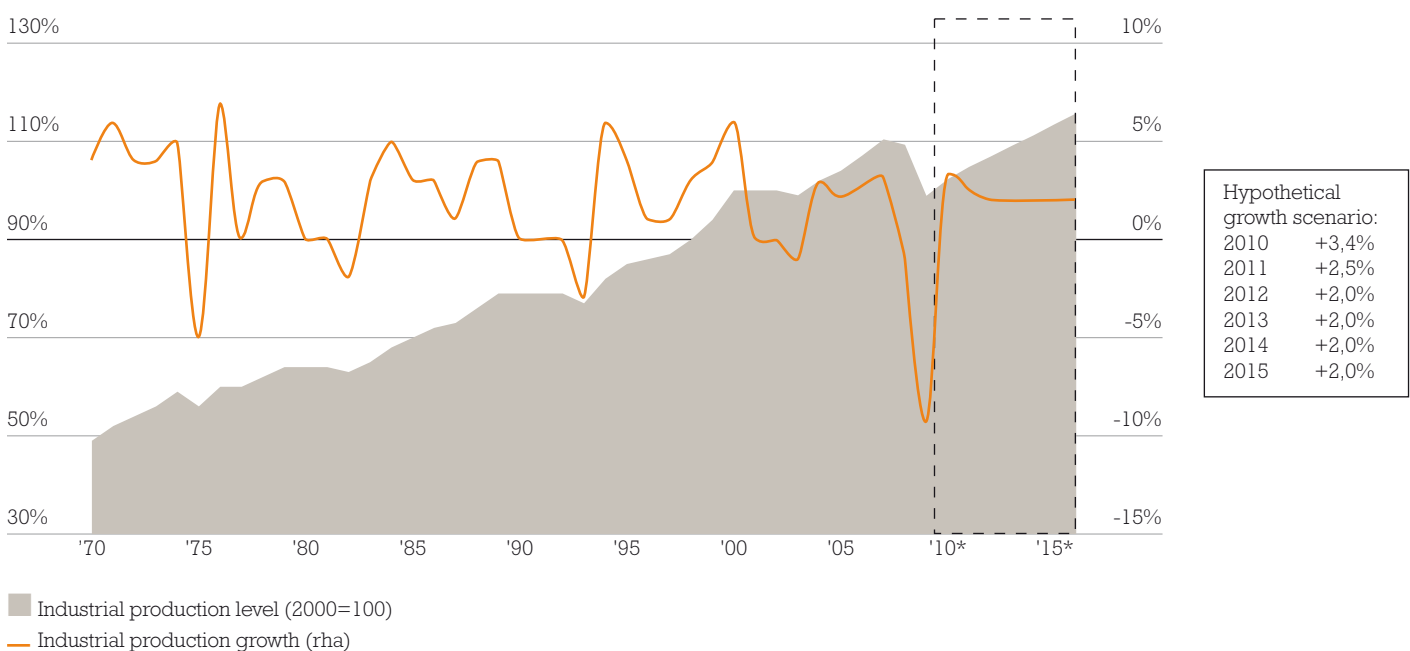
During turbulent periods it is crucial to manage working capital carefully to maintain a healthy liquidity position. Rising expenditure and disappointing revenues have already quickly proved fatal for many companies. Besides personnel, purchasing and depreciation costs, it is therefore also important to focus on curbing the costs of working capital. These costs have risen for many companies this year because customers are paying later while outstanding bills are often still being paid as quickly as before. In that case financial resources remain locked up in the business process for longer at the expense of flexibility or extra costs if additional financing is needed.

If we look at the impact of the economic downturn on these costs of working capital, industry seems to have been affected worse than other sectors. A survey of just over 3,000 Dutch enterprises showed that the trends in terms of the payment behaviour of customers and supplier credit are more negative in industry than in other sectors. The greatest discrepancy with other sectors is the payment period of debtors. On balance, almost 40% of industrial companies reported that debtors were taking longer to pay compared with fewer than 20% in other business sectors.

### Fewer factory jobs due to overcapacity

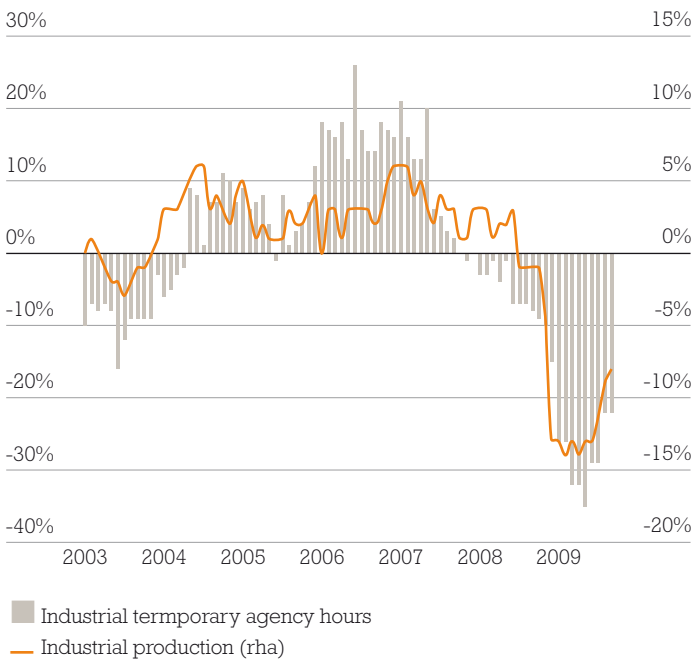
While production levels have risen in recent decades, industrial employment has been steadily declining. Extensive automation, digitisation and robotisation means that more and more work can be performed by fewer people. In 2009 and 2010 the decline in the number of industrial jobs will be reinforced by the continued overcapacity. Fewer employees are needed when machines are being used less. Although specialist staff are still very scarce in some branches of industry, the fall-off in demand is forcing companies to make cutbacks. Only a third of the record number of vacancies outstanding at the beginning of last year is still open. Companies already started trimming the flexible component of their workforce at the end of 2007. Up to September 2009, the number of hours worked by temporary employees in industry has on average been more than a quarter lower than a year ago (figure 10). Here too the worst of the contraction

**Figure 9 Development and growth scenario for industrial production**



Source: CBS, \*ING Economics Department

**Figure 10 Development of number of hours worked by temporary employees and production in industry (year-on-year)**



Source: ABU, CBS

has already taken place, which is a sign of pending recovery because of the correlation between production and early cyclical demand for temporary employees.

To help the worst-affected companies the government first introduced the shorter working hours scheme and then the part-time unemployment benefit scheme. Although these schemes have tempered the fall in the number of jobs they will not last forever. Almost 90,000 jobs are expected to disappear in Dutch industry in 2009 and 2010 through natural wastage, bankruptcies and reorganisations.

**Automation remains essential**

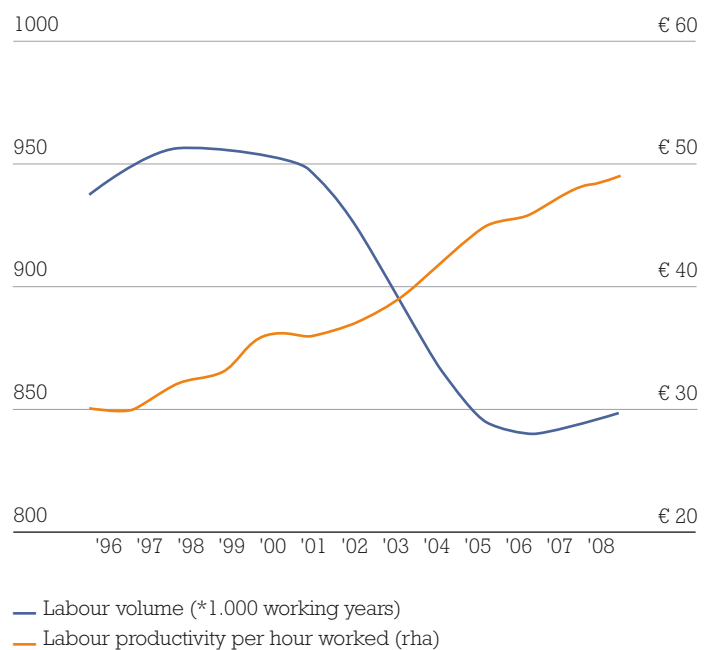
With the population rapidly ageing, when demand picks up industrial companies will eventually again be faced with staff shortages. Producers will consequently continue to look for ways of reducing their staffing requirements. One way of doing this is through further automation of production processes, which could also provide the stimulus for that innovation that manufacturing companies need to stay ahead of the growing international competition. It is not without reason that the capital intensity of Dutch industry has grown in line with the increasing competition from low-wage countries. This trend has been accompanied in recent years by declining workforces and increased labour productivity (figure 11).

**Continued efforts to increase sustainability**

Sustainable innovations are an ideal way of emerging stronger from the crisis. Apart from moral considerations that reinforce the trend, economic considerations will increasingly dictate the efforts of companies to leave a smaller 'global footprint'. Consumers and customers attach growing importance to socially responsible products. Many multinationals and governments are adopting green procurement criteria. A socially responsible production process and sustainable products are therefore not only essential, they also offer new market opportunities.

Reducing energy consumption and using fewer raw materials yields immediate cost benefits for a company. For example, by investing in more efficient production processes and designing production processes in a smarter way, the depletion of valuable raw materials can be reduced. Unexpected cost savings can also often be achieved with minor adjustments in the logistics of the business process or by recycling waste or old products. There are cost benefits to be gained from curbing emissions and waste. For example, the taxes on water pollution and waste have risen sharply in recent years, waste processing has become more expensive and additional emission allowances have to be paid for. Another possibility is to use solar panels or a windmill and to sell the surplus energy that is generated to the grid.

**Figure 11 Development of size of workforce and labour productivity in Dutch industry**



Source: CBS

### Robotisation: automation 2.0

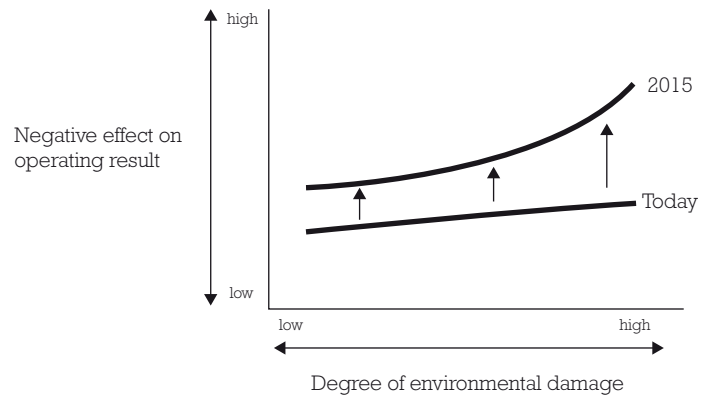
Extensive automation can be achieved by integrating industrial robots in the production process. Using advanced technologies, robots can take over many operations performed by humans, which will yield substantial savings on wage costs. Apart from sectors where they have traditionally been used, such as the automotive and metal industries, because of their versatility industrial robots are increasingly being used outside industry, for example in logistics. Non-industrial robots are also used in the health care sector. As robots become more intelligent they are increasingly capable of performing more advanced actions. For example, whereas in the past they were usually used for 'end-of-line' operations, such as removing completed products from machines and stacking them on pallets, cost considerations are prompting more and more companies nowadays to integrate industrial robots fully in the production process using so-called 'end-of-process' applications. For example, the final steps in the process are automated by using robots to bind or pack products or to assemble packages consisting of different products. An additional advantage is that robots usually make fewer mistakes and make a more (energy) efficient and more hygienic (an aspect that is particularly important in the food industry) production process possible.

Although the investment required for robotisation still represents a significant obstacle for many companies, the combination of steadily rising wage costs for Dutch and foreign workers and further advances in hardware and software will make the use of industrial robots increasingly profitable. However, a wider awareness of the potential applications is important to take full advantage of the benefits of robotisation<sup>1</sup>.

<sup>1</sup> The trade association Robotics Association Benelux is promoting this.

A company that harms the environment incurs not only higher direct costs but also indirect costs in the form of damage to their reputation or loss of 'reputation gains'. The negative effects of pollution on operating results will probably rise steadily in the coming years and accelerate as the damage to the environment increases (figure 12). Traditional sources of energy are also growing more expensive and green innovations will continue to appear. Investments in sustainability will therefore pay more quickly for themselves.

**Figure 12 Effect of environmental impact on corporate results, now and in 2015**



Source: ING Economics Department

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