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Cash Flow Rate Contracted

Earning Power of Austrian Manufacturers in 2014

Cash Flow Rate Contracted. Earning Power of Austrian Manufacturers in 2014

The cash-flow-to-sales ratio for Austrian manufacturing in 2014 reached 8.4 percent, again remaining below the long-term average of 9.4 percent and 0.3 percentage points below the previous year's value, according to WIFO estimates using a dynamic panel-econometric model. The reduction was mostly due to the weak growth of real value added. Estimates for 2015 forecast a slight recovery of earning power.

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This contribution analyses the earning power of Austrian manufacturing within the context of the ongoing European – and global – economic crisis and the weakness of the Austrian economy. While the years 2010 and 2011 saw economic recovery, the dynamics have levelled noticeably since 2013. In 2014 Austria's gross domestic product expanded by only 0.3 percent (2013 +0.4 percent). WIFO also forecasts moderate growth for 2015, and private consumer expenditures show a similar pattern (–0.1 percent in 2013, +0.2 percent in 2014, +0.4 percent projected for 2015). Likewise, investment figures reflect moderate development: in 2013 gross fixed capital formation was strong at –4.4 percent and in 2014 it declined slightly by –0.4 percent. It is expected to stagnate at +0.1 percent in 2015. Investments in equipment relevant to the manufacturing sector were still on the decline in 2013 (–1.5 percent), but increased by 1.7 percent in 2014 and are expected to increase by an estimated 0.5 percent in 2015. This macroeconomic picture also corresponds with the development of the manufacturing sector: real value added increased by only 0.6 percent in 2013 compared to the previous year and has largely stagnated since 2014 (+0.1 percent; ±0 percent in 2015; *Schiman,* 2015).

The WIFO Business Cycle Survey reflected the onset of the financial crisis from 2008, and shows also developments in the manufacturing sector. The economic expectations of manufacturing enterprises worsened by mid-2009 (Figure 1). In 2010 and 2011, they developed quite dynamically as a result of the global economic recovery. However, after mid-2011 a slowdown set in, which, after a slight recovery by the end of 2013, culminated in a lateral shift at a low level.

A slightly different picture emerges for the years 2006 to 2015 based on the EU's confidence indicator (Figure 2): while it dropped more significantly in Germany than in

Austria and the EU average in early 2009, German companies also had a more optimistic view of economic recovery for 2010 and 2011. Before the crisis, reports from Austrian companies were more optimistic than those in Germany and the EU average, and since the outbreak of the crisis they have largely developed in parallel with the average of the EU 28. Since the beginning of 2014 they have remained at a slightly lower level than that of the EU 28.

Figure 1: Assessment of the economic situation of companies in manufacturing

Balance of positive and negative assessments as a percentage of total responses
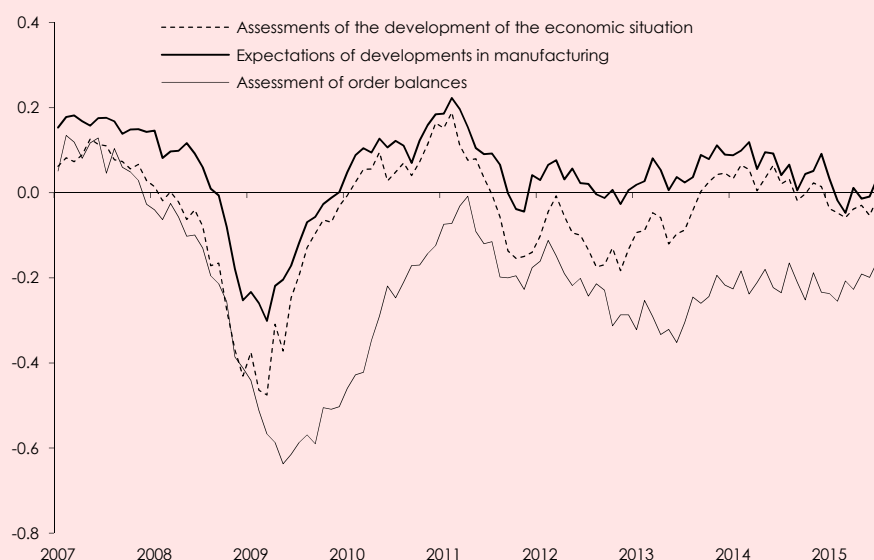
Source: WIFO Business Cycle Survey.

Figure 2: Industrial confidence indicator for the EU, Germany and Austria
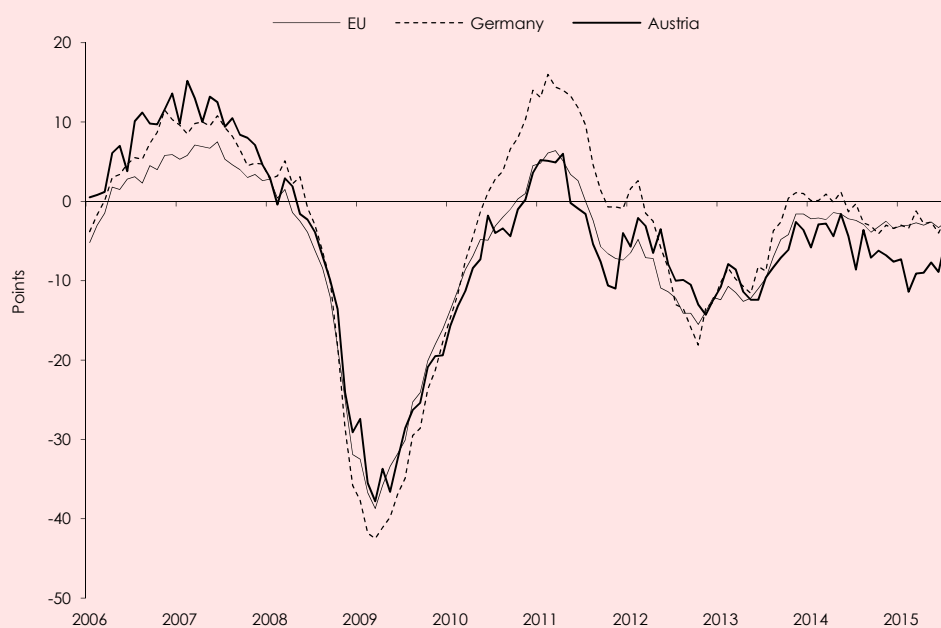
Source: Joint Harmonised EU Programme of Business and Consumer Surveys.

At the same time, the costs of manufacturers only moderately increased. While unit labour costs increased by 2.5 percent in 2013 and by 1.2 percent in 2014, the interest rate on loans to enterprises remained low at an average of 2.2 percent; commodity

prices dropped continuously (–5.8 percent in 2013, –5.0 percent in 2014). The real-effective exchange rate index rose by 2.0 percent in 2013 compared to the previous year (+1.5 percent in 2014). As Austrian manufacturing is significantly determined by foreign trade, the decline in the cost of material and financial advances is hardly expected to compensate for the increase of unit labour costs and the exchange rate (Table 1).

Data and definitions

The cash-flow ratio is an indicator of a company's capacity to *finance investment, pay off debt and taxes or distribute profits* out of its sales revenue. It mirrors the *self-financing capacity* of a company. Equity capitalisation is of importance beyond the pure liability element, above all with a view to its effect on confidence with clients and suppliers regarding a company's future liquidity, as well as its autonomy in carrying out high-risk financial operations.

The *cash flow* of a company corresponds to the surplus of revenues over expenditure generated within a period through its own business operations. In contrast to *external financing* (via equity capital, debt capital or subsidies) or financing via asset transformation (asset sales, depletion of inventories, etc.), it is another form of internal financing. *Self-financing* in the broader sense consists of three components: retained earnings (self-financing in the narrow sense), the "earned" counter value of *depreciation and of financial reserves* for potential liabilities vis-à-vis third parties (*Schäfer,* 1998).

The cash-flow-to-sales ratio (cash-flow ratio) is measured by the share of cash flow in sales revenues. For this purpose, cash flow is defined as follows:

Result from ordinary business operations

+   normal depreciation of fixed assets

+   depreciation of financial assets and securities of current assets

[±   allocation to or liquidation of reserves]

[±   allocation to or liquidation of social capital]

=   cash flow

The balance sheet database of the Austrian Institute for SME Research

The data basis is the balance sheet database of the Austrian Institute for SME Research, which consists of a pool of over 100,000 annual financial statements of Austrian firms. The industry classification mainly follows ÖNACE 2008. This statistical classification offers the advantages of a high degree of detail and the possibility of international comparison. Through the analysis of balance (asset and capital structure) and return-and-loss-sheets (performance, costs and results structure), it is possible to compute a number of performance indicators (*Voithofer – Hölzl – Eidenberger,* 2011).

Adjusted cash flow

The definition of earning power used in the following is the "adjusted cash flow". Here, the cash flow derived from the accounts is placed in relation to operational effectiveness. The cash flow is calculated as the sum of ordinary operations and depreciations. The figure is "adjusted" by taking into account a "calculatory entrepreneurial salary", which makes it possible to compare figures across legal forms. In contrast to incorporated companies, business partnerships and individual enterprises do not enter a deductible salary for the participation of the entrepreneur as an expenditure. For business partnerships and individual enterprises, the minimum salary of managers exercising comparable functions is used as proxy for a calculatory entrepreneurial salary.

For the calculation of the median, the arithmetic mean and the standard deviation, the weighted and unweighted cash-flow ratios are used.

The equity capital ratio

As a measure for financial independence towards third parties, the equity capital ratio is calculated as the share of equity capital in the absolute balance sheet value. Equity capital includes both budgetary equity and untaxed reserves. The balance sheet total consists of fixed assets, current assets and accrued and deferred items.

There are no early indicators for the development of the profit situation in manufacturing; balance sheet data are only available with a lag. The cash-flow ratio for 2014 is therefore "projected" and compared with indicators which are based on preliminary data. The estimation is based on the balance sheet database of Austrian Institute for SME Research, which are highly suited for the analysis of balance sheet data of Austrian companies. Based on the preliminary data for 2014 an estimate for 2015 is also devised.

Table 1: Development of cost in manufacturing

	Industrial commodity prices, euro basis		Unit labour costs		Interest rate for company loans	Real-effective exchange rate index	
	1990 = 100	Percentage changes from previous year	2000 = 100	Percentage changes from previous year	In percent	First quarter 1999 = 100	Percentage changes from previous year
2002	94.1	− 7.6	100.5	+ 1.2	5.2	94.5	+ 0.5
2003	91.3	− 2.9	101.7	+ 1.2	4.2	97.8	+ 3.4
2004	103.8	+ 13.6	98.7	− 2.9	3.7	98.7	+ 0.9
2005	118.8	+ 14.5	97.6	− 1.1	3.5	97.4	− 1.3
2006	155.7	+ 31.1	94.1	− 3.5	4.1	96.7	− 0.7
2007	165.0	+ 5.9	92.5	− 1.7	5.1	97.2	+ 0.5
2008	160.9	− 2.5	96.9	+ 4.8	5.5	97.3	+ 0.1
2009	126.3	− 21.5	107.5	+ 11.0	2.8	97.8	+ 0.5
2010	194.0	+ 53.5	100.0	− 7.0	2.4	94.9	− 3.0
2011	210.9	+ 8.7	98.8	− 1.2	2.9	95.5	+ 0.6
2012	192.2	− 8.9	101.5	+ 2.7	2.4	94.0	− 1.6
2013	181.1	− 5.8	104.0	+ 2.5	2.2	95.9	+ 2.0
2014	172.1	− 5.0	105.2	+ 1.2	2.2	97.4	+ 1.5

Source: WIFO, OeNB, HWWA.

1. Forecast of the cash-flow-to-sales ratio

For the analysis of the profitability of the manufacturing sector, WIFO used indicators from the balance sheet database of the Austrian Institute for SME Research for a second consecutive time this year. This permits a more accurate calculation of the adjusted cash-flow ratio than the approximations of profitability computed using the BACH database at the industry level (see box "Data and definitions"; *Friesenbichler*, 2009). A comparison of results with analyses in the WIFO monthly reports before 2014 is not possible due to this change.

According to preliminary data and econometric estimates, the average cash-flow-to-sales ratio in Austrian manufacturing deteriorated to 8.4 percent in 2014 (2013: 8.7 percent). Estimates for the year 2015 point towards a recovery.

Moreover, the industry classification was changed from NACE Rev 1.1 to NACE Rev. 2 in January of 2008. The estimation is therefore based on relatively short time series, since the recalculated performance indicators are only available from the year 2000. The data set contains no values for the industries of tobacco processing (NACE 12) and coke and refined petroleum processing (NACE 19). In addition, the measures of dispersion from the year 2014 used for the projections for the sectors leather, leather goods and footwear (NACE 15) and other transport equipment (NACE 30) are not available. The econometric estimates therefore only consider 20 of the 24 sectors. The estimate for 2014 is based on data from the 2000 to 2013 period, and the forecasts for 2015 are based on estimates for the year 2014.

Table 2: Estimated coefficients for the projection of the cash-flow-to-sales ratio

	$\log \pi_{it-1}$	I_{it}	I_{it}^2	$\log SD(\pi_{it-1})$
Coefficient	0.270	0.14	− 0.03	0.04
z-value	8.54***	1.5*	− 0.79	5.39***

Source: WIFO calculations. Number of observations: 261. π . . . cash-flow ratio, I . . . economic indicator, SD . . . standard deviation, I . . . industry, t . . . period, * . . . significant at a 10 percent level, *** . . . significant at a 1 percent level.

The aggregated cash-flow ratio rebounded only slightly after the outbreak of the financial market crisis in 2008 (2007: 10.5 percent, 2008: 8.8 percent). While it slightly exceeded the long-term 2010-2014 average of 9.4 percent at 9.6 percent in 2010, thereafter it again declined well below the pre-crisis level and the long-term average.

The preliminary data for 2014 are based on a much smaller sample and may still be significantly revised. Nevertheless, the preliminary indicators provide a first indication of development in 2014, based on which the cash-flow ratio is 8.4 percent (Table 3).

A panel-econometric model for cash flow projection

A panel-econometric approach is used for the projection of the cash-flow ratio at the industry level. Despite rather short time series, the pooling of sectoral data allows a reliable econometric estimate to be made for the cash-flow ratio. The specification follows the industrial economics literature and assumes that the cash profitability, and thereby also the self-financing power of companies, exhibit differences which are persistent over time (*Mueller*, 1990, *Aiginger – Pfaffermayr*, 1997, *Peneder – Pfaffermayr*, 2003). As industries in manufacturing are also characterised by entry barriers and sunk investments, the equalisation of earning power across industries will be slow. Unfortunately, industry-specific structural data that explain the cash-flow ratio are not available. The econometric model also includes the cash-flow ratio lagged by one period in order to account for the partial adjustment to external shocks.

The central explanatory variable is a synthetic business cycle indicator at the industry level (I_{it}, I_{it-1}) based on companies' subjective assessment of business conditions, as provided by the WIFO Business Cycle Survey. The synthetic cyclical indicator is derived from the annual averages of the balance between optimistic and pessimistic responses (as a percentage of all responses) with regard to current order books (*AB*), the business outlook for the next six months (*GL*) and the development of prices (*PR*) using the following formula (*Oppenländer*, 1996):

$$I = \left[(AB+2)(GL+2)(PR+2)\right]^{1/3} - 2 \ ,$$

with the individual indicators included as percentage values in the estimate. The series of these balances of responses are closely correlated with the trend of the cash-flow-to-sales ratio and with the growth of manufacturing. However, they also mirror unobserved structural differences and different developments in production costs between industries. For projection purposes, this indicator should exhibit a sufficient lead time. The correction of values by 2 ensures that the value of the term in square brackets is always positive.

In algebraic terms, the econometric forecasting model is specified as follows:

$$\log \pi_{it} = \beta_1 \log \pi_{it-1} + \beta_2 \, I_{it} + \beta_3 \, I_{it}^2 + \beta_4 \, SD\left(\pi_{it-1}\right) + \beta_0 + \sum_{j=1}^{22} \gamma_j \, S_j + \varepsilon_{it} \ ,$$

$$\varepsilon_{it} \sim N\left(0, \sigma^2\right)$$

In addition to the lagged cash-flow ratio (π_{it-1}) and the synthetic business cycle indicator (I_{it}, as well as its squared term I_{it}^2) the lagged standard deviation of the cash-flow-to-sales ratio ($SD(\pi_{it-1})$) and fixed industry effects (S_i) are included in the forecasting model.

The estimate of the dynamic panel model uses the *Kiviet* (1995) approach. The projection of the average cash-flow ratio for the entire manufacturing sector is obtained as the weighted average of the industry-specific projections, with the turnover shares of the individual industries used as weights. The weights are assumed as deterministic and continued for the year 2013 using the growth rates of industrial production between 2012 and 2013.

The estimation results for the period from 2000 to 2013 are presented in Table 2. All explanatory variables, with the exception of the squared WIFO Business Cycle Indicator, but including fixed industry effects, are significant. The significant parameter of the one-period-lagged cash-flow ratio implies that exogenous effects on the development of returns have a lagged effect over several periods, even though the persistence of the cash-flow-ratio is relatively small. In general, the estimated model exhibits sufficient quality (Figure 3).

In order to achieve a representative statement for overall manufacturing, the estimated cash-flow-to-sales ratio at the industry level is weighted with the share of turnover of the sector in manufacturing. Data from the performance and structure survey of Statistics Austria are used to do this. As the econometric model considered the value of the previous year with a lag, no estimation value is available for the first year of the time series (Table 3).

The projected, turnover-weighted profit rates explain 94 percent of the variance of the observed cash-flow-to-sales ratio. However, this result should not be overvalued, as it is largely determined by fixed sector effects.

The first estimation of the cash-flow ratio of the year 2015 is based on the estimation for the year 2014. The estimation model has been simplified, and it does not consider the dispersion of the cash-flow-to-sales ratio among the sectors.

This indicator is complemented using an estimate based on a dynamic panel-econometric model (see box "A panel-econometric model for cash flow projec-

tion"). It uses the data of all existing complete samples from 2000 to 2013, however not the preliminary data for the year 2014. The aggregated cash-flow ratio is extrapolated with a turnover weighting based on the estimation results for the industries. The result of the econometric model only differs from the preliminary values at the second decimal place (the preliminary data show a rate of 8.39 percent, and the econometric model after turnover weighting has a rate of 8.38 percent). The decrease with respect to the previous year reflects the continued subdued economy in the year 2014.

Table 3: The cash-flow ratio in Austria by industry

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014[1]	2014[2]
						Cash flow as a percentage of sales						
Manufacture of food and feed products	6.4	7.1	7.0	7.0	6.0	7.0	7.2	5.1	5.7	5.4	5.5	6.1
Manufacture of beverages	12.1	12.5	11.1	13.7	10.4	12.7	13.4	11.2	10.3	9.4	8.3	10.9
Manufacture of textiles	7.8	9.9	8.3	6.2	0.1	3.5	6.7	5.5	5.0	4.4	4.8	6.0
Manufacture of apparel	5.6	2.1	5.3	6.2	5.7	5.5	8.3	5.7	4.9	3.6	5.5	4.9
Manufacture of leather and related products	10.1	8.5	8.3	9.1	9.0	10.3	13.6	11.2	9.8	8.8		
Manufacture of wood, weaving, basket and cork products (without furniture)	7.1	8.6	7.7	7.4	3.5	4.5	7.9	6.0	6.1	6.4	3.5	6.3
Manufacture of paper, cardboard and related products	12.4	11.6	10.3	11.9	9.4	13.6	9.5	10.2	9.7	8.4	4.7	10.7
Printing and reproduction of recorded media	9.6	7.7	8.2	8.5	8.5	8.1	9.7	8.6	7.3	6.9	9.8	7.9
Manufacture of chemical products	11.2	10.6	12.8	10.6	10.5	12.0	12.2	11.4	10.5	10.6	5.7	10.7
Manufacture of pharmaceuticals	18.7	12.3	15.0	10.2	7.3	10.3	8.2	12.3	12.1	12.7	6.1	13.4
Manufacture of rubber and plastics	7.4	8.3	8.7	8.6	7.9	8.4	8.5	8.9	7.8	7.8	9.5	8.1
Manufacture of glass and glassware, ceramics, processing of rocks and soils	10.0	9.9	11.9	12.4	10.6	9.4	9.9	10.2	10.5	8.7	5.7	9.8
Manufacture and processing of basic metals	8.3	10.2	10.4	10.1	9.8	10.9	9.5	8.7	8.0	7.9	7.2	8.8
Manufacture of fabricated metal products	8.4	9.4	10.5	9.0	10.5	9.5	10.2	9.5	9.8	10.1	9.0	9.6
Manufacture of computer, electronic and optical products	12.6	12.1	10.9	10.3	8.9	8.6	9.7	11.3	10.3	9.3	11.7	10.3
Manufacture of electrical equipment	9.3	10.3	11.5	8.1	9.3	9.1	10.0	7.6	9.5	9.1	7.0	9.2
Manufacture of machinery	8.4	9.3	10.8	10.1	10.1	9.5	10.5	9.8	8.6	8.9	9.8	9.2
Manufacture of motor vehicles, trailers and semi-trailers	10.1	11.1	11.5	11.4	5.5	6.6	7.3	9.6	7.8	8.7	8.0	9.0
Manufacture of other transport equipment	5.6	8.7	10.4	3.6	5.8	5.1	19.6	6.5	2.0	4.9		
Manufacture of furniture	5.4	5.5	6.0	5.7	5.6	5.5	5.3	5.1	5.4	5.5	5.7	5.7
Other manufacturing	13.6	14.1	13.8	8.8	6.7	6.2	10.0	8.6	8.4	8.6	6.9	10.4
Repair and installation of machinery and equipment	8.6	5.8	7.1	7.5	7.9	7.5	8.3	6.4	6.2	7.4	7.4	6.9
Manufacture of goods total												
Industries considered in the projection	9.8	10.0	10.4	9.2	8.4	8.8	9.1	9.0	8.6	8.0	8.4	8.4
All industries	9.5	9.4	10.4	10.5	8.8	8.6	9.7	8.6	9.1	8.7	8.4	8.4

Source: Data from the Austrian Institute for SME Research. – [1] Estimate. – [2] Forecast.

In addition, the analysis has been extended to include econometric estimates for the year 2015. The volume-weighted aggregate results for 2015 point towards a recovery of the cash-flow-to-sales ratio; the ratio is estimated at 9.0 percent. However, this estimation must be treated with caution, because it is on the one hand based on estimates by industry in 2014, which are subject to the usual uncertainty of forecasts. Since more reliable data are not available at this time, use is only made of the economic indicator and its squared value as an explanatory variable. These indicators are so far also only available for the first half of 2015 and may change significantly depending on economic developments. While the different earnings developments of the individual sectors enter into the estimate via this synthetic economic indicator based on information of companies, the heterogeneous effects of the change in conditions can only be displayed to a limited extent.

In individual sectors, the cash-flow ratio developed differently according to these statistics. In particular, it lay clearly below the long-term average in the manufacture of paper, cardboard and related products (C17), the manufacture of chemical products (C20) as well as the manufacture of pharmaceutical products (C21). Only the manufacture of printing and recorded media (C18) as well as the manufacture of rubber and plastics (C22) showed an increase in the ratio of more than 1 percentage point compared to the 2010-2014 average (Table 3).

Figure 3: Projection and actual development of the cash-flow ratio in manufacturing
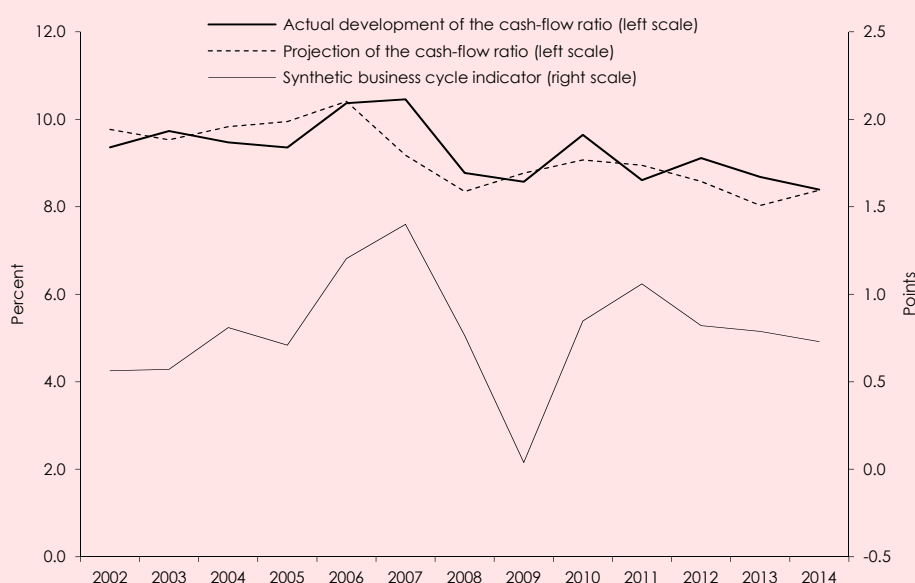
Source: WIFO Business Cycle Survey, WIFO calculations. 2014: preliminary values and projection.

2. The cash-flow-to-sales ratio before and after the financial crisis

Up to now in this paper profitability at industry level has mainly been dismissed as cyclically driven. This approach has been supplemented by a non-linear relationship with the synthetic WIFO Business Cycle Indicator. In addition, the dispersion of the profit rate within an industry as an explanatory variable and period dummies for time effects were taken into account. However, this does not consider possible structural damage as a result of the financial crisis, the debt crisis and the economic crisis, which have shaped the economy since 2008.

The following statistical analysis of the average effects of structural changes on profitability within the Austrian manufacturing sectors since the financial crisis in particular deals with aspects such as company size and the heterogeneity of the cash-flow-to-sales ratio within the analysed sector. In a first step, the weighted and unweighted measures of the distribution of the cash-flow ratio at the industry level in a 2000-2007 pre-crisis period and a 2008-2013 post-crisis period are examined. The data for 2014 are currently only preliminary and have not been considered. In a second step, a dummy variable is used, which distinguishes between the pre-crisis period up to 2007 and the post-crisis period after 2008.

In almost all industries, the profit rate was lower before the financial market crisis than afterward (Tables 3 and 4). The weighted cash-flow ratios (Table 4) were determined by weighting the ratios with company turnover based on the forecast model, while each company received the same weight for the unweighted rates regardless of size.

The arithmetic average of the weighted ratios was significantly above that of the unweighted sample. Smaller companies therefore have a lower profit rate than larger ones, on average (*Austrian Institute for SME Research,* 2012, *BMWFJ,* 2012, p. 46). The cash-flow-to-sales ratio of larger companies also declined more significantly than that of the smaller companies after the outbreak of the financial crisis in the year 2008. The comparison of medians between the two calculation methods confirms this result, which is based on the arithmetic mean values.

In addition, the standard deviation of the unweighted cash-flow ratio is significantly higher than that of the weighted one. The profit rate of small businesses is thus sig-

The financial crisis meant a structural break in the profit rate. Smaller companies have always had a lower rate of return on average. Since 2008, larger companies have recorded a stronger decline in the cash-flow-to-sales ratio than small and medium-sized enterprises; the recovery was weak due to the poor GDP growth. The dispersion of earning power increased after the crisis in the manufacturing industries.

nificantly wider spread than that of larger companies. Since 2008, this effect has strengthened, although not to a statistically significant extent: the standard deviation of the unweighted sample rose considerably more significantly than that of the weighted sample. The profit rates of smaller companies are therefore expected to develop much more heterogeneously than those of larger companies.

Table 4: Weighted and unweighted cash-flow-to-sales ratio at industry level before and after the financial crisis

| | Weighted with turnover | | | Unweighted | | |
	Average	Median	Standard deviation	Average	Median	Standard deviation
			Cash flow as a percentage of sales			
2000-2007	9.4	8.6	8.3	8.7	7.5	11.7
2008-2014	8.4	7.4	8.9	8.1	7.0	12.8
Difference	− 1.0	− 1.2	0.6	− 0.6	− 0.5	1.1
2000-2014	9.0	8.1	8.5	8.5	7.2	12.2

Source: Austrian Institute for SME Research.

In the next step the previous estimates are verified. In addition to the arithmetic mean, the median and the standard deviation of the weighted and unweighted cash-flow ratio are used as the dependent variable in an exploratory regression analysis. The estimation equation is adjusted: the structural break due to the financial market crisis serves as the central explanatory variable in 2008. In addition, the synthetic economic indicator and its value lagged by one period are entered into the estimation (see box "Alternative estimation models").

Alternative estimation models

The projection values are based on the cash-flow ratios weighted with industry turnover. In addition, the model uses information on the distribution. The regression equation had to be adjusted in the following way:

$$M(\pi)_{it} = \beta_1 I_{it} + \beta_2 I_{it-1} + \beta_3 \, Crisis + \sum_{j=1}^{22} \gamma_j \, S_j + \alpha_i + \varepsilon_{it}$$

The term $M(\pi)_{it}$ stand for one of the logarithmic measures of distribution (mean, median or standard deviation). The explanatory variable *Crisis* takes as a dummy variable a value of 0 for the 2000-2007 period and of 1 for the period from 2008. In addition to the business cycle indicator at industry level (I_{it}) the lagged indicator (I_{it-1}) is included in the estimation. Further dummy variables are used for the outlier values. The model is estimated as a panel with fixed effects (α), in order to depict fixed industry effects of the cash-flow ratio at industry level, which are above all determined by economies of scale and sunk costs. The term ε expresses the estimation deviations. In order to minimize distortions due to the small sample size, standard deviations are calculated by bootstrapping with 500 repetitions.

The regression results confirm the picture that emerges from descriptive statistics: the crisis subdued the profit rates, and indeed more so in the turnover-weighted sample than in the unweighted data. The export weakness of Austrian manufacturing since the financial crisis (*Tichy*, 2015) was on average slightly more marked among large companies than among small and medium-sized enterprises (Table 5). However, the heterogeneity of earnings has increased among companies in both groups since the crisis.

The analysis of the distribution moments only delivered statistically significant results with satisfactory explanatory power (R^2) for the weighted sample. The heterogeneity of the development of the cash-flow ratio of smaller businesses is thus primarily influenced by corporate characteristics, while the effects of economic and industry structure are more important for larger companies. For the unweighted sample only the median contributes to the explanation of the variance.

Table 5: Connection between the cash-flow-to-sales ratio, economic indicators and measures of distribution of the profit rate

	Cash-flow-to-sales ratio					
	Weighted with turnover			Unweighted		
	Average	Median	Standard deviation	Average	Median	Standard deviation
I_t	0.06*	0.04	0.03**	0.05**	0.07**	0.02
	(0.029)	(0.039)	(0.013)	(0.019)	(0.022)	(0.022)
I_{t-1}	− 0.03*	− 0.09**	− 0.01	− 0.03	− 0.02*	− 0.00
	(0.015)	(0.029)	(0.017)	(0.020)	(0.011)	(0.017)
$I_{i\,t-1}$	− 0.09*	− 0.13**	0.06*	− 0.06*	− 0.03***	0.06**
	(0.040)	(0.044)	(0.023)	(0.025)	(0.018)	(0.022)
Number of observations	283	283	283	283	283	283
R^2	0.666	0.432	0.204	0.094	0.364	0.085

Source: WIFO calculations. * . . . significant at a 1 percent level, ** . . . significant at a 5 percent level, *** . . . significant at a 10 percent level. Cursive figures in parentheses . . . Standard deviation.

3. Appendix: the equity capital ratio in international comparison

One determinant of profitability is the equity available to companies. More so than the cash-flow ratio, the equity capital ratio is a structural indicator. It is determined by the company and industry-specific capital intensity and business risk. In an international comparison, moreover, the non-neutrality of modes of financing plays a role. If corporate financing via bank loans is cheaper for companies than the accumulation of equity due to the deductibility of interest payments, this will have an effect on the financial structure of companies.

Table 6: International comparison of the weighted equity capital ratio in manufacturing

	Large enterprises		Small and medium-sized enterprises					
			Total		Medium-sized enterprises		Small enterprises	
	Ø 2000-2013	2013	Ø 2000-2013	2013	Ø 2000-2013	2013	Ø 2000-2013	2013
				In percent				
Austria	38.9	46.3	34.2	33.5	36.4	34.4	28.7	31.6
Belgium	43.0	50.8	44.4	52.4	43.6	52.4	45.2	52.3
Czech Republic	51.0	.	49.5	.	50.3	.	48.1	.
Germany	30.4	32.0	33.2	39.1	34.3	39.6	28.8	37.0
Spain	39.4	38.5	42.3	47.1	45.0	48.5	40.4	46.3
France	34.3	36.6	38.6	42.2	38.0	41.8	39.5	42.7
Italy	32.1	36.3	30.6	35.6	31.3	36.4	28.7	32.6
Netherlands	45.6	49.6	48.2	52.8	45.6	47.1	49.3	55.6
Poland	50.1	51.6	49.3	52.6	49.9	53.8	48.2	50.7
Portugal	43.5	38.4	36.8	37.0	41.1	43.6	33.4	32.8
Slovakia	51.6	37.3	37.0	38.0	42.8	43.0	31.6	33.6
Average	41.8	41.7	40.4	43.0	41.7	44.1	38.3	41.5

Source: BACH database (Bank for Accounts of Companies Harmonized).

The analysis of the equity capital ratio is based on the BACH database (Bank for Accounts of Companies Harmonized). This has been issued since 1987 by the European Commission (DG ECFIN) in collaboration with the European Committee of Central Balance Sheet Offices in order to enable comparisons between EU countries. Currently, aggregated financial statement data for 9 countries are available: Austria, Belgium, Spain, France, Germany, Italy, Netherlands, Portugal, Poland. In addition, a breakdown of 87 industries according to NACE rev. 2 (two-digit level) is available, of which 24 are in the manufacturing sector, as well as 3 size classes (companies with

an annual turnover below € 10 million, from € 10 million to € 50 million and € 50 million).

In 2013, the average equity capital ratio of larger Austrian manufacturing producers was 46.3 percent and significantly higher than the average of the comparison countries (41.7 percent; Tables 6 and 7). The ratio decreases with the company size: for small and medium-sized manufacturing producers it remained well below the international average of 43 percent at 33.5 percent. For large enterprises the median equity capital ratio also lay under the average value of the countries of comparison.

These international comparisons provide a rough guide and should be interpreted with caution: due to differences in accounting standards, reporting dates, sample sizes and data sources, as well as breaks in the time series, distortions are possible[1].

Table 7: International comparison of the equity capital ratio in manufacturing

	Large enterprises		Small and medium-sized enterprises					
			Total		Medium-sized enterprises		Small enterprises	
	Ø 2000-2013	2013	Ø 2000-2013	2013	Ø 2000-2013	2013	Ø 2000-2013	2013
			In percent (median)					
Austria	36.5	36.5	24.9	27.5	30.9	30.8	23.1	26.5
Belgium	35.4	43.2	35.6	38.6	38.0	43.5	35.3	38.1
Germany	31.1	35.2	25.8	35.1	29.5	37.5	23.1	33.2
Spain	41.8	41.0	28.9	33.9	42.9	47.1	28.4	33.3
France	35.0	39.2	36.2	41.8	35.2	39.7	36.4	42.2
Italy	27.6	34.0	22.3	30.0	23.7	31.5	22.0	28.1
Netherlands	39.2	39.7	33.9	35.4	39.5	40.2	33.5	35.2
Poland	50.0	51.7	51.2	53.3	48.3	51.3	52.0	53.8
Portugal	42.0	41.8	28.6	26.4	37.4	38.9	28.0	26.0
Slovakia	37.1	35.5	25.0	26.7	40.7	39.8	24.2	25.9
Average	37.6	39.8	31.2	34.9	36.6	40.0	30.6	34.2

Source: BACH database (Bank for Accounts of Companies Harmonized).

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[1] See the BACH User Guide, https://www.banque-france.fr/fileadmin/user_upload/banque_de_france/Economie_et_Statistiques/BACH-Summary-Userguide.pdf, retrieved on 25 August 2015.

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