Jungheinrich Pref.

(SDAX, Capital Goods)

WARBURG RESEARCH

Buy	(Suspended)
EUR 41.00	
Price	EUR 30.00
Upside	**36.7 %**

Value Indicators:	EUR
DCF:	41.27
Peer group KGX:	35.26

Share data:	
Bloomberg:	JUN3 GR
Reuters:	JUNG_p
ISIN:	DE0006219934

Description:

Producer of material handling equipment and warehousing technology.

Market Snapshot:	EUR m
Market cap:	3,060
No. of shares (m):	102
EV:	3,413
Freefloat MC:	3,060
Ø Trad. Vol. (30d):	3.74 m

Shareholders:	
Freefloat	100.0 %
Deutsche Bank AG	*5.0 %*
DWS Investment	*4.0 %*

Risk Profile (WRe):	2019e
Beta:	1.2
Price / Book:	2.1 x
Equity Ratio:	30 %
Net Fin. Debt / EBITDA:	0.2 x
Net Debt / EBITDA:	0.6 x

Uplift in e-commerce enabled by Jungheinrich

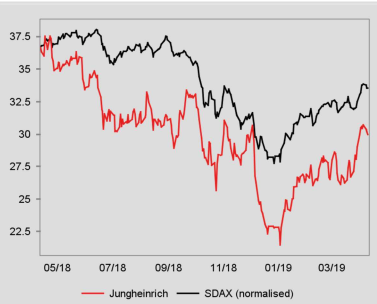
As one of the top three intralogistics players worldwide, Jungheinrich is a one-stop shop offering new forklifts, rental business, fully integrated warehouse solutions and aftermarket activities. With strong exposure to e-mobility and a rising share of automated solutions in the scope of Industry 4.0, Jungheinrich is the second-largest player in its core market Europe after the KION Group.

Barriers to entry should remain high in light of substantial size advantages for existing players, such as know-how, capital requirements, strong supplier and customer relationships. Within its peer group, Jungheinrich stands out with a high share of aftermarket revenues, leading to a high share of recurring revenues which provides a safety cushion in times of economic slowdown.

Having outperformed economic growth by a factor of 1.5x in the past decade, the global market for intralogistics looks set to rise further, especially driven by a robust shift towards e-commerce, fuelling demand for warehouse equipment. As one of the globally leading players, Jungheinrich looks set to participate in this growth trend, particularly given its strong position in warehouse equipment including electric forklifts as well as automated warehouse solutions (i.e. Industry 4.0). Furthermore, as the Chinese market should offer substantial catch-up potential for Jungheinrich, it is expecting a proportionately greater rise in international revenues.

We expect sales to rise by 4.7% p.a. to EUR 4,357m from 2018-21e. In fact, while new truck business is expected to normalise following stellar double-digit growth rates in the past three years, new trucks are expected to increasingly enter the aftermarket, leading to an improving sales mix towards highly profitable and recurring service revenues. Hence, the EBIT margin is expected to be recover by 0.5pp to 7.7% in 2018-21e also supported by favourable input prices.

In light of macroeconomic concerns related to trade tariffs and a slowdown in the Chinese economy, Jungheinrich's share price dropped by 30% in 2018. Hence, shares are now trading at a 7%-discount to its 5-year average forward PE ratio and largely in line with peers KION and Hyster-Yale. In our view, this looks unjustified, as Jungheinrich has a more resilient business model and a higher margin level, despite lower scale, while margins look set to recover in the coming years on the back of higher service revenues as well as a recovery in input factors. Given strong structural drivers, an attractive industry with high barriers to entry as well as an attractive valuation, we resume coverage with a Buy rating and a DCF-based PT of EUR 41.00.



Rel. Performance vs SDAX:	
1 month:	9.9 %
6 months:	2.1 %
Year to date:	12.8 %
Trailing 12 months:	-8.0 %

Company events:	
30.04.19	AGM
10.05.19	Q1
08.08.19	Q2
07.11.19	Q3

FY End: 31.12. in EUR m	CAGR (18-21e)	2015	2016	2017	2018	2019e	2020e	2021e
Sales	4.7 %	2,754	3,085	3,435	3,796	3,952	4,150	4,357
Change Sales yoy		10.3 %	12.0 %	11.4 %	10.5 %	4.1 %	5.0 %	5.0 %
Gross profit margin		*30.9 %*	*30.9 %*	*29.9 %*	*29.5 %*	*29.7 %*	*29.9 %*	*30.1 %*
EBITDA	5.6 %	432	489	543	595	616	658	701
Margin		*15.7 %*	*15.9 %*	*15.8 %*	*15.7 %*	*15.6 %*	*15.9 %*	*16.1 %*
EBIT	6.8 %	213	235	259	275	288	311	335
Margin		*7.7 %*	*7.6 %*	*7.5 %*	*7.2 %*	*7.3 %*	*7.5 %*	*7.7 %*
EBT		198	216	243	250	271	295	320
EPS	8.9 %	1.35	1.51	1.79	1.72	1.89	2.05	2.23
DPS	8.9 %	0.40	0.44	0.50	0.52	0.57	0.62	0.68
Dividend Yield		1.9 %	1.6 %	1.5 %	1.6 %	1.9 %	2.1 %	2.3 %
FCFPS		0.48	0.41	-0.36	0.54	0.54	0.65	0.73
FCF / Market cap		2.1 %	1.5 %	-1.1 %	2.5 %	1.8 %	2.2 %	2.4 %
EV / Sales		0.8 x	1.0 x	1.1 x	1.0 x	0.9 x	0.8 x	0.8 x
EV / Sales		0.8 x	1.0 x	1.1 x	1.0 x	0.9 x	0.8 x	0.8 x
EV / EBITDA		5.3 x	6.0 x	6.8 x	6.2 x	5.5 x	5.2 x	4.9 x
EV / EBIT		10.8 x	12.6 x	14.2 x	13.5 x	11.8 x	11.0 x	10.1 x
P / E		15.6 x	17.7 x	18.9 x	19.2 x	15.9 x	14.6 x	13.5 x
FCF Potential Yield		7.1 %	6.4 %	5.9 %	5.8 %	6.7 %	7.3 %	7.9 %
Net Debt		167	222	233	331	353	349	342
ROCE (NOPAT)		12.6 %	13.3 %	13.8 %	12.2 %	11.8 %	12.1 %	12.5 %
Guidance:	Sales EUR 3.85-4.05bn, EBIT EUR 275-295m							

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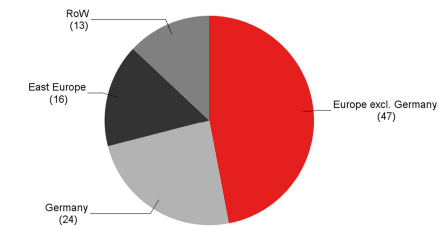
Sales, order intake, book-to-bill
in EUR m

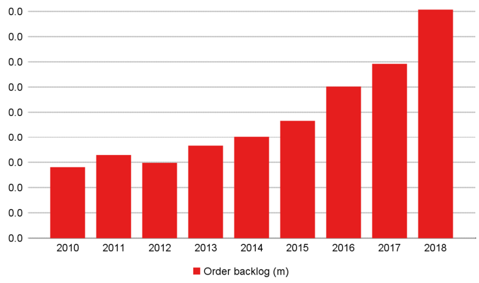
Source: Warburg Research

Sales by regions
2018; in %



Source: Warburg Research

Order backlog
in EUR m



Source: Warburg Research

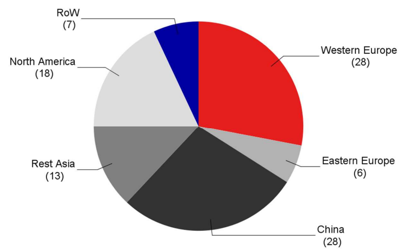
Company Background

- Global top three supplier of materials handling equipment and warehousing technology (after Toyota and KION) with a strong focus on Europe which accounts for c. 88% of sales.
- The share of leasing business which increased from one-third of new sales to currently c. 40% sets the stage for further margin improvement as leasing contracts are coupled with higher margin service contracts.
- Hence, the margin mix within the installed base is gradually improving due to a rising share of leased vehicles.

Competitive Quality

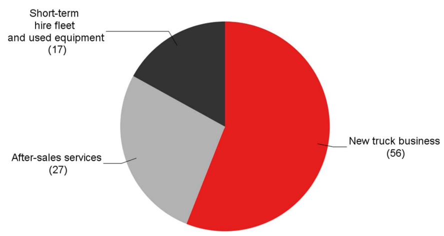
- Jungheinrich's business model is less volatile than those of its peers because:
- (1) high share of after-market activities (2) retail customers incl. Food, which are less cyclical, account for 45% of order intake; no single customer accounts for >3% of sales.
- (2) The portfolio is well balanced between new business, leasing, rental, service and used equipment sales.
- Jungheinrich is uniquely positioned in the refurbishment of used trucks on an industrial scale in a separate plant in Eastern Germany. Thus, margins can be extracted from the returned leased and rental fleet.
- The installed base of c. 1m vehicles is difficult to replicate for new entrants and sets the stage for rising and highly visible service revenues.

World Material Handling Market
2018, in %



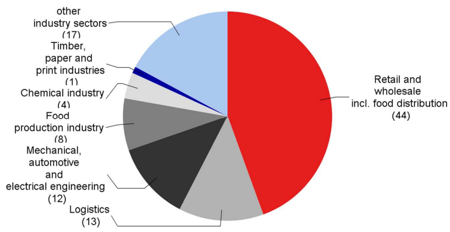
Source: Warburg Research

Sales by business fields
2018; in %



Source: Warburg Research

Order intake by Industry
2018; in units



Source: Warburg Research

Summary of Investment Case

Investment triggers

- Proportionately greater benefit for Jungheinrich from an overall GDP growth particularly in growing emerging markets.
- Sound structural growth drivers to remain intact, driven especially by the rise of e-commerce in Europe and China.
- High share of aftermarket revenues protects Jungheinrich from substantial drawdowns during a recession.
- Profitability expected to recover on the back of improved sales mix (i.e. high share of highly profitable service revenues) as well as lower pressure on input costs.
- Margin improvement to become visible which should help to close the historical valuation gap.

Valuation

- FCF model points to a fair value of EUR 32.70 with 9% upside potential based on FCF Value Potential 2020e.
- DCF model suggests a fair value/share of EUR 41.00 implying 37% upside potential based on a 7.5% terminal-value EBIT margin, 2.0% long-term growth rate and 7.1% WACC.
- 7% discount to historical multiples appears unjustified, as margins are expected to recover in the coming years.
- Premium to peer group appears justified given Jungheinrich's superior profitability despite lower scale driven by a beneficial sales mix with a greater share of highly profitable and recurring service revenues.

Growth

- Sound structural growth drivers, as rising e-commerce penetration fuels demand for warehousing equipment.
- Aftermarket revenues should benefit from strong new truck business in the past three years.
- Margins expected to recover driven by an improved sales mix towards highly profitable and recurring service revenues as well as lower input costs.
- We expect sales to increase 4.7% p.a. in the period 2018-21e with EBIT rising by 6.8% p.a. 2018-21e implying an increase in the EBIT margin of 0.5pp to 7.7% in 2021e.

Competitive quality

- Leading player in the global industrial truck market protected by high barriers to entry.
- Strong focus on Europe, which accounts for 87% of sales.
- High share of aftermarket revenues represents a safety cushion against economic slowdown allowing for profitable and recurring revenues.

Warburg versus consensus

- For the current fiscal year our estimates are broadly in line with consensus expectations.
- On profitability level, EBIT estimates for FY 2019 and FY 2020 are largely in-line with street expectations respectively.

Company Overview

JUNGHEINRICH

Segments	New Truck Business	Short term hire and sale of used equipment	After Sales Services	Financial Services	Group
Sales in EUR m	2,305	632	1,006	973	3796.1
in % of total	*61%*	*17%*	*27%*	*26%*	*100%*
EBIT in EUR m		309.33		2.82	275.4
EBIT Margin		*8%*		*0.3%*	*7.25%*

Products

New Forklifts | **Used Forklifts** | **Racking / Warehouse storage** | **Automated components**

Batteries / Charging Technology | **Forklift Hire** | **Radio Data Transmission** | **Digital Products**

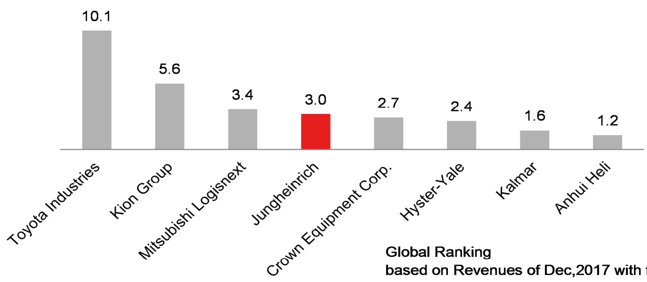
Systems	Software / IT	Storage	Conveyor	Automated Guided Vehicles	Order picking / Palletizing

Service	Maintenance	Spareparts

End Markets

Material handling equipment for various industries including food, logistics, mechanical automotive and electrical engineering, timber or print & paper

Market positions (market share)



Global Ranking
based on Revenues of Dec,2017 with forklift trucks and warehouse technology in EUR bn

Nr. 4 worldwide (by revenues) and Nr.2 in Europe with c. 20% market share (by units)

Competitors

KION GROUP
Nr. 1 in Europe
Nr. 2 worldwide
World Market Share 14.4%

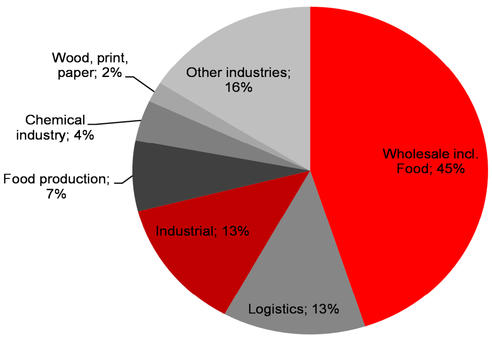
TOYOTA
Nr. 1 worldwide
Nr. 3 in Europe
World Market share 20 %

Global Presence

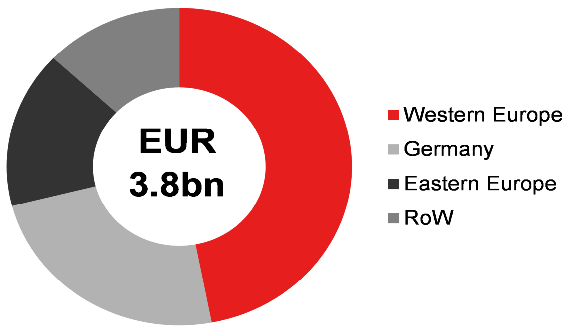
>17,800 employees in 40 countries

Production plants in Germany (7), China (2) and Hungary (1)

Sales by Industry



Sales by Region



Source: Warburg Research

Competitive Quality

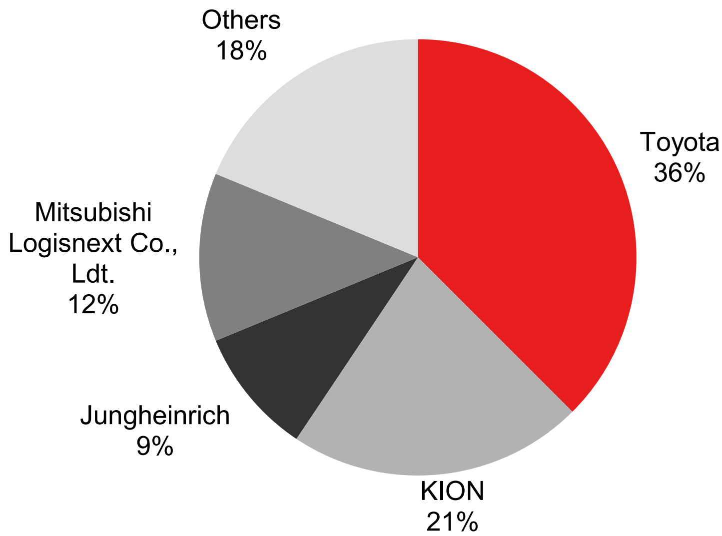
- Leading player in the global industrial truck market protected by high barriers to entry
- Strong focus on Europe, which accounts for 87% of sales
- High share of aftermarket revenues represents safety cushion against economic slowdown allowing for profitable and recurring revenues
- Higher exposure to less cyclical end-markets than peers

Leading player in the global industrial truck market

Leading player with 13% global market share

Jungheinrich is one of the globally-leading industrial truck manufacturers and intralogistics service providers. The top four players represent c. 80% of the global forklift market and Jungheinrich has a global market share of c. 9%. In its core market Europe, Jungheinrich commands a market share of as much as 20%.

Consolidated market of the global forklift industry



Source: MH&L, Warburg Research

Barriers to entry in the global forklift market are high, as existing players can rely on significant advantages compared to new entrants. These include:

1) **Size advantages** thanks to 1) a large installed base (around 1m vehicles) allowing for a high share of recurring and profitable aftermarket activities, 2) a strong supplier network enabling favourable procurement terms with suppliers supporting gross margin and 3) a large direct distribution network with strong relationships to customers built up over the past decades. Moreover, Jungheinrich has established a strong brand, particularly in its home turf Europe, all of which are difficult for new competitors to replicate.

2) **Expertise**: Over the past decades, Jungheinrich has developed extensive know-how in the areas of product innovation and warehouse automation. This has been fuelled by its strong customer relationships as well as R&D expenses of around EUR 500m in the past 10 years (2% of sales on average). With that, Jungheinrich has strong competence in developing lithium ion batteries in-house, while most competitors rely on third-party suppliers. Moreover, Jungheinrich has a competitive edge in the field of Internet of Things/Industry 4.0. For instance, automatic high-rack stackers include shelves, software and feed-in systems such as conveyor technology, which means that shelves and stackers, connected by software, operate without direct manual assistance and are controlled remotely e.g. over a warehouse management system (WMS)

3) **Capital intensity:** Finally, sufficient capital is required to establish a meaningful market position. As one of the market leaders, Jungheinrich invests around 3% of sales in capital expenditure p.a. (annual average 2016-2018: EUR 116m)

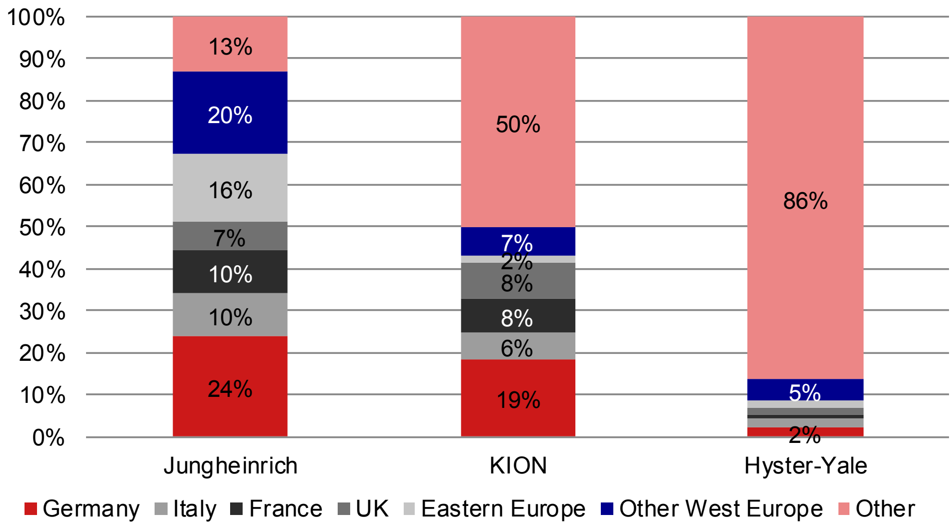
While these advantages protect the leading players such as Toyota, Jungheinrich, KION and Hyster-Yale, Jungheinrich has several competitive advantages over its large rivals.

20% market share in Europe

Focus on Europe

Jungheinrich's operating activities are strongly geared towards Europe, where the rise of e-commerce has fuelled demand for warehouse equipment and where Jungheinrich holds a strong competitive position. While the European market accounts for 35% of global forklift sales, it makes up almost 90% of Jungheinrich's forklift sales. This is significantly more than competitors which have larger exposure to emerging markets.

Regional sales split FY 2018



Source: Company data, Warburg Research

In our view, this strong focus on the European market is particularly beneficial for Jungheinrich, as it should protect the company from trade wars between the US and China, particularly as seven out of 10 production sites are located in Europe.

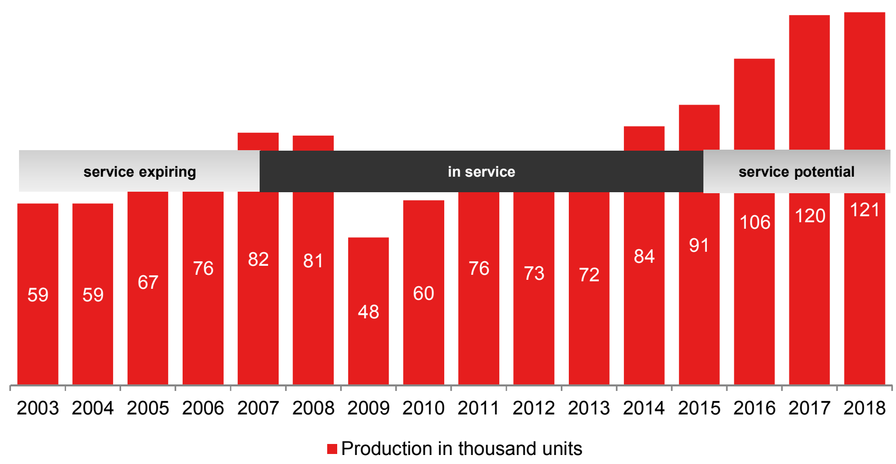
Jungheinrich's focus on Europe also makes it far less vulnerable than its competitors to a slowdown in the Chinese economy. A slowdown in China should not constrain growth at Jungheinrich, as the European material handling equipment market is showing sound mid-teen growth rates, in line with the global market. That said Jungheinrich was able to outperform main peer KION with 10% sales growth in 2018 vs only 4% yoy for KION.

Aftermarket activities enable recurring and profitable revenues

Strong aftermarket share acting as a safety cushion

More importantly, Jungheinrich has high exposure to the aftermarket business, owing to its huge installed base of around 1m vehicles (FY 2018). Aftermarket activities include repair, spare parts and maintenance activities. In fact, Jungheinrich generates 27% of sales with high-margin service revenues (excluding rental business), while KION's aftermarket share stands at 19% and Hyster-Yale's is trailing with 13%.

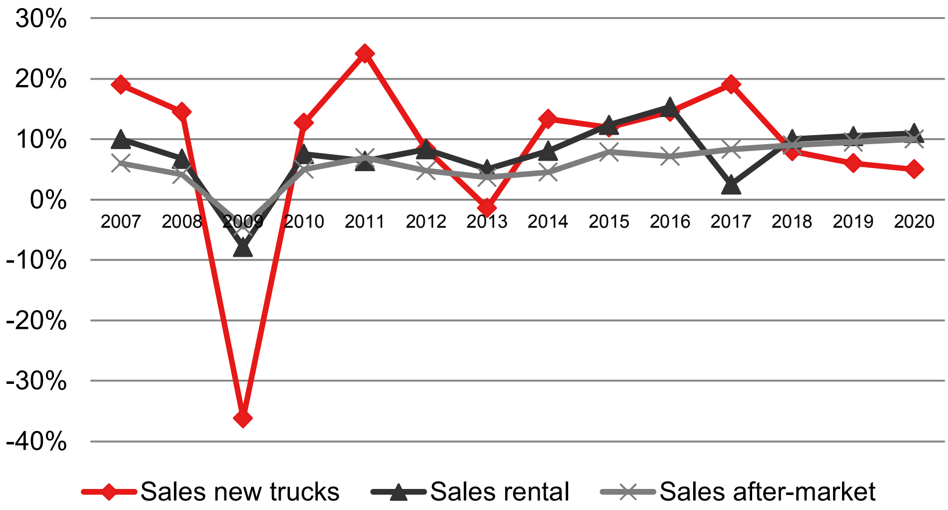
Production units secure high installed base



Source: Company data

While the global forklift market is regarded as cyclical, Jungheinrich's high share of aftermarket revenues ensures a favourable sales mix towards recurring and profitable revenues while effectively protecting the company from substantial drawdowns (see chart below). In periods of economic uncertainty, customers tend to extend the lifecycle of existing equipment rather than purchasing new equipment, or they focus on leasing equipment which comes with a service contract for Jungheinrich.

Divisional sales growth



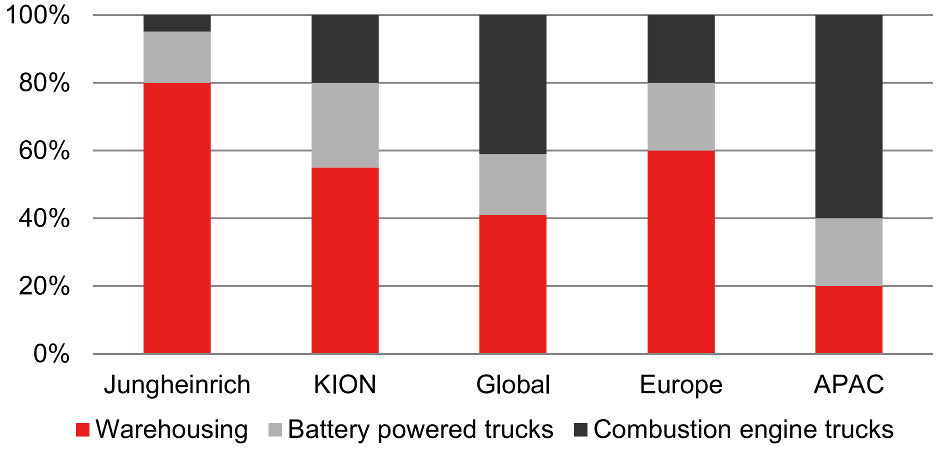
Source: Company data, Warburg Research

Higher exposure to less cyclical end-markets

Jungheinrich has higher exposure to less cyclical end-markets than its main peer KION. The relatively non-cyclical food industry accounts for more than 50% of sales compared to only 25% at KION. Customers include the giants of the sector such as Aldi, Lidl etc.

Also in terms of the products it offers, Jungheinrich is underrepresented in the more volatile categories such as combustion engine-powered counterbalance trucks. In 2009, for instance, sales in counterbalance trucks dropped by 42% compared to a 32%-drop in sales of warehouse trucks.

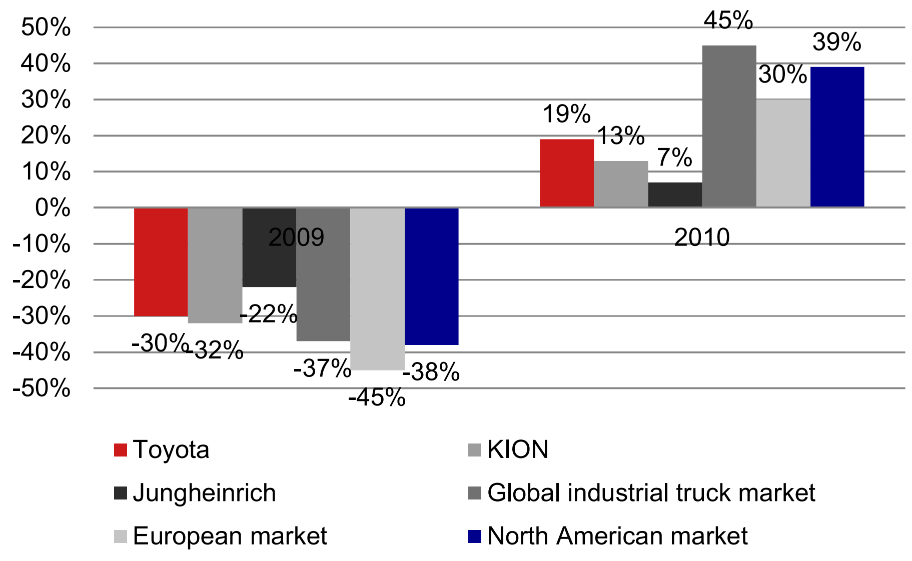
Product mix



Source: Company data, Warburg Research

As a result, Jungheinrich has the least volatile business model of its peers, which we regard as particularly attractive considering the advanced stage of the global economic cycle. Evidently, Jungheinrich's sales declined by only 22% yoy in 2009, while competitors recorded declines of 37% on average.

Less cyclicality thanks to high aftermarket share (sales in % yoy)

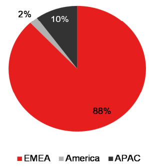
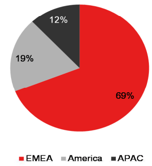
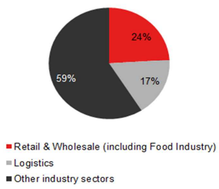


Source: Company data, Warburg Research

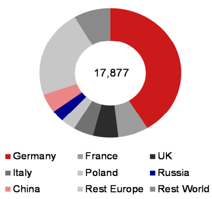
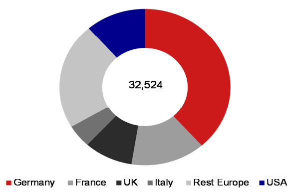
Jungheinrich in comparison with KION

Jungheinrich and KION are both leading players in the global handling equipment market with market shares of 9% and 20% respectively. While Jungheinrich is clearly focused on organic growth, KION is geared towards inorganic growth. Nevertheless, Jungheinrich has been able to achieve higher growth rates in the last years, mainly driven by its strong position in warehousing and electric forklifts where demand is fuelled by a structural shift towards e-commerce.

In the coming years, Jungheinrich's sales growth is expected to normalise to mid-single-digits due to a transition from new business towards after-market activities which carry higher margins.

	Jungheinrich	KION
Sales	EUR 3.79bn (4.7% CAGR 2018-2021e)	EUR 7.99bn (3.7% CAGR 2018-2021e)
Profitability	7.25% EBIT Margin (6.9% CAGR 2018-2021e)	8.0 % EBIT Margin (4.5% CAGR 2018-2021e)
Strategy	Single Brand Strategy / organic growth	Multi Brand Strategy / anorganic growth
Geographic Exposure		
Customer structure by sector		
Installed base of industrial trucks	>1 million battery-based trucks	1.3 million trucks in use

Products / Solutions				73 % of sales			75 % of sales	
	New Forklifts			X			X	
	motor	electric	X		X	X		X
	premium	economy	X			X		
	Forklift hire			X			X	
	Used Forklifts			X			X	
	Automated guided Vehicles			X			X	
	Battery production			X			-	
After-sales services				26% of sales			19 % of sales	
	After Sales Service			X			X	
	Fiancial Service			X			X	
	Consulting			X			X	

	Jungheinrich	KION
Differentiation	Li Ion Batteries & 'close to the customer'	80% of trucks can be ordered as fuel cell - powered trucks
Customers	Lidl, Schwarz Group, DHL, Tesco, Metro, VW, Amazon,Thyssenkrupp	Amazon, Walmart, Fedex, Tesco, La redoute
Market position	Global Number 3 Industrial Truck Suppliers	Global Number 2 of Industrial Truck Suppliers
Joint Ventures / Cooperations	**Mitsubishi Caterpillar Forklift America** Joint Venture for the production of industrial comomnetnts in the US **Anhui Heli Co. Ltd** Joint Venture for the short term rental of material handling equipment **Triatlon Holding** Joint Venture for production and recycling of li-ion battery systems	**EP Equipment** Partnership for wharehouse equipment in China
Production Sites	Total of 9 production sites: Germany (7), China (2), Hungary (1)	Total of 26 production plants including in Germany (9), Other Europe (7), China (2), Brazil (1) and US (5)
Employees by region		
Strategic Focus	electric mobility, automation, digitalization and connectivity	integrated and automated supply chain solutions and mobile automation solutions. Drive technology and automation/robotics solutions & warehouse management systems
Shareholder Interest	constant Dividend payments between 25%-30% of net income	Over 43% ownership has Chinese Holding 'Weichai' constant dividend payments

Analysis of Return on Capital

- High fixed-cost base and capital needs represent barrier to entry
- Catch-up potential in managing working capital compared to KION
- FCF is set to improve going forward

Capital employed

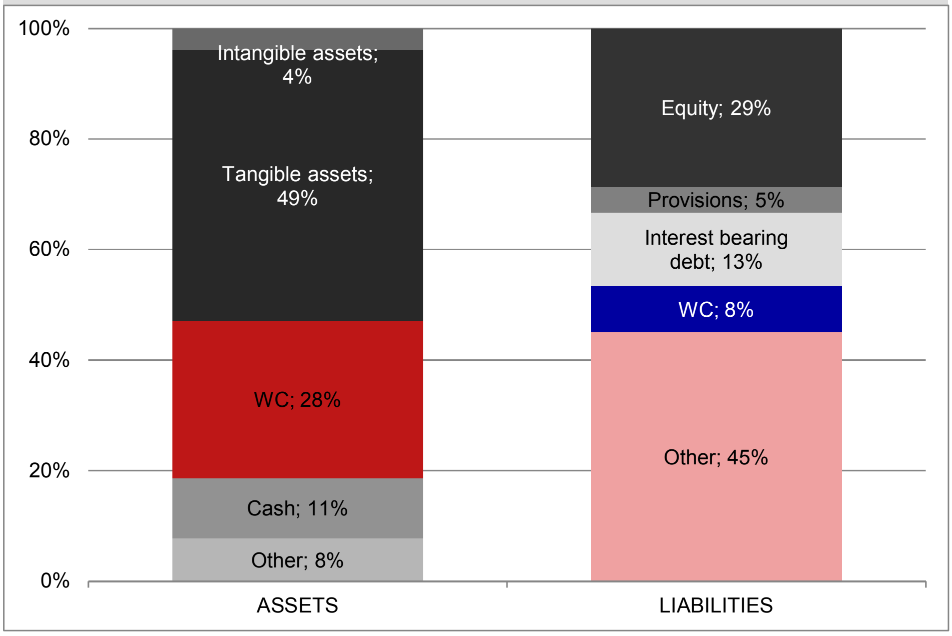
Jungheinrich is a fully integrated supplier of material handling equipment for various industries including food, logistics, mechanical automotive and electrical engineering, wood or print & paper.

Conservative balance sheet

Jungheinrich enjoys a high degree of vertical integration including development, manufacturing and distribution of new trucks. Moreover, the company provides financial services for its clients including leasing services. Products are manufactured in the company's 10 production plants, seven of which are based in Germany, two in China and one in Hungary. Distribution is carried out by its massive sales force that has established strong client relationships over the past decades, secured by intensive aftermarket activities (i.e. maintenance, repair, spare parts) with a service network in 39 countries.

Jungheinrich's business is capital intensive with a capex to sales ratio of 3%. As a result, D&A amounts to c. 8% of sales. Tangible assets account for approximately half of total assets with a book value of EUR 2,514m in FY 2018. This represents a high barrier to entry, as new entrants would need substantial amounts of capital to replicate the business. Intangible assets, however, account for only 4% of total assets, reflecting Jungheinrich's conservative balance sheet compared to main rival KION (48% intangibles of total assets). This should be attributable to KION's M&A growth strategy while Jungheinrich's is clearly focused on organic growth.

FY 2018: Solid balance sheet



Source: Company data, Warburg Research

Substantial leasing liabilities

Industrial truck manufacturers typically carry a high level of leasing assets and liabilities on their balance sheets given that a large fraction of trucks is leased. In the case of Jungheinrich, leasing liabilities amounted to EUR 1.526m in FY 2018 (32% of total assets) backed by leasing assets of EUR 1.951m (41% of total assets).

While we consider Jungheinrich's conservative balance sheet coupled with a capital-intensive business as a competitive strength, it reduces capital efficiency, which is reflected in capital employed of EUR 1,693m.

Working capital

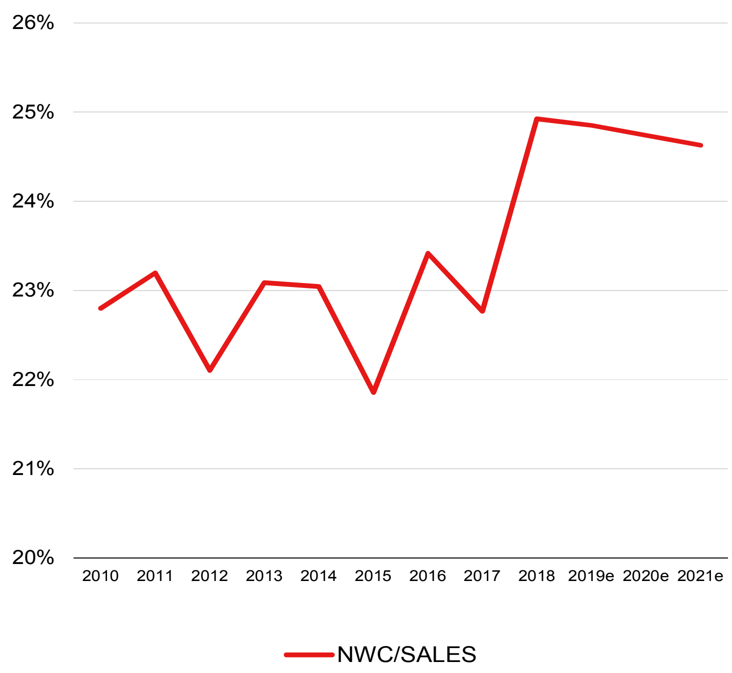
Net working capital accounted for 24.9% of sales in FY 2018 with a total book value of EUR 946m. Receivables amounted to EUR 997m comprising trade receivables of EUR 722m as well as EUR 275m from financial services. Thus, receivables are almost twice as high as inventories (EUR 615m), reflecting the company's focus on rental business. Inventories consist mainly of finished goods which amounted to EUR 197m in FY 2018.

Conservative working capital management

Jungheinrich generally collects receivables after 66 days which is comparable to KION (67 days). Suppliers are paid within 52 days meaning that Jungheinrich pre-finances its customers. Inventory turnover is slower than that of KION (75 days vs 55). Hence, the overall higher cash conversion cycle of 89 (vs only 65 for KION) should imply catch-up potential, which could support cash generation in future.

During FY 2018, NWC to sales rose to 24.9%, especially given higher inventories, while trade receivables and trade payables remained largely stable. We expect inventory levels to normalise again from 2019 onwards due to lower growth rates and thus, the NWC to sales ratio is expected to be declining to 24.6% of sales in 2021.

Net working capital



Source: Company data, Warburg Research

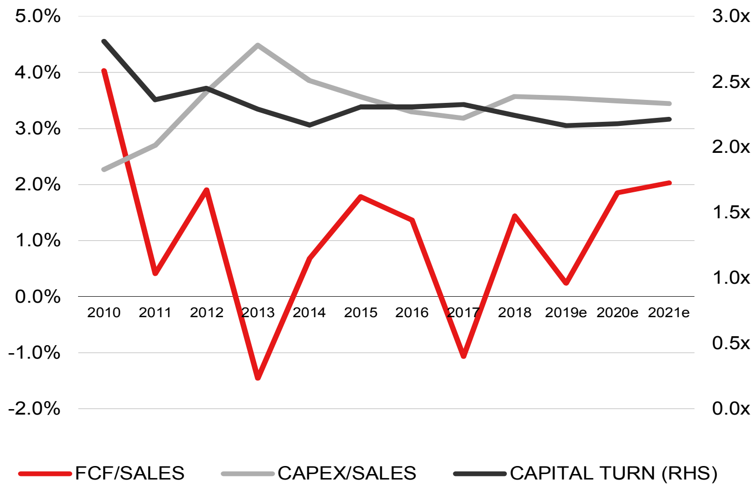
Cash flow and capex

FCF is expected to improve

Generally, Jungheinrich operates a capital-intensive business model with capex to sales of 2-4% p.a. Capex levels peaked in 2013, which was due to a jump in the R&D capitalisation ratio from 12.5% to 27%. Since 2013, the ratio has remained stable at around 27%. Hence capex normalized at around 3% of sales since 2013. We estimate that two-thirds of total capex is maintenance-related. Currently, for instance, factories are undergoing modernisation as is the headquarters in Hamburg, Germany. Going forward, we expect capex to sales to stay at levels around 3.5% p.a.

FCF in 2017 was especially burdened by extraordinarily high volumes of trucks for short-term rental and lease, resulting in operating cash flow of only EUR 70m compared to EUR 142m in the previous year. In 2018, FCF has been burdened somewhat by higher inventory levels. However, this effect is expected to normalise in the coming years and thus FCF should improve again from 2019 onwards to EUR 77m in 2020e.

FCF and capex



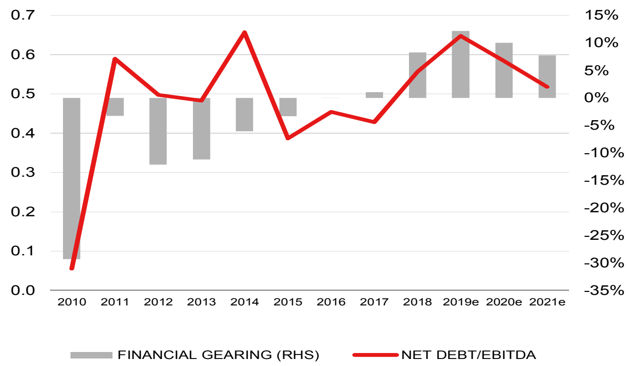
Source: Company data, Warburg Research

Debt

Solid financial position

Jungheinrich has a sound solvency track record. Net debt/EBITDA has been below 0.7x since 2010, reflecting good financial control. Total financial debt amounted to EUR 626m in FY 2018, comprising EUR 218m in bank liabilities, EUR 238m in promissory notes and EUR 183m in finance leases from Jungheinrich's rental truck business. EUR 160m of the financing volume is due within one year, EUR 334m within one to five years and EUR 162m in more than five years. Going forward, net debt is set to decline on the back of a FCF recovery, which should allow for a net debt/EBITDA ratio of 0.5x in 2021e.

Financial leverage



Source: Company data, Warburg Research

Operating profitability

Gross margin/pricing

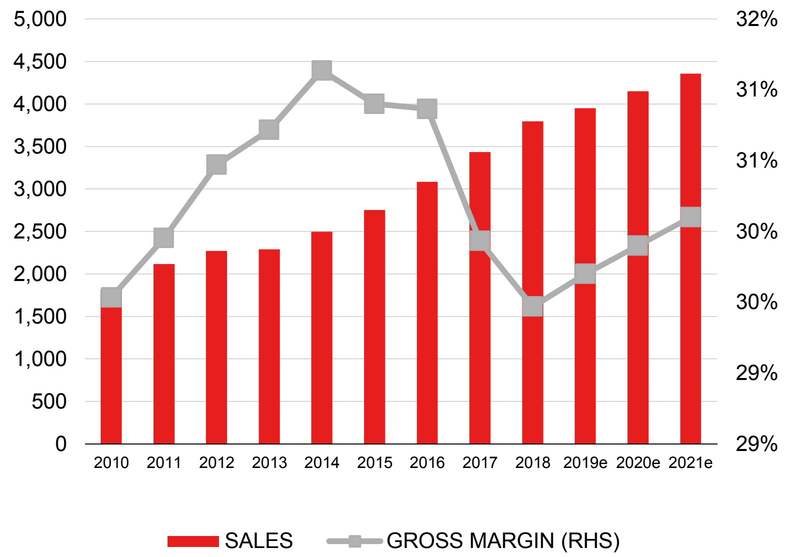
Jungheinrich's gross margin is generally determined by two factors.

Gross margin expected to stabilise

1) Product mix: Given Jungheinrich's high share of service revenues, the following principle can be observed. In times of strong revenue growth, which is typically generated by new business, the product mix shifts towards new trucks, which typically carry lower gross margins. Following a time lag of around two years, service contracts start to kick in, which improves the revenue mix as service revenues generate higher margins. While this explains the margin slowdown since 2014, lower top-line growth from 2019e onwards should result in an improved revenue mix as aftermarket contracts lead to an improved margin profile for Jungheinrich.

2) Input costs: Jungheinrich's purchasing volume amounted to EUR 2,363m in FY 2018 with production material accounting for almost 50%, while merchandise and indirect materials/services account for the other half. Especially steel should be a factor to watch, considering that the production of one forklift truck requires one ton of steel. Given the sharp rise in many raw material prices in 2016-17, gross margin dropped by 1.3pp to 29.5% in 2018. Going forward, however, a normalisation of input prices should help to increase the gross margin again to over 30%, backed by a rising share of service activities, as large new truck fleets delivered in the last two years enter the high-margin aftermarket.

Gross margin/pricing



Source: Company data, Warburg Research

Operating margin

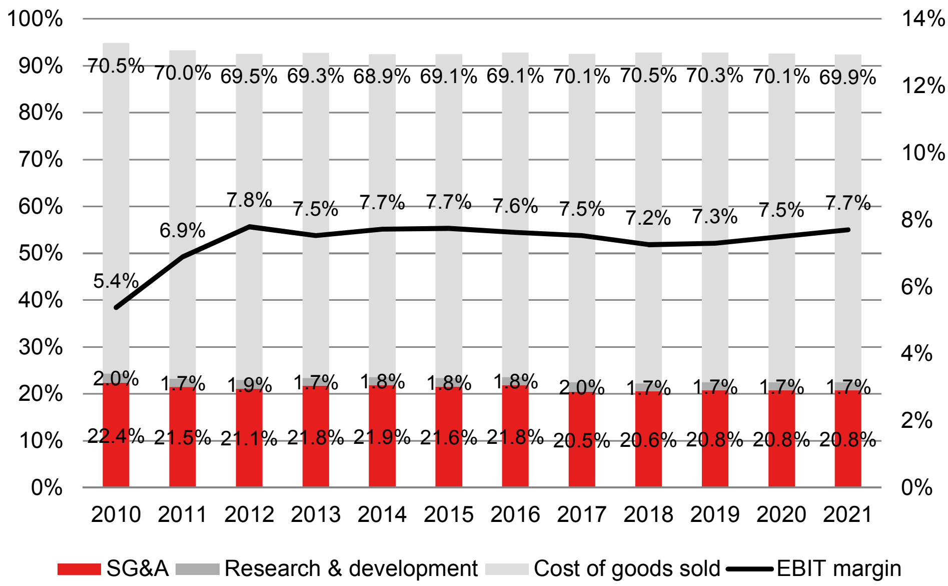
EBIT margin looks set to recover

EBIT margins have remained largely stable since 2013 with a slight downward trend since 2015, which can be attributed to a 1.5pp rise in COGS to 70.5% in 2018, predominantly due to rising input cost inflation and an unfavourable product mix, i.e. a high share of new trucks that typically carry lower gross margins.

Still, Jungheinrich was able to keep EBIT margins relatively stable as SG&A expenses have declined by 1pp since 2013, reflecting the company's ability to leverage its fixed-cost base.

We expect EBIT margins to recover towards the 5-year average of 7.6%, as the gross margin should benefit from a rising share of aftermarket revenues, and input cost inflation is expected to be slowing down or even reverse slightly.

Margins look set to bottom out (% of sales)



Source: Company data, Warburg Research

Fixed-cost base allows for operating leverage

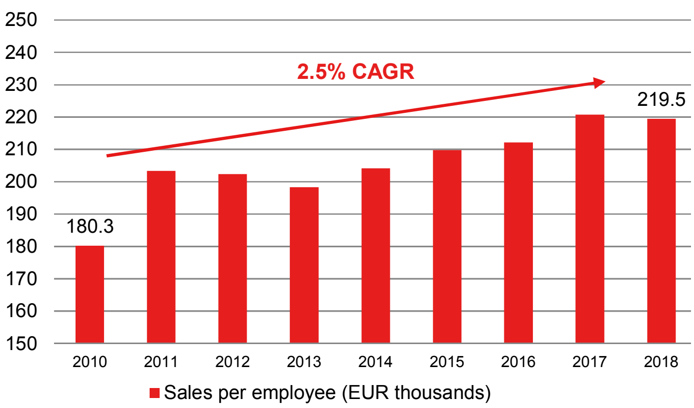
Operating leverage

Jungheinrich can achieve solid operating leverage, in our view. This should be driven by a high fixed-cost base as well as rising automation. SG&A declined by 1.8pp to 20.6% from 2010-18 leading to an expansion of EBIT margins by 2.0pp to 7.2% from 2010-18 supported by a slight gross margin increase (+0.7pp 2010-18 to 30.1%).

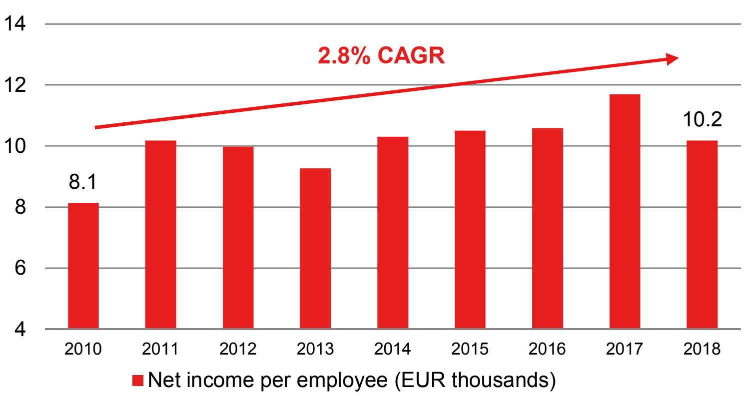
This is also reflected in decent leverage of personnel costs with sales per employee rising by 2.5% p.a. and a slightly higher increase in net income per employee of 2.8% p.a. since 2010. Having said that, personnel cost ratio declined by 1.0pp 11-18 to 28.3%.

Leverage of personnel costs

Sales per employee 2010-18



Net income per employee 2010-18



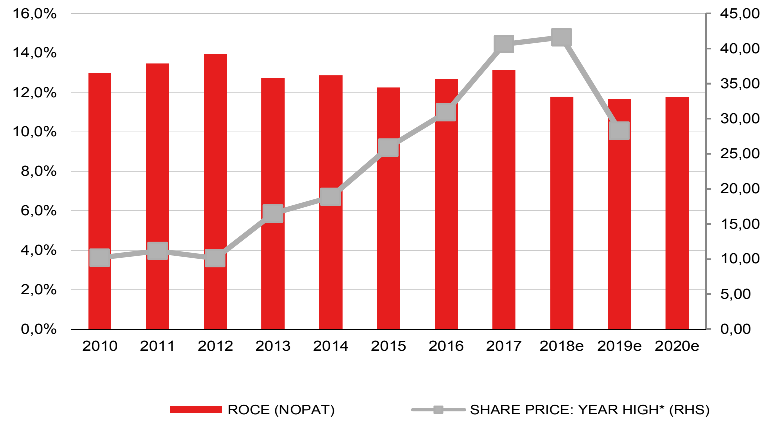
Source: Company data, Warburg Research

Maintaining returns above cost of capital

ROCE

With sales rising from EUR 2,116m to EUR 3,796m in the period 2011-18, capital employed increased from EUR 896m to EUR 1783m, implying a slightly declining cap turn from 2.4x to 2.1x. With EBIT margins largely stable in the past years at around 7.6%, ROCE has, in turn, been largely stable. Given strong double-digit growth rates, Jungheinrich's share price doubled between 2014 and 2017 before declining 30% in 2018 given an EBIT margin decline of 0.2pp to 7.3% in FY'18 and rising macroeconomic uncertainty. While ROCE has been relatively stable over the past years, Jungheinrich's share price rose by 270% since 2010, reflecting sound growth on the top and bottom line.

ROCE and annual peaks in the share price



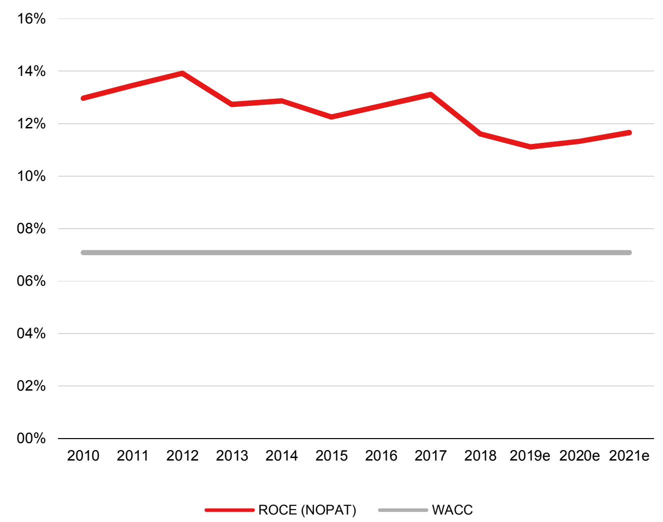
Source: Company data, Warburg Research

High aftermarket share allows for lower cyclicality

Sustainability of returns

The attractiveness of Jungheinrich's business model is, in our view, lower cyclicality of returns than peers. In fact, Jungheinrich's sales dropped by only 22% yoy in 2009 which compares to -32% for KION and -30% yoy for Toyota. This can be explained by its strong aftermarket share, which allows for a higher share of recurring and resilient revenue streams. In future, Jungheinrich looks set to defend double-digit ROCEs on the back of its strong position in Europe coupled with a superior earnings quality backed by a high share of service revenues. Hence, ROCEs should continue to exceed the company's cost of capital implying attractive returns for shareholders.

Sustainability of returns



Source: Warburg Research

Growth

- Strong organic growth track record with accelerated growth since 2009 (9.3% CAGR)
- Future growth expected to normalise while structural drivers remain intact, i.e. rising e-commerce penetration, shift towards e-mobility
- Slower new truck business should improve sales mix towards high-margin service revenues supporting profitability (Earnings CAGR 14.9%)

Structural growth drivers to remain sound

Jungheinrich has been able to achieve sound growth rates over the past decades benefitting from overall GDP growth as well as additional structural growth layers such as the rise of e-commerce.

Structural growth drivers well intact

With a sales increase of 6.4% p.a. since 2003, Jungheinrich shifted into high gear post-crisis, generating 9.3% growth p.a. from 2009-18. Key drivers are:

1) Robust demand for industrial trucks driven by economic growth and rising fragmentation of supply chains

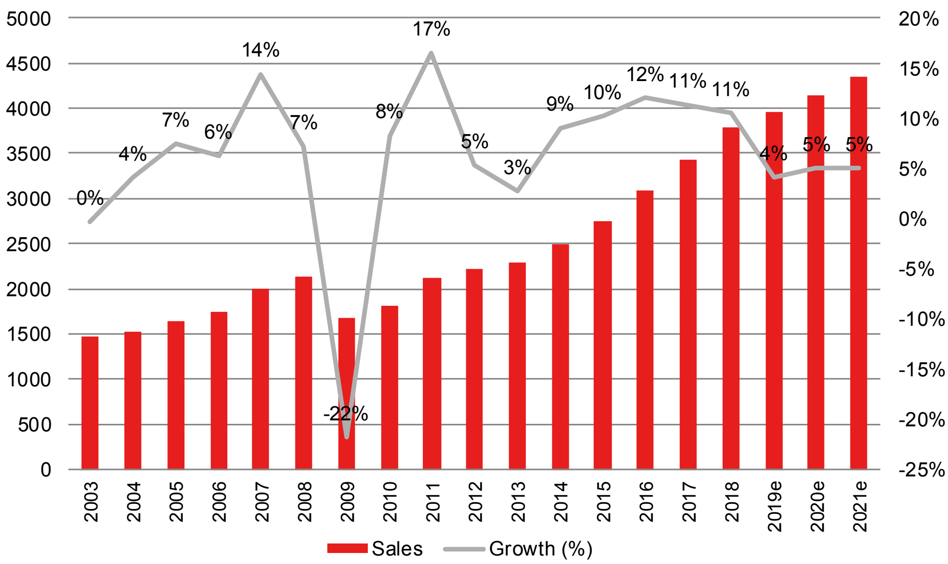
2) E-commerce-fuelled growth in developed countries due to rising online penetration resulting in rising need for warehousing

3) Structural shift towards e-mobility where Jungheinrich has strong exposure

4) Jungheinrich's international expansion, lifting international sales exposure from 13% in 2016 to 15% in 2020e

In the medium term, management aims to achieve EUR 4bn group sales in 2020e. Having delivered a strong 11% CAGR since 2015, Jungheinrich should be well on track to reach its mid-term target. Jungheinrich could even afford a growth slowdown in 2019e and 2020e to mid-single-digit growth rates and still reach its 2020 target. Hence, given robust structural drivers, especially in e-commerce, Jungheinrich might even exceed its EUR 4bn target in 2020e.

Sales growth (EUR m, % yoy)



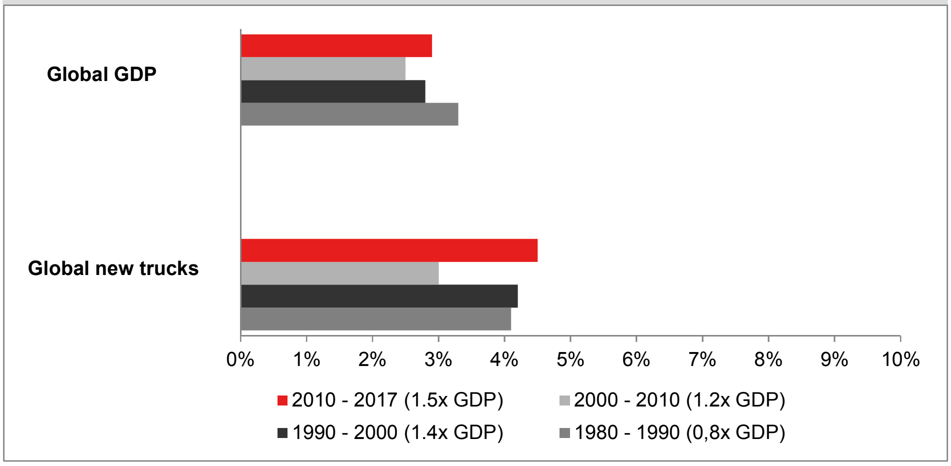
Source: Company data, Warburg Research

Outperforming GDP growth

Robust GDP growth driving demand for industrial trucks

Benefitting from mega trends such as rising industrialisation in emerging markets, globalisation and an increasing fragmentation of supply chains, the global forklift market outgrew global GDP by ~1.3x on average in the past decades. Post-crisis, the forklift market even accelerated, supported by the rise of e-commerce which significantly increased the need for warehousing. With that, the global forklift market grew by 1.5x GDP 10-17 and is expected to maintain the pace to a total of USD 56bn in 2021e (source: SCMR).

Global forklift truck demand grows approx. 1.5x global GDP



Source: WITS, Warburg Research

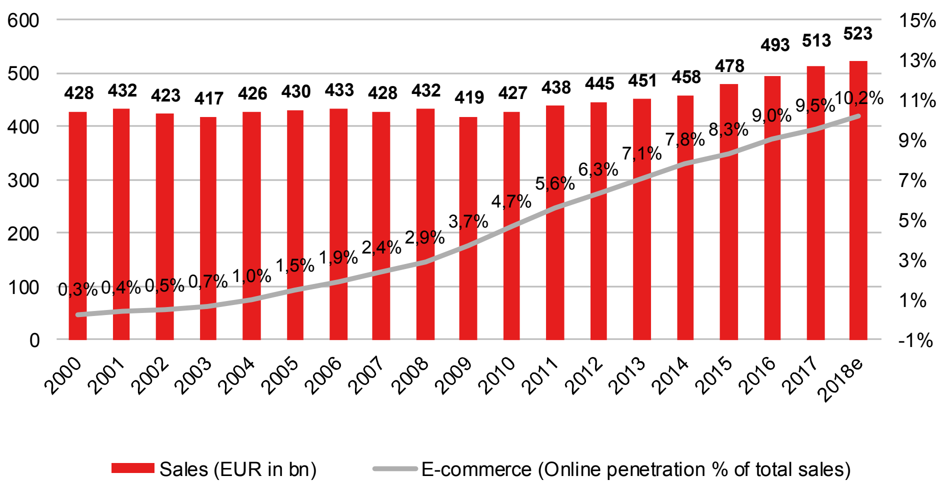
Online expansion fuels demand for warehousing

E-commerce should remain key to growth

Since the emergence and proliferation of the internet in the late 1990s, e-commerce has been playing an important role, increasing the need for forklifts and warehousing equipment in general. Growth in e-commerce is especially driven by rising online penetration. Given rising internet speed and a focus on mobile, e-commerce volumes have accelerated since 2010. We still see ample catch-up potential, as the online share in German retail sales, for example, accounts for a mere 10% of total retail sales, compared to 15% in the US.

E-commerce in Europe is still forecast to grow by c. 10% p.a., which should represent an important growth layer for Jungheinrich, in our view.

Rising e-commerce penetration in Germany

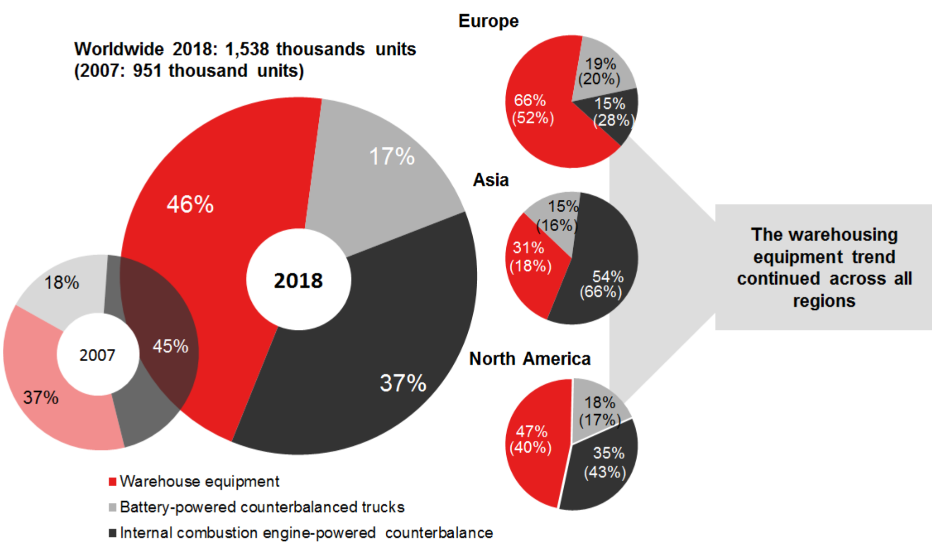


Source: HDE Germany, Warburg Research

Even more importantly, we regard Jungheinrich *as* excellently positioned to capitalise on this growth trend supported by its focus on Europe and technology leadership in warehousing equipment.

Rising e-commerce penetration explains why the share of warehousing equipment has climbed by 7pp to 44% of global material handling sales from 2007-17.

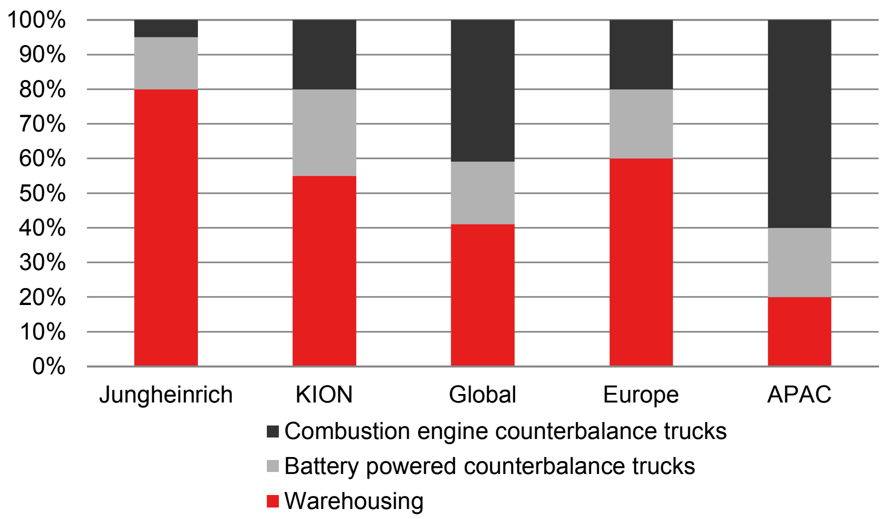
Sales split



Source: WITS, SIMHEM

Jungheinrich is considered to be benefitting more than its peers from this development based on its higher exposure to warehousing equipment as well as electric forklifts that are predominantly used in e-commerce fulfilment centres.

Product mix



Source: Warburg Research

Strong position in e-mobility

Competitive edge in e-mobility

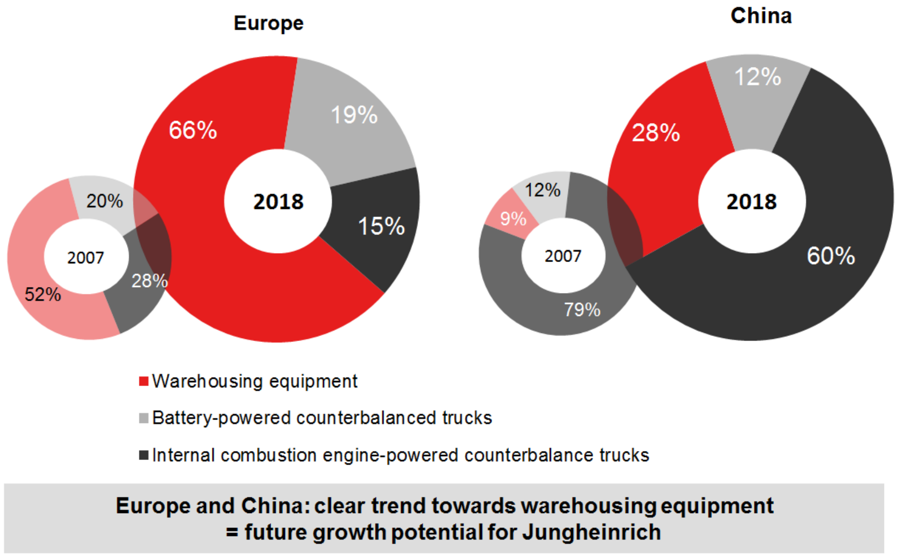
Additionally, Jungheinrich is benefitting from a shift towards e-mobility in warehouses where the company has a very strong position (lowest exposure to fuel forklifts in peer group). The graph above reflects a clear trend towards battery-powered counterbalanced trucks versus internal combustion engine-powered trucks.

This trend should also be driven by the shift towards warehousing equipment arising from e-commerce. Combustion trucks are typically used when transporting semi-finished goods, while electric trucks are used for warehousing and finished goods. Hence, as emerging markets mature, demand for electric trucks looks set to rise.

Expanding international footprint

The trend towards warehousing equipment is particularly pronounced in Europe and in China. In China, demand for warehousing equipment grew strongly from 9% to 28% in the 10 years from 2007-17 and looks set to continue, as Chinese consumers embrace online shopping.

Regional revenue mix

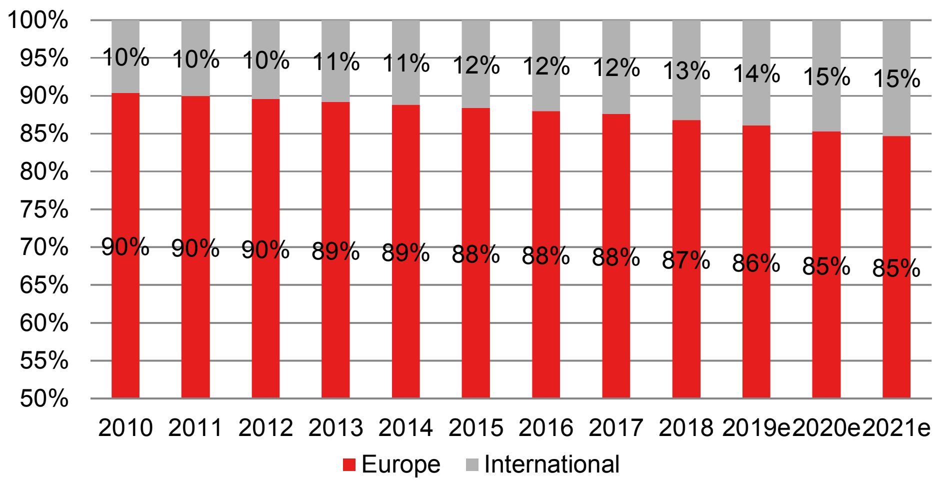


Source: WITS based on incoming orders in units, SIMHEM

Catch-up potential in China

Jungheinrich should have substantial catch-up potential in the Chinese market. Jungheinrich has expanded its footprint in China by entering a JV with Anhui Heli Co. in its truck business and with its acquisition of MIAS Group in 2015 in its logistic system business. Given a clear trend towards warehousing equipment in the region, Jungheinrich's international sales are expected to rise to 15% of group sales in 2020e (2017: 12%).

Regional sales split of Jungheinrich



Source: Company Data

Earnings growth

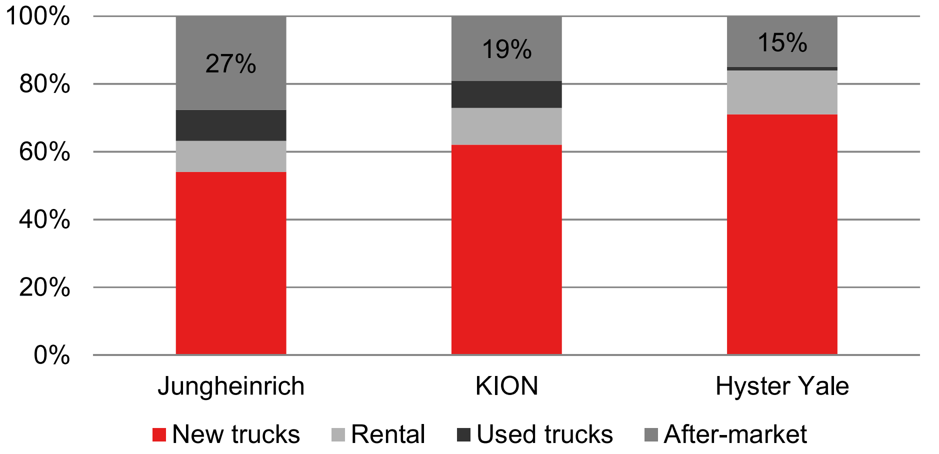
Strong aftermarket footprint allows for superior profitability

Jungheinrich's profitability generally benefits from a high share of service revenues. In 2018, Jungheinrich generated 27% of group revenues with aftermarket activities, such as maintenance, repair and spare parts compared to 19% for KION and just 13% for US peer Hyster Yale. This can be explained by Jungheinrich's focus on premium trucks and the European market as well as a higher share of leasing business.

This is the main reason why we consider Jungheinrich's earnings quality to be superior to peers. A high share of service revenues not only has a positive mix effect on overall margins, it also ensures a high share of recurring revenues while reducing cyclicality of the business during an economic downswing.

High share of service revenues

High share of service revenues bodes well for profitability

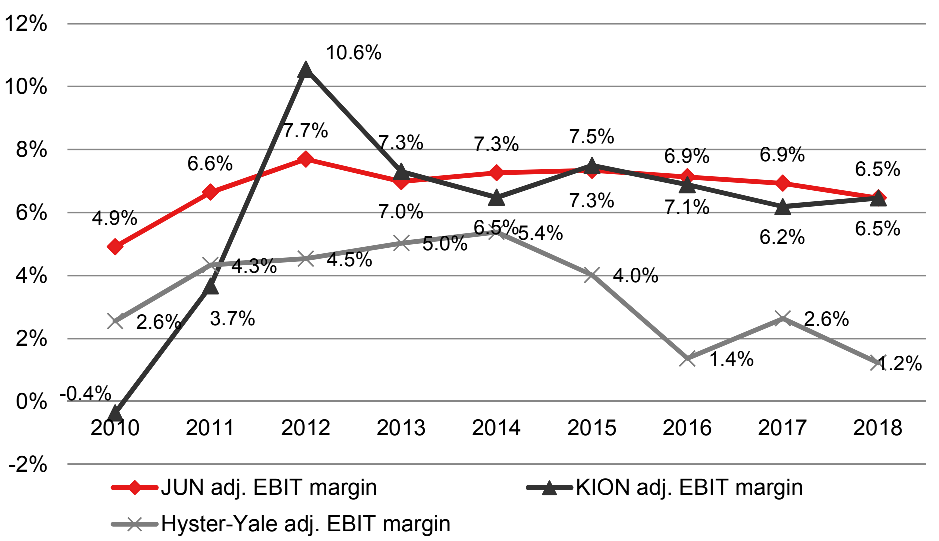


Source: Company data, Warburg Research

Having said that, Jungheinrich has similar profitability compared to main peer KION both outperforming US peer Hyster-Yale. Jungheinrich's profitability is remarkable considering its lower scale. Moreover, Jungheinrich has more conservative accounting principles, only capitalising R&D expenses of c 0.5% p.a. compared to 1.0% for KION.

Jungheinrich's sound profitability is mainly explained by a superior product mix on the back of a high share of service revenues as well as a focus on premium trucks, while KION and Hyster-Yale are rather focused on lower priced trucks.

Benchmarking profitability (adjusted for capitalised R&D)



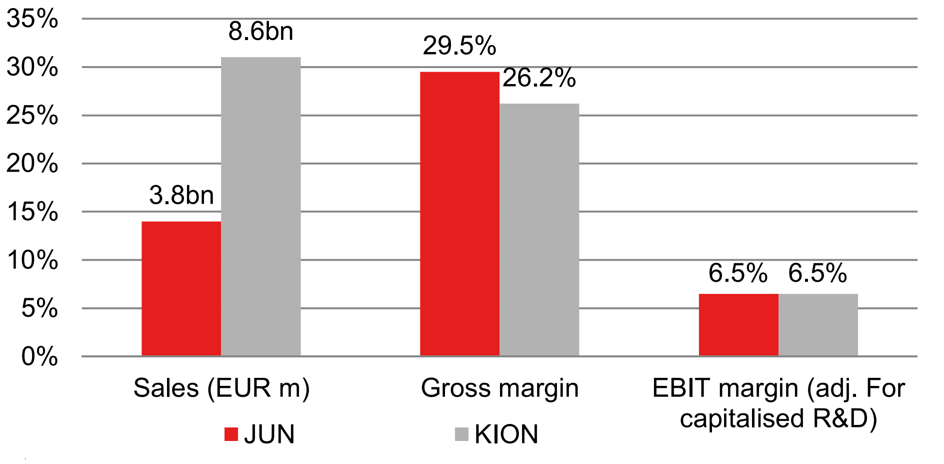
Source: Company data, Warburg Research

Revenue mix should improve again once new business growth normalises

In times of strong revenue growth, typically generated by new business, the product mix includes a greater share of sales of new trucks. This business usually generates lower margins. Following a time lag of c. two years, service contracts start to kick in, which generate higher margins and thus improve the revenue mix. While this explains the margin slowdown since 2014, lower top-line growth from 2019e onwards should result in an improved revenue mix generated by aftermarket contracts, leading to an improving margin profile for Jungheinrich.

In our view, Jungheinrich's superior margins are particularly remarkable given its lower scale compared to KION. With its superior gross margin of c. 30%, Jungheinrich is able to achieve superior EBIT margins despite generating around half the revenue level of KION. Even though gross margins are assumed to merely remain stable, Jungheinrich looks set to achieve even higher margin levels in the medium term on the back of operating leverage with rising scale.

Catch-up potential to KION due to superior gross margin profile

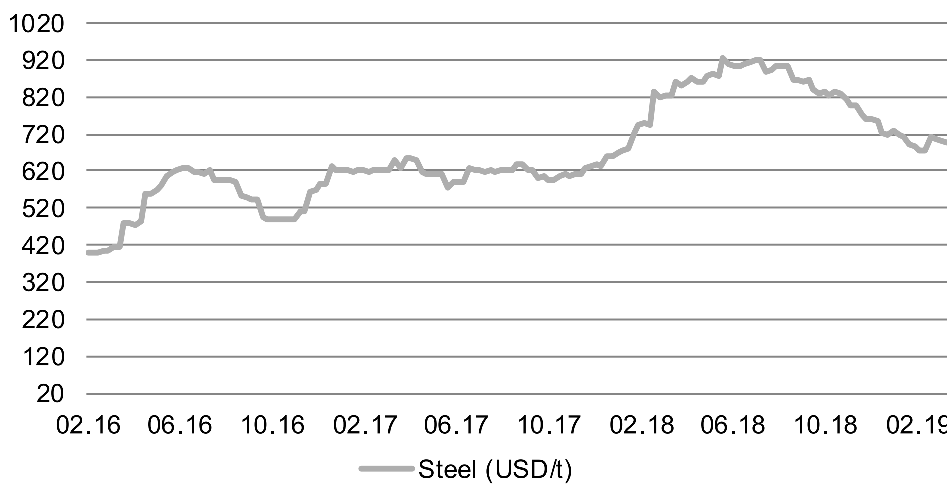


Source: Company data, Warburg Research

Gross margin likely to recover

In 2018, Jungheinrich faced rising input cost pressure, as it is particularly exposed to raw materials. Especially steel should be factor to watch for Jungheinrich, considering that the production of one forklift truck requires one ton of steel. On the positive side, raw material prices look set to normalise after peaking in mid-2018, providing relief for input costs. Hence, we expect Jungheinrich's gross margins to recover in the coming years.

Raw material cost development

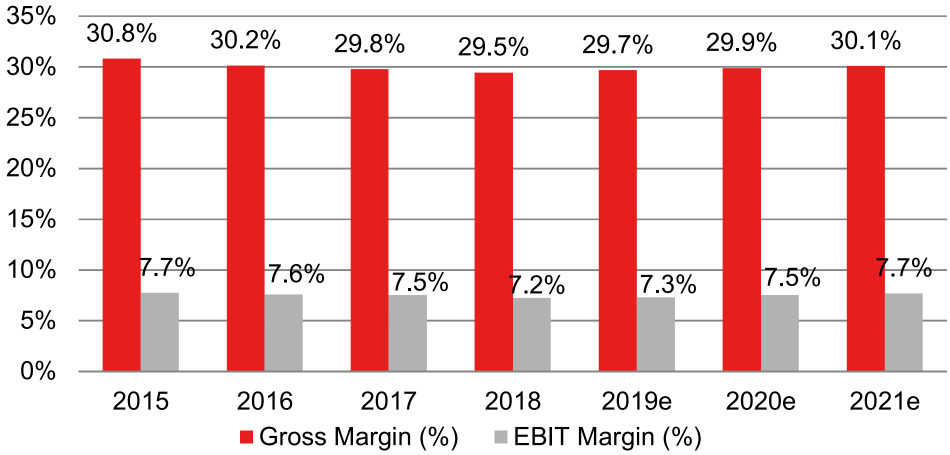


Source: Factset

At the same time the gross margin is also expected to benefit from a rising share of new business that has been brokered together with a financial services contract.

We expect the gross margin to bottom out going forward, leading to a gradual improvement of 0.2pp p.a. to 30.1% in the period 18-21e. Moreover, as explained above, a positive product mix towards high-margin service revenues should support profitability, resulting in an EBIT margin improvement of 0.2pp p.a. to 7.7% 18-21e.

Margins look set to bottom out



Source: Company data, Warburg Research

Valuation

- 9% upside potential based on FCF Value Potential 2020e
- 36.7% upside potential based on DCF (7.5% TY EBIT margin, 2.5% long-term growth rate, 7.1% WACC)
- 7% discount to historical multiples appears unjustified as margins are expected to recover in the coming years
- Premium to peer group appears justified given Jungheinrich's superior profitability despite lower scale driven by a beneficial sales mix towards service revenues

Attractively valued on several valuation metrics

Valuation appears attractive

Jungheinrich appears to be attractively valued, which is underpinned by several valuation metrics. Our FCF Value Potential model, which reflects the company's ability to generate sustainable cash flow in the medium term, yields a fair value of EUR 32.70 per share based on FY 2020e, implying 9% upside to the current share price.

Free Cash Flow Value Potential

Warburg Research's valuation tool "FCF Value Potential" reflects the ability of the company to generate sustainable free cash flows. It is based on the "FCF potential" - a FCF "ex growth" figure - which assumes unchanged working capital and pure maintenance capex. A value indication is derived via the perpetuity of a given year's "FCF potential" with consideration of the weighted costs of capital. The fluctuating value indications over time add a timing element to the DCF model (our preferred valuation tool).

in EUR m	2015	2016	2017	2018	2019e	2020e	2021e
Net Income before minorities	138	154	182	176	192	209	227
+ Depreciation + Amortisation	59	72	78	87	85	89	93
- Net Interest Income	-8	-8	-8	-11	-9	-9	-9
- Maintenance Capex	40	46	52	57	57	58	59
+ Other	0	0	0	0	0	0	0
= Free Cash Flow Potential	**164**	**188**	**216**	**216**	**228**	**248**	**269**
FCF Potential Yield (on market EV)	7.1 %	6.4 %	5.9 %	5.8 %	6.7 %	7.3 %	7.9 %
WACC	6.74 %	6.74 %	6.74 %	6.74 %	6.74 %	6.74 %	6.74 %
= Enterprise Value (EV)	**2,310**	**2,956**	**3,677**	**3,708**	**3,413**	**3,409**	**3,402**
= Fair Enterprise Value	**2,431**	**2,795**	**3,206**	**3,211**	**3,387**	**3,684**	**3,991**
- Net Debt (Cash)	-34	0	13	333	313	301	288
- Pension Liabilities	220	220	220	220	219	232	239
- Other	0	0	0	0	0	0	0
- Market value of minorities	0	0	0	0	0	0	0
+ Market value of investments	185	185	185	185	185	185	185
= Fair Market Capitalisation	**2,430**	**2,760**	**3,158**	**2,843**	**3,040**	**3,336**	**3,649**
Number of shares, average	102	102	102	102	102	102	102
= Fair value per share (EUR)	**23.83**	**27.06**	**30.96**	**27.87**	**29.80**	**32.70**	**35.78**
premium (-) / discount (+) in %					-0.7 %	9.0 %	19.3 %

Sensitivity Fair value per Share (EUR)

		2015	2016	2017	2018	2019e	2020e	2021e
	9.74 %	16.49	18.62	21.28	18.18	19.58	21.58	23.73
	8.74 %	18.37	20.79	23.77	20.67	22.20	24.44	26.83
	7.74 %	20.75	23.52	26.90	23.80	25.51	28.04	30.72
WACC	**6.74 %**	**23.83**	**27.06**	**30.96**	**27.87**	**29.80**	**32.70**	**35.78**
	5.74 %	27.98	31.83	36.43	33.35	35.58	38.99	42.59
	4.74 %	33.88	38.61	44.21	41.15	43.81	47.94	52.28
	3.74 %	42.94	49.02	56.16	53.11	56.42	61.66	67.15

- Net debt excludes leasing liabilities
- Maket value of investments = Securities
- Maintenance CAPEX = 2% of sales

DCF model implies 37% upside

DCF valuation

Our DCF-based valuation underscores Jungheinrich's attractive valuation profile yielding a fair value of EUR 41.00 per share implying 36.7% upside to the current share price.

Our DCF model is based on the following assumptions:

- We forecast a medium-term growth rate of 4.5% 20-29e with long-term growth of 2.5% given the company's sound structural growth prospects. The terminal value accounts for 63.7 % of the total present value.
- The terminal year EBIT margin is set at 7.5% which compares to a margin of 7.4% in 2020e.
- Beta is 1.18x given the cyclicality of the industrial truck business.

DCF model

	Detailed forecast period			Transitional period										Term. Value
Figures in EUR m	2019e	2020e	2021e	2022e	2023e	2024e	2025e	2026e	2027e	2028e	2029e	2030e	2031e	
Sales	3,952	4,150	4,357	4,575	4,804	5,044	5,296	5,561	5,783	6,015	6,195	6,381	6,572	
Sales change	*4.1 %*	*5.0 %*	*5.0 %*	*5.0 %*	*5.0 %*	*5.0 %*	*5.0 %*	*5.0 %*	*4.0 %*	*4.0 %*	*3.0 %*	*3.0 %*	*3.0 %*	*2.5 %*
EBIT	285	308	332	343	360	378	392	412	422	439	446	459	467	
EBIT-margin	*7.2 %*	*7.4 %*	*7.6 %*	*7.5 %*	*7.5 %*	*7.5 %*	*7.4 %*	*7.4 %*	*7.3 %*	*7.3 %*	*7.2 %*	*7.2 %*	*7.1 %*	
Tax rate (EBT)	*29.0 %*	*29.0 %*	*29.0 %*	*29.0 %*	*29.0 %*	*29.0 %*	*29.0 %*	*29.0 %*	*29.0 %*	*29.0 %*	*29.0 %*	*29.0 %*	*29.0 %*	
NOPAT	203	219	236	244	256	269	278	292	300	312	317	326	331	
Depreciation	85	89	93	91	96	101	106	111	116	120	124	128	131	
in % of Sales	*2.1 %*	*2.1 %*	*2.1 %*	*2.0 %*	*2.0 %*	*2.0 %*	*2.0 %*	*2.0 %*	*2.0 %*	*2.0 %*	*2.0 %*	*2.0 %*	*2.0 %*	
Changes in provisions	0	0	0	0	0	0	0	0	0	0	0	0	0	
Change in Liquidity from														
- Working Capital	27	29	31	52	54	57	60	63	53	55	43	44	45	
- Capex	140	145	150	151	154	156	159	156	150	144	136	128	131	
Capex in % of Sales	*3.5 %*	*3.5 %*	*3.4 %*	*3.3 %*	*3.2 %*	*3.1 %*	*3.0 %*	*2.8 %*	*2.6 %*	*2.4 %*	*2.2 %*	*2.0 %*	*2.0 %*	
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	
Free Cash Flow (WACC Model)	120	133	147	132	144	156	166	185	212	233	262	282	286	260
PV of FCF	124	129	133	113	115	116	116	121	130	134	141	142	135	2,892
share of PVs	8.52 %			27.79 %										63.69 %

Model parameter

Derivation of WACC:		Derivation of Beta:	
Debt ratio	19.00 %	Financial Strength	1.00
Cost of debt (after tax)	1.4 %	Liquidity (share)	1.10
Market return	7.00 %	Cyclicality	1.30
Risk free rate	1.50 %	Transparency	1.10
		Others	1.40
WACC	**6.74 %**	**Beta**	**1.18**

Valuation (m)

Present values 2031e	1,649		
Terminal Value	2,892		
Financial liabilities	630		
Pension liabilities	219		
Hybrid capital	0		
Minority interest	0		
Market val. of investments	185		
Liquidity	333	No. of shares (m)	102.0
Equity Value	**4,209**	**Value per share (EUR)**	**41.27**

Sensitivity Value per Share (EUR)

		Terminal Growth						
Beta	WACC	1.75 %	2.00 %	2.25 %	**2.50 %**	2.75 %	3.00 %	3.25 %
1.40	7.7 %	30.13	30.91	31.77	32.71	33.74	34.88	36.15
1.29	7.2 %	33.25	34.24	35.33	36.53	37.87	39.37	41.05
1.24	7.0 %	35.04	36.16	37.39	38.77	40.31	42.03	43.99
1.18	6.7 %	37.01	38.28	39.69	**41.27**	43.05	45.06	47.36
1.12	6.5 %	39.19	40.64	42.26	44.09	46.15	48.52	51.25
1.07	6.2 %	41.61	43.28	45.15	47.28	49.71	52.51	55.78
0.96	5.7 %	47.38	49.63	52.19	55.15	58.61	62.69	67.60

		Delta EBIT-margin						
Beta	WACC	-1.5 pp	-1.0 pp	-0.5 pp	**+0.0 pp**	+0.5 pp	+1.0 pp	+1.5 pp
1.40	7.7 %	22.28	25.76	29.23	32.71	36.18	39.65	43.13
1.29	7.2 %	25.05	28.88	32.71	36.53	40.36	44.19	48.01
1.24	7.0 %	26.67	30.70	34.74	38.77	42.80	46.84	50.87
1.18	6.7 %	28.48	32.74	37.01	**41.27**	45.53	49.80	54.06
1.12	6.5 %	30.51	35.04	39.56	44.09	48.61	53.13	57.66
1.07	6.2 %	32.83	37.64	42.46	47.28	52.10	56.92	61.73
0.96	5.7 %	38.52	44.07	49.61	55.15	60.70	66.24	71.78

Premium to peers appears justified

Relative valuation

Premium reflects higher earnings quality

Compared to peers KION and Hyster-Yale, Jungheinrich is trading at a premium based on PE multiples while EV/sales suggests a discount.

This reflects Jungheinrich's ability to generate superior margins despite a lower magnitude of sales, which is driven by its superior sales mix towards highly profitable service revenues as well as its focus on Europe/premium trucks. Moreover, Jungheinrich's business model is seen to be more resilient to economic slowdowns than its peers, all of which explains why we consider the PE-based premium to peers as justified.

Peer group

Company Prices in local currency	Price	EV / Sales 19e	EV / EBITDA 19e	EV / EBITDA 20e	EV / EBIT 19e	EV / EBIT 20e	P / E 19e	P / E 20e	EPS CAGR (18-21e)
Hyster-Yale	65.38	-	-	-	-	-	16.4	9.9	-
KION Group	53.60	0.9	5.0	4.7	9.6	8.9	11.1	10.5	14.0 %
Average		0.9	5.0	4.7	9.6	8.9	13.8	10.2	14.0 %
Median		0.9	5.0	4.7	9.6	8.9	13.8	10.2	14.0 %
Jungheinrich Pref.	**30.00**	**0.9**	**5.5**	**5.2**	**11.8**	**11.0**	**15.9**	**14.6**	**8.9 %**
Delta to median		-7.1 %	11.7 %	11.2 %	22.7 %	23.4 %	15.7 %	43.9 %	-36.5 %

- PER and EV/EBIT are most meaningful
- Due to high D&A on leased assets, EV/EBITDA is not meaningful

7% discount to historical PE

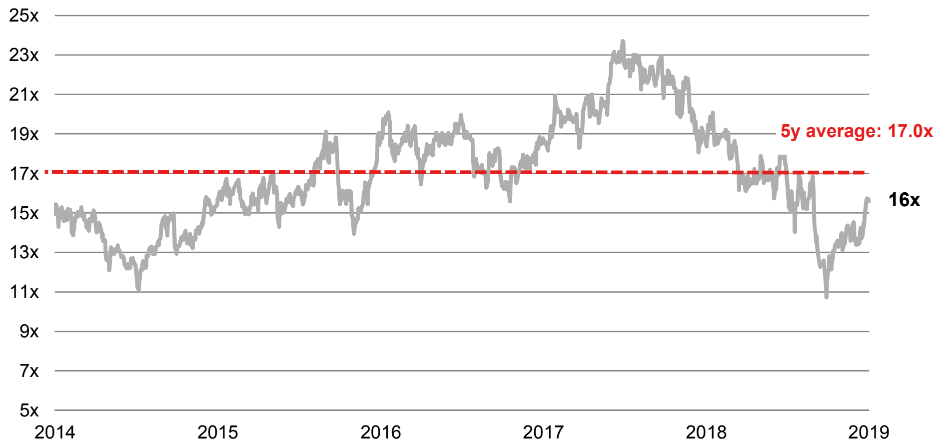
Historical valuation

Discount to historical multiples

Jungheinrich's valuation profile also appears attractive when benchmarking current valuation multiples with the company's historical multiples. Looking at the 5-year chart of Jungheinrich's forward PE multiple, Jungheinrich is trading close to its 5-year low at around 10x PE reached in 2014. However, valuation multiples contracted in the last 12 months from a high of 21x in January 2018 to 16x currently imply a 7% discount to Jungheinrich's 5-year average forward PE.

Against this backdrop, macroeconomic concerns seem to be priced in. In our view, the risk/reward ratio looks attractive, as Jungheinrich's fundamental outlook has not changed substantially and, even during an economic downturn, the company should be well protected by its high aftermarket share, which allows for a relatively high share of recurring revenues over the cycle.

Discount to historical average forward PE ratio



Source: Factset, Warburg Research

Company & Products

Business model

Jungheinrich is a globally leading solutions provider of intralogistics solutions with 16,000 employees in more than 39 countries. With a wide-ranging portfolio of material handling equipment, logistics systems and services, Jungheinrich provides tailored solutions for its customers. In its core market Europe, Jungheinrich generates 87% of its consolidated net sales.

The business model encompasses the development, production and sale of new trucks, the logistics systems and mail-order business, the short-term rental of new and used equipment, the reconditioning and sale of used forklifts, and the maintenance, repair and spare parts operations. Jungheinrich aims to serve its customers for the duration of a product life cycle by offering consulting services, financial services and after-sales services.

Business model

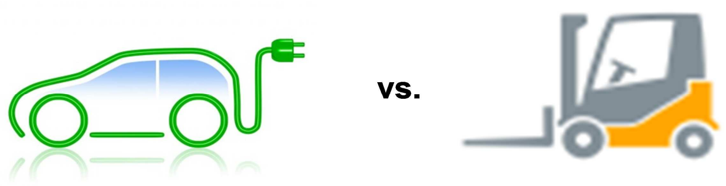
Source: Company data

Jungheinrich develops and produces trucks and provides control systems, software, batteries and charging equipment. The company's approach is to offer unique vertical integration for energy solutions to the intralogistics industry. Since 1953, Jungheinrich has been a pioneer in the field of electro mobility, being one of the leaders and first movers to introduce trucks powered by electricity. Worldwide, there are more than 1 million Jungheinrich electric trucks in use which compares to only 2m electric cars.

Jungheinrich leaving automotive industry behind

worldwide electric cars in use **~2m**

Jungheinrich's electric vehicles in use **~1m**



Source: Company data

Product portfolio

Full intralogistics solution

Jungheinrich's products include all components that intralogistics companies need for full integration and coverage of their procedures. Jungheinrich offers:

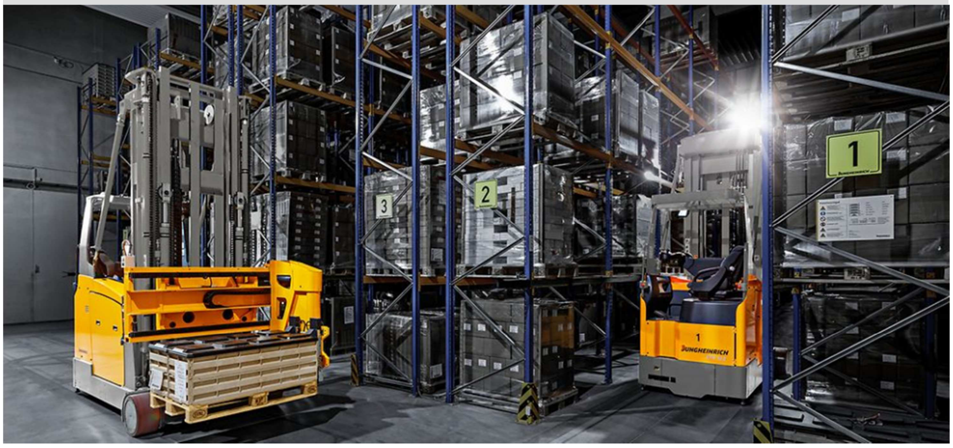
- Trucks – from forklifts and order pickers to reach trucks and pallet trucks – 95% of which are battery-powered
- Warehouse/racking storage systems that enable efficient and optimal storage
- Batteries & charging technology for the trucks to run electronically
- Automated guided vehicles: automatic truck solutions and fully automated transport enabled by Jungheinrich's intelligent automation components
- Fleet management system products that increase the efficiency and safety of intralogistics processes
- Radio data transmission such as WLAN infrastructure, barcode scanners or radio data terminals to enable connectivity
- Software/IT systems such as warehouse management systems (WMS) that allow for intelligent warehouse management

Examples of trucks offered by Jungheinrich

Source: Company data

To provide full intralogistics solutions, Jungheinrich offers whole systems to increase efficiency and productivity, e.g. the automatic high-rack stacker allows for a fully automated warehouse procedure and includes shelves, software and feed-in systems such as conveyor technology. Shelves and stackers, connected by software, operate without direct manual assistance and are controlled remotely e.g. over a warehouse management system (WMS).

Fully automated racking system



Source: Company data

Li-ion technology

The company entered the field of lithium-ion technology in 2011 given that lead ion batteries are more powerful, durable, safe and maintenance-free. Jungheinrich focused on in-house development and the production of intelligent battery management systems. The company was first to introduce a production-ready industrial truck driven by lithium ion in 2011. The major strength of Jungheinrich's lithium-ion trucks is the intelligent teamwork and the seamless communication between all the involved technical components, which is enabled through software solutions.

Li-ion disciplines

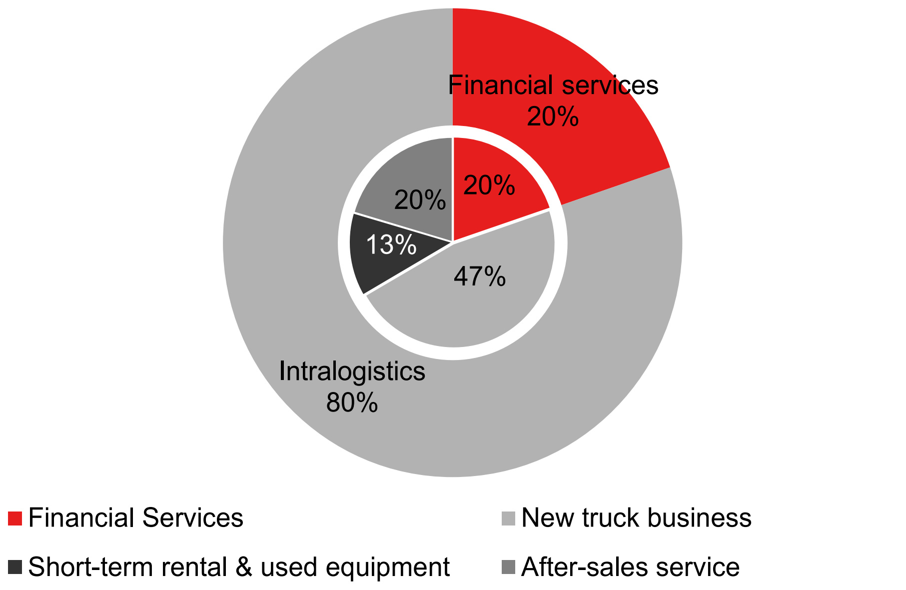
Source: Company data

- 1) Lithium-ion batteries are installed in the vehicles and can be charged at any power outlet via an integrated charging device. Li-ion batteries are maintenance free. Jungheinrich's electronic battery management system (BMS) monitors the li-ion cells at all times.
- 2) Jungheinrich's charging devices have a specific communication interface. This enables the battery to regulate the charging process optimally and the battery's exact charging status can be viewed at any time.
- 3) Almost all Jungheinrich vehicles are available with li-ion batteries, and the vehicle technology is always perfectly matched to li-ion implementation.
- 4) Jungheinrich offers consulting services for concerns regarding li-ion batteries. Especially for customers who switch to li-ion battery and charging technology, consulting services can optimise processes and energy balance.

Divisional revenue split

Jungheinrich reports in two segments, the Intralogistics segment and the Financial Services segment. The Intralogistics segment encompasses the development, production, sale and short-term rental of new material handling equipment and warehousing technology products, including logistics systems as well as short-term rental of used equipment and after-sales services, consisting of maintenance, repair and spare parts. Its Mail Order division is also part of the Intralogistics segment. In 2017, Jungheinrich Digital Solutions AG & Co was established for the development, integration and sale of digital solutions in the areas of material handling equipment, logistics systems and other industrial trucks and machines. Operations started in 2018. To enter the B2B e-commerce market, Jungheinrich established its Mail Order division. It focuses especially on small and medium-sized enterprises that cannot effectively be addressed by Jungheinrich's sales organisations. Logistics systems essentially comprise the combination of all products for the customised planning, projection and implementation of entire warehouses – partially and fully automated forklift trucks and stacker cranes, software, consulting, service and financial services alongside racks.

Sales by segments



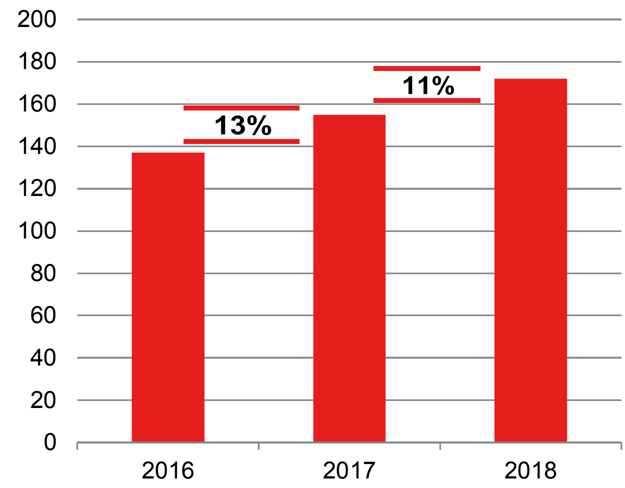
Source: Company data, Warburg Research

Financial services

The segment Financial Services consists of the Europe-wide sales financing and usage transfer of forklift truck and warehousing technology products. This business area supports the operating sales units of the Intralogistics segment and secures long-term customer retention based on contracts. Jungheinrich has more than 150,000 contracts on hand, which represents an increase of 11% yoy. In 2017, 42% of new trucks were sold in combination with financial services agreements.

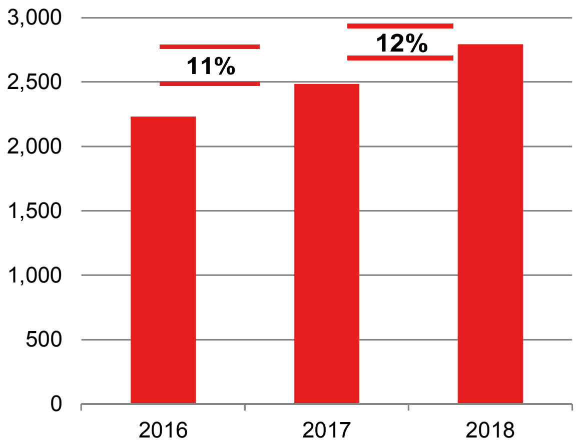
There are two main types of contracts Jungheinrich concludes, namely direct contracts and vendor contracts. A direct contract is classified as a finance lease or an operating lease contract. Jungheinrich mainly concludes finance leases, which account for 75% of all contracts. Finance leases generally have long durations and therefore include service by Jungheinrich, for which the company receives monthly payments. Jungheinrich also offers forfaiting and sale and lease-back contracts. In order to conclude financial contracts, Jungheinrich is in partnerships with 38 banks, including five core banks.

Number of forklifts under contract in thousand units



Source: Company data

Original value of contracts on hand in EUR million



Source: Company data

Jungheinrich operates as a management holding

Corporate structure and shareholder structure

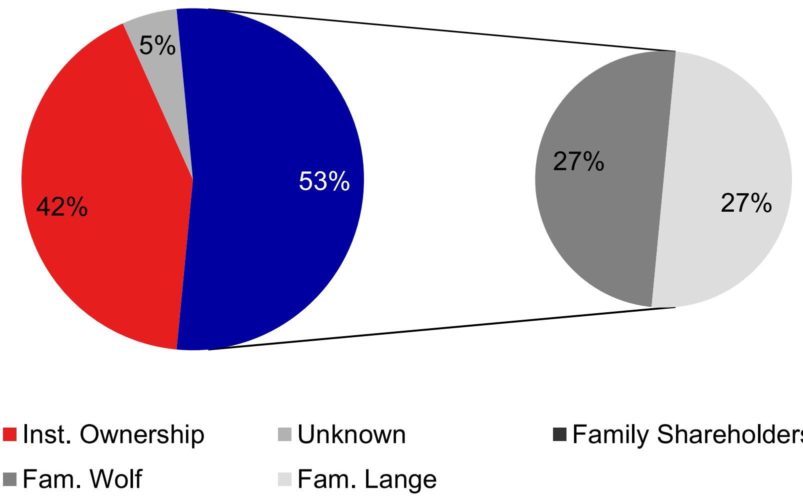
Corporate structure

Jungheinrich AG operates as an active management holding company with centralised operations Distribution (Sales, Customer Service), Engineering, Finance, Service Center and Real Estate on the one hand and the operative units on the other. The company units Distribution Germany, Distribution Export, the Norderstedt/Lüneburg and Spare Parts Logistics Norderstedt are independent companies obliged to report in form of the 'AG & Co. KG' (limited partnership with a stock corporation as general partner). Jungheinrich AG has more than 84 subsidiaries under management.

Shareholder structure

Jungheinrich is a listed stock corporation with the characteristics of a family-owned company. All ordinary shares are held by the founding families Wolf and Lange and account for 53% of total ownership, whereas all preferred shares are traded on the market. The ownership of shares is diversified with no shareholder owning more than 3%, except for DWS Investment GmbH as the biggest institutional shareholder holding 5.38%.

Shareholder structure

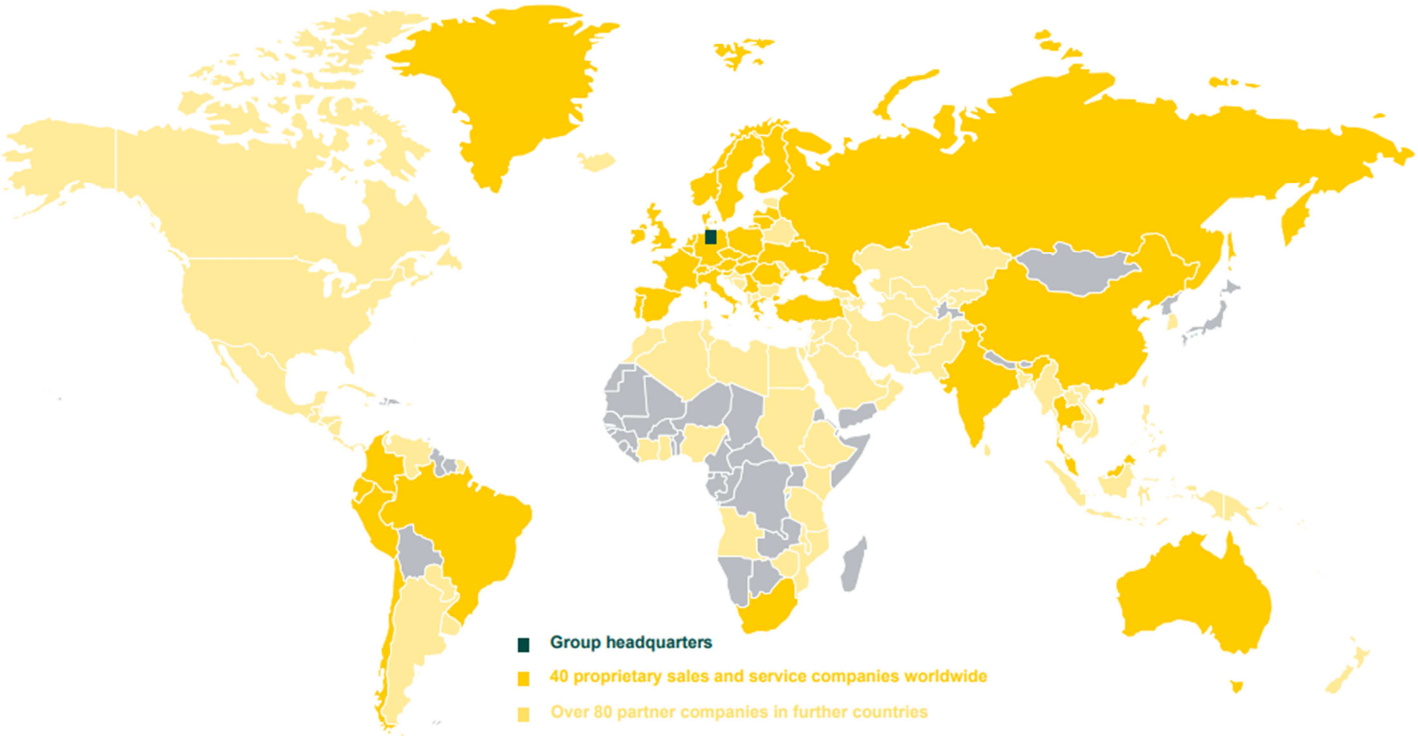


Source: Warburg Research

Global presence

Jungheinrich is headquartered in Hamburg, Germany and has locations in 40 countries. The company has 10 production plants, a global network for original spare parts as well as 5000 service employees worldwide. The company operates in more than 100 countries. Jungheinrich's core business is the European market, where the company is ranked second in the industry. In future, Jungheinrich plans to access the growing markets in APAC, especially the Chinese market. The company has been active in China since 1997 and has set up a direct sales company headquartered in Shanghai with several branch offices in North, East and South China. In 2013, a production facility was established in Qingpu, Shanghai to serve the Asian market. In 2016, a joint venture in cooperation with Anhui Heli Co. Ltd. was established in China for the rental of material handling equipment, forming the biggest rental company for material handling equipment in China. The acquisition of MIAS Group in 2015 was also a strategic move to strengthen Jungheinrich's logistic system business.

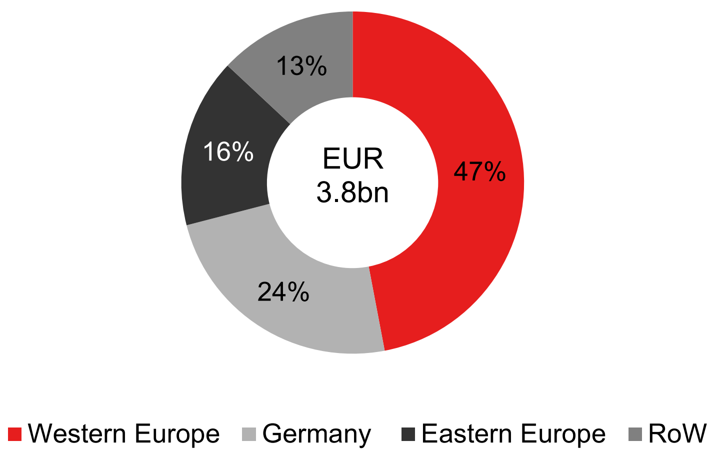
Global presence



Source: Company data

Jungheinrich generates 87% of its sales in Europe, driven by the strong rise in e-commerce, and is consistently improving and enlarging this position. Consequently, the sales split of all other regions has declined, which may seem contrary to Jungheinrich's strategic goal of expanding its operations in China but on the other hand is advantageous, benefits the company by hedging against trade and economic tension that could negatively affect operations in other continents.

Sales by regions



Source: Company data

Management

Hans-Georg Frey (Chief Executive Officer)

Hans-Georg Frey, 62, is Chairman of the Board of Management and has held this position for 11 years. In the course of 2019, he will make way for Dr. Lars Brzoska, currently responsible for Engineering, and will then join the Supervisory Board. At the request of the two shareholder families, Wolf and Lange, Frey will assume the role of chairman. In the past 11 years, with Frey at the head of Jungheinrich, the company grew significantly, especially organically. Frey is also a member of the Supervisory Board of Fielmann AG and a member of the Advisory Board of HOYER GmbH.

Dr. Lars Brzoska (Engineering)

Dr. Lars Brzoska has been with Jungheinrich since 2014 and will become Chairman of the Management Board in the course of 2019. To prepare for this position, he assumed responsibility for the Engineering department at the end of 2018, having previously held the position of Head of Sales. Before joining Jungheinrich, Brzoska held leading positions at Terex Material Handling & Port Solutions AG and DMG Mori AG, two mechanical engineering companies, where he gained broad industry knowledge and experience and a high level of expertise in the engineering sector.

As of 1 January 2020, Sabine Neuß will take over the Engineering department from Lars Brzoska. Sabine Neuß has experience in the automotive sector and currently works for KION as Head of Production.

Christian Erlach

Christian Erlach, who has worked for Jungheinrich since 2007, joined the management in 2018 as Head of Marketing and Sales. Following his role as Managing Director for Jungheinrich Austria, he held various management positions including Vice President of Sales in South-Eastern Europe, South Africa and South America. In January 2019, he initiated a joint venture together with Fricke Group, which will combine Jungheinrich's expertise in vehicle engineering and Fricke's expertise in e-commerce to establish a competitive partner for the distribution of spare parts.

Dr. Volker Hues (Finance)

Volker Hues has managed Jungheinrich's finances since 2009 and has supported the transformation of Jungheinrich from a forklift manufacturer into an intralogistics expert and software provider. At the age of 30, Volker Hues was Chief Financial Officer at Boco International and gained experience in leading positions. His expertise is rounded off by his experience in family-owned businesses.

Klaus-Dieter Rosenbach

Klaus-Dieter Rosenbach joined Jungheinrich 27 years ago. He started his career as the assistant to a Member of the Board of Management and became board member in 2008. Rosenbach was initially responsible for the Engineering department and then became Head of Logistics Systems.

History

- **1953** Jungheinrich & Co Maschinenfabrik is founded and the first battery-powered forklift truck goes into production. The company starts with five employees.
- **1954 to 1968** Jungheinrich enjoys the boom years of the German economic miracle and establishes the first international subsidiaries. The company lays the groundwork towards becoming a global group, and export business becomes the major source of revenue.
- **1969 to 1989** After the death of Friedrich Jungheinrich, the company remains a family business, owned by the shareholder families Wolf & Lange, who still own the majority of shares. Global expansion through international subsidiaries continues and Jungheinrich, which is already recognised as a pioneer in automation systems and driverless transport systems, launches an innovation offensive in the late 1970s.
- **1990-1999** The company is transformed into a public limited company and enters the stock exchange in 1990. In line with the ongoing global expansion, Jungheinrich acquires the Austrian Boss Group, including the long-standing Steinbock company. Jungheinrich is certified with several ISO DIN norms and positions itself as a sustainable and fair enterprise.
- **2000-2010** Jungheinrich expands in the Americas by entering a JV with Mitsubishi. In North America, Jungheinrich forklifts are distributed *by* Mitsubishi Caterpillar Forklift America Inc. To expand the product portfolio Jungheinrich enters the development of competitive combustion engine trucks, while clearly focusing on electronic trucks. The company decides to integrate and continue the one-brand strategy under the Jungheinrich brand for all of its products.
- **2010-present** Jungheinrich is an early mover in terms of digitalisation and Industry 4.0. The company is transforming from a forklift manufacturer to an intralogistics company, offering complete intralogistics solutions. Logistics Solutions becomes a key area for Jungheinrich and is expanded with the acquisition of the Munich-based MIAS Group, a stacker crane expert. A sales target of EUR 4bn is set for 2020.

DCF model

	Detailed forecast period			Transitional period										Term. Value
Figures in EUR m	2019e	2020e	2021e	2022e	2023e	2024e	2025e	2026e	2027e	2028e	2029e	2030e	2031e	
Sales	3,952	4,150	4,357	4,575	4,804	5,044	5,296	5,561	5,783	6,015	6,195	6,381	6,572	
Sales change	*4.1 %*	*5.0 %*	*5.0 %*	*5.0 %*	*5.0 %*	*5.0 %*	*5.0 %*	*5.0 %*	*4.0 %*	*4.0 %*	*3.0 %*	*3.0 %*	*3.0 %*	*2.5 %*
EBIT	285	308	332	343	360	378	392	412	422	439	446	459	467	
EBIT-margin	*7.2 %*	*7.4 %*	*7.6 %*	*7.5 %*	*7.5 %*	*7.5 %*	*7.4 %*	*7.4 %*	*7.3 %*	*7.3 %*	*7.2 %*	*7.2 %*	*7.1 %*	
Tax rate (EBT)	*29.0 %*	*29.0 %*	*29.0 %*	*29.0 %*	*29.0 %*	*29.0 %*	*29.0 %*	*29.0 %*	*29.0 %*	*29.0 %*	*29.0 %*	*29.0 %*	*29.0 %*	
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Changes in provisions	0	0	0	0	0	0	0	0	0	0	0	0	0	
Change in Liquidity from														
- Working Capital	27	29	31	52	54	57	60	63	53	55	43	44	45	
- Capex	140	145	150	151	154	156	159	156	150	144	136	128	131	
Capex in % of Sales	*3.5 %*	*3.5 %*	*3.4 %*	*3.3 %*	*3.2 %*	*3.1 %*	*3.0 %*	*2.8 %*	*2.6 %*	*2.4 %*	*2.2 %*	*2.0 %*	*2.0 %*	
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	
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Sensitivity Value per Share (EUR)

		Terminal Growth						
Beta	WACC	1.75 %	2.00 %	2.25 %	**2.50 %**	2.75 %	3.00 %	3.25 %
1.40	7.7 %	30.13	30.91	31.77	32.71	33.74	34.88	36.15
1.29	7.2 %	33.25	34.24	35.33	36.53	37.87	39.37	41.05
1.24	7.0 %	35.04	36.16	37.39	38.77	40.31	42.03	43.99
1.18	6.7 %	37.01	38.28	39.69	**41.27**	43.05	45.06	47.36
1.12	6.5 %	39.19	40.64	42.26	44.09	46.15	48.52	51.25
1.07	6.2 %	41.61	43.28	45.15	47.28	49.71	52.51	55.78
0.96	5.7 %	47.38	49.63	52.19	55.15	58.61	62.69	67.60

		Delta EBIT-margin						
Beta	WACC	-1.5 pp	-1.0 pp	-0.5 pp	**+0.0 pp**	+0.5 pp	+1.0 pp	+1.5 pp
1.40	7.7 %	22.28	25.76	29.23	32.71	36.18	39.65	43.13
1.29	7.2 %	25.05	28.88	32.71	36.53	40.36	44.19	48.01
1.24	7.0 %	26.67	30.70	34.74	38.77	42.80	46.84	50.87
1.18	6.7 %	28.48	32.74	37.01	**41.27**	45.53	49.80	54.06
1.12	6.5 %	30.51	35.04	39.56	44.09	48.61	53.13	57.66
1.07	6.2 %	32.83	37.64	42.46	47.28	52.10	56.92	61.73
0.96	5.7 %	38.52	44.07	49.61	55.15	60.70	66.24	71.78

- Net Debt excluding leasing liabilities
- Depreciation and Capex without financial service business
- Derivation of Beta: Others reflects trading of solely preference shares

Free Cash Flow Value Potential

Warburg Research's valuation tool "FCF Value Potential" reflects the ability of the company to generate sustainable free cash flows. It is based on the "FCF potential" - a FCF "ex growth" figure - which assumes unchanged working capital and pure maintenance capex. A value indication is derived via the perpetuity of a given year's “FCF potential” with consideration of the weighted costs of capital. The fluctuating value indications over time add a timing element to the DCF model (our preferred valuation tool).

in EUR m	2015	2016	2017	2018	2019e	2020e	2021e
Net Income before minorities	138	154	182	176	192	209	227
+ Depreciation + Amortisation	59	72	78	87	85	89	93
- Net Interest Income	-8	-8	-8	-11	-9	-9	-9
- Maintenance Capex	40	46	52	57	57	58	59
+ Other	0	0	0	0	0	0	0
= Free Cash Flow Potential	**164**	**188**	**216**	**216**	**228**	**248**	**269**
FCF Potential Yield (on market EV)	7.1 %	6.4 %	5.9 %	5.8 %	6.7 %	7.3 %	7.9 %
WACC	6.74 %	6.74 %	6.74 %	6.74 %	6.74 %	6.74 %	6.74 %
= Enterprise Value (EV)	**2,310**	**2,956**	**3,677**	**3,708**	**3,413**	**3,409**	**3,402**
= Fair Enterprise Value	**2,431**	**2,795**	**3,206**	**3,211**	**3,387**	**3,684**	**3,991**
- Net Debt (Cash)	-34	0	13	333	313	301	288
- Pension Liabilities	220	220	220	220	219	232	239
- Other	0	0	0	0	0	0	0
- Market value of minorities	0	0	0	0	0	0	0
+ Market value of investments	185	185	185	185	185	185	185
= Fair Market Capitalisation	**2,430**	**2,760**	**3,158**	**2,843**	**3,040**	**3,336**	**3,649**
Number of shares, average	102	102	102	102	102	102	102
= Fair value per share (EUR)	**23.83**	**27.06**	**30.96**	**27.87**	**29.80**	**32.70**	**35.78**
premium (-) / discount (+) in %					-0.7 %	9.0 %	19.3 %

Sensitivity Fair value per Share (EUR)

		2015	2016	2017	2018	2019e	2020e	2021e
	9.74 %	16.49	18.62	21.28	18.18	19.58	21.58	23.73
	8.74 %	18.37	20.79	23.77	20.67	22.20	24.44	26.83
	7.74 %	20.75	23.52	26.90	23.80	25.51	28.04	30.72
WACC	**6.74 %**	**23.83**	**27.06**	**30.96**	**27.87**	**29.80**	**32.70**	**35.78**
	5.74 %	27.98	31.83	36.43	33.35	35.58	38.99	42.59
	4.74 %	33.88	38.61	44.21	41.15	43.81	47.94	52.28
	3.74 %	42.94	49.02	56.16	53.11	56.42	61.66	67.15

- Net debt excludes leasing liabilities
- Maket value of investments = Securities
- Maintenance CAPEX = 2% of sales

Peer Group

Company Prices in local currency	Price	EV / Sales 19e	EV / EBITDA 19e	EV / EBITDA 20e	EV / EBIT 19e	EV / EBIT 20e	P / E 19e	P / E 20e	EPS CAGR (18-21e)
Hyster-Yale	65.38	-	-	-	-	-	16.4	9.9	-
KION Group	53.60	0.9	5.0	4.7	9.6	8.9	11.1	10.5	14.0 %
Average		0.9	5.0	4.7	9.6	8.9	13.8	10.2	14.0 %
Median		0.9	5.0	4.7	9.6	8.9	13.8	10.2	14.0 %
Jungheinrich Pref.	**30.00**	**0.9**	**5.5**	**5.2**	**11.8**	**11.0**	**15.9**	**14.6**	**8.9 %**
Delta to median		-7.1 %	11.7 %	11.2 %	22.7 %	23.4 %	15.7 %	43.9 %	-36.5 %

- PER and EV/EBIT are most meaningful
- Due to high D&A on leased assets, EV/EBITDA is not meaningful

Valuation

	2015	2016	2017	2018	2019e	2020e	2021e
Price / Book	2.1 x	2.5 x	2.8 x	2.5 x	2.1 x	2.0 x	1.9 x
Book value per share ex intangibles	8.72	9.46	10.71	11.58	12.32	13.19	13.97
EV / Sales	0.8 x	1.0 x	1.1 x	1.0 x	0.9 x	0.8 x	0.8 x
EV / EBITDA	5.3 x	6.0 x	6.8 x	6.2 x	5.5 x	5.2 x	4.9 x
EV / EBIT	10.8 x	12.6 x	14.2 x	13.5 x	11.8 x	11.0 x	10.1 x
EV / EBIT adj.*	10.8 x	12.6 x	14.2 x	13.5 x	11.8 x	11.0 x	10.1 x
P / FCF	46.5 x	67.7 x	n.a.	40.7 x	55.6 x	45.9 x	41.3 x
P / E	15.6 x	17.7 x	18.9 x	19.2 x	15.9 x	14.6 x	13.5 x
P / E adj.*	15.6 x	17.7 x	18.9 x	19.2 x	15.9 x	14.6 x	13.5 x
Dividend Yield	1.9 %	1.6 %	1.5 %	1.6 %	1.9 %	2.1 %	2.3 %
FCF Potential Yield (on market EV)	7.1 %	6.4 %	5.9 %	5.8 %	6.7 %	7.3 %	7.9 %

*Adjustments made for: -

Company Specific Items

	2015	2016	2017	2018	2019e	2020e	2021e
Order intake	2817.0	3220.0	3560.0	3971.0	4129.8	4315.7	4509.9
Order backlog	466.0	601.9	692.0	907.0	1084.8	1251.0	1403.7
Book-to-bill	1.02	1.04	1.04	1.05	1.04	1.04	1.04

Consolidated profit and loss

In EUR m	2015	2016	2017	2018	2019e	2020e	2021e
Sales	**2,754**	**3,085**	**3,435**	**3,796**	**3,952**	**4,150**	**4,357**
Change Sales yoy	10.3 %	12.0 %	11.4 %	10.5 %	4.1 %	5.0 %	5.0 %
COGS	1,903	2,133	2,407	2,678	2,778	2,909	3,046
Gross profit	**851**	**952**	**1,028**	**1,119**	**1,174**	**1,241**	**1,311**
Gross margin	*30.9 %*	*30.9 %*	*29.9 %*	*29.5 %*	*29.7 %*	*29.9 %*	*30.1 %*
Research and development	50	56	68	64	67	71	74
Sales and marketing	517	584	609	678	711	747	784
Administration expenses	77	89	96	104	111	116	122
Other operating expenses	-1	-4	0	3	0	0	0
Other operating income	5	7	3	5	0	0	0
Unfrequent items	0	0	0	0	0	0	0
EBITDA	**432**	**489**	**543**	**595**	**616**	**658**	**701**
Margin	*15.7 %*	*15.9 %*	*15.8 %*	*15.7 %*	*15.6 %*	*15.9 %*	*16.1 %*
Depreciation of fixed assets	219	254	285	320	328	347	366
EBIT	**213**	**235**	**259**	**275**	**288**	**311**	**335**
Margin	*7.7 %*	*7.6 %*	*7.5 %*	*7.2 %*	*7.3 %*	*7.5 %*	*7.7 %*
EBIT adj.	**213**	**235**	**259**	**275**	**288**	**311**	**335**
Interest income	3	0	1	1	1	1	1
Interest expenses	10	8	9	12	10	10	10
Other financial income (loss)	-7	-11	-8	-15	-9	-8	-7
EBT	**198**	**216**	**243**	**250**	**271**	**295**	**320**
Margin	*7.2 %*	*7.0 %*	*7.1 %*	*6.6 %*	*6.9 %*	*7.1 %*	*7.3 %*
Total taxes	61	61	61	74	79	85	93
Net income from continuing operations	**138**	**154**	**182**	**176**	**192**	**209**	**227**
Income from discontinued operations (net of tax)	0	0	0	0	0	0	0
Net income before minorities	**138**	**154**	**182**	**176**	**192**	**209**	**227**
Minority interest	0	0	0	0	0	0	0
Net income	**138**	**154**	**182**	**176**	**192**	**209**	**227**
Margin	*5.0 %*	*5.0 %*	*5.3 %*	*4.6 %*	*4.9 %*	*5.0 %*	*5.2 %*
Number of shares, average	102	102	102	102	102	102	102
EPS	**1.35**	**1.51**	**1.79**	**1.72**	**1.89**	**2.05**	**2.23**
EPS adj.	1.35	1.51	1.79	1.72	1.89	2.05	2.23

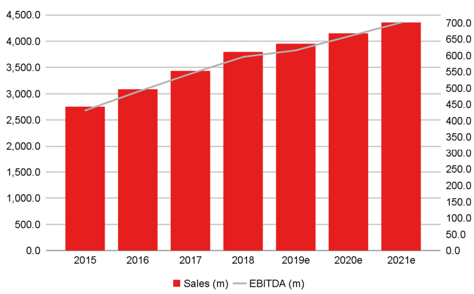
*Adjustments made for:

Guidance: Sales EUR 3.85-4.05bn, EBIT EUR 275-295m

Financial Ratios

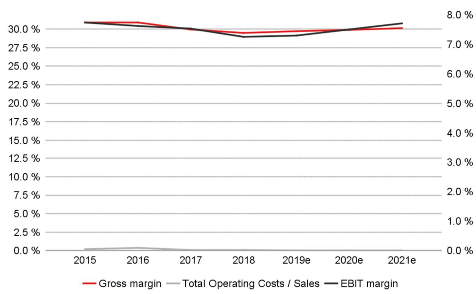
	2015	2016	2017	2018	2019e	2020e	2021e
Total Operating Costs / Sales	0.2 %	0.4 %	0.1 %	0.1 %	0.0 %	0.0 %	0.0 %
Operating Leverage	1.0 x	0.9 x	0.9 x	0.6 x	1.2 x	1.6 x	1.6 x
EBITDA / Interest expenses	42.1 x	60.4 x	61.8 x	49.5 x	61.6 x	65.8 x	70.1 x
Tax rate (EBT)	30.6 %	28.4 %	25.2 %	29.5 %	29.0 %	29.0 %	29.0 %
Dividend Payout Ratio	29.4 %	29.1 %	28.0 %	30.4 %	30.4 %	30.4 %	30.4 %
Sales per Employee	197,242	205,520	211,431	212,362	214,630	218,797	223,046

Sales, EBITDA
in EUR m



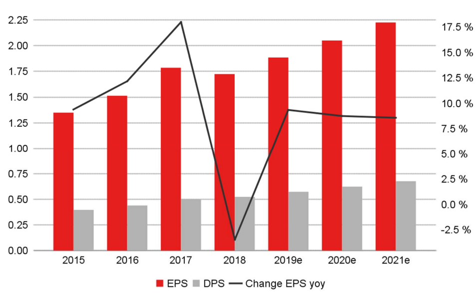
Source: Warburg Research

Operating Performance
in %



Source: Warburg Research

Performance per Share



Source: Warburg Research

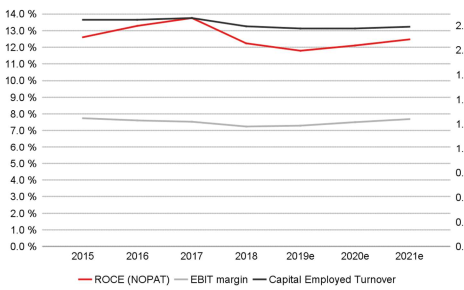
Consolidated balance sheet

In EUR m	2015	2016	2017	2018	2019e	2020e	2021e
Assets							
Goodwill and other intangible assets	136	149	152	181	169	175	180
thereof other intangible assets	136	149	152	181	169	175	180
thereof Goodwill	2	32	35	40	40	40	40
Property, plant and equipment	1,095	1,152	1,275	1,398	1,397	1,375	1,331
Financial assets	11	26	27	36	36	36	36
Other long-term assets	628	690	805	899	976	1,060	1,153
Fixed assets	**1,870**	**2,016**	**2,259**	**2,514**	**2,579**	**2,646**	**2,701**
Inventories	317	396	481	615	619	631	645
Accounts receivable	526	614	668	731	763	789	817
Liquid assets	356	327	443	518	487	483	482
Other short-term assets	280	291	278	368	368	368	368
Current assets	**1,479**	**1,627**	**1,871**	**2,232**	**2,237**	**2,272**	**2,313**
Total Assets	**3,349**	**3,643**	**4,130**	**4,746**	**4,816**	**4,918**	**5,013**
Liabilities and shareholders' equity							
Subscribed capital	102	102	102	102	102	102	102
Capital reserve	78	78	78	78	78	78	78
Retained earnings	885	1,000	1,138	1,266	1,329	1,423	1,509
Other equity components	-39	-66	-74	-84	-84	-84	-84
Shareholders' equity	1,026	1,114	1,244	1,362	1,426	1,520	1,605
Minority interest	0	0	0	0	0	0	0
Total equity	**1,026**	**1,114**	**1,244**	**1,362**	**1,426**	**1,520**	**1,605**
Provisions	431	464	450	451	463	476	490
thereof provisions for pensions and similar obligations	202	223	220	219	225	232	239
Financial liabilities (total)	321	326	456	630	615	600	585
thereof short-term financial liabilities	119	107	155	156	156	156	156
Accounts payable	241	287	367	400	409	419	429
Other liabilities	1,329	1,451	1,612	1,903	1,903	1,903	1,903
Liabilities	**2,323**	**2,529**	**2,885**	**3,384**	**3,390**	**3,398**	**3,408**
Total liabilities and shareholders' equity	**3,349**	**3,643**	**4,130**	**4,746**	**4,816**	**4,918**	**5,013**

Financial Ratios

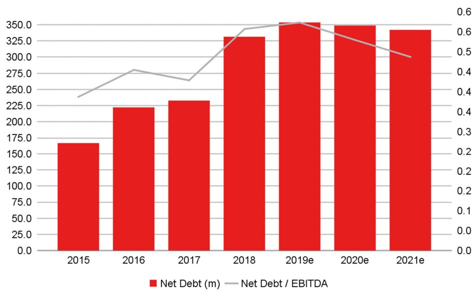
	2015	2016	2017	2018	2019e	2020e	2021e
Efficiency of Capital Employment							
Operating Assets Turnover	1.6 x	1.6 x	1.7 x	1.6 x	1.7 x	1.7 x	1.8 x
Capital Employed Turnover	2.3 x	2.3 x	2.3 x	2.2 x	2.2 x	2.2 x	2.2 x
ROA	7.4 %	7.7 %	8.1 %	7.0 %	7.5 %	7.9 %	8.4 %
Return on Capital							
ROCE (NOPAT)	12.6 %	13.3 %	13.8 %	12.2 %	11.8 %	12.1 %	12.5 %
ROE	14.3 %	14.4 %	15.4 %	13.5 %	13.8 %	14.2 %	14.5 %
Adj. ROE	14.3 %	14.4 %	15.4 %	13.5 %	13.8 %	14.2 %	14.5 %
Balance sheet quality							
Net Debt	167	222	233	331	353	349	342
Net Financial Debt	-34	0	13	113	128	117	103
Net Gearing	16.3 %	20.0 %	18.7 %	24.3 %	24.8 %	22.9 %	21.3 %
Net Fin. Debt / EBITDA	n.a.	n.a.	2.4 %	18.9 %	20.8 %	17.7 %	14.7 %
Book Value / Share	10.1	10.9	12.2	13.4	14.0	14.9	15.7
Book value per share ex intangibles	8.7	9.5	10.7	11.6	12.3	13.2	14.0

ROCE Development



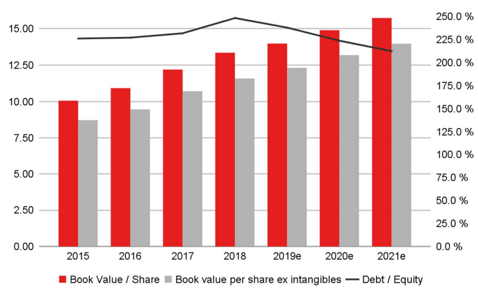
Source: Warburg Research

Net debt
in EUR m



Source: Warburg Research

Book Value per Share
in EUR



Source: Warburg Research

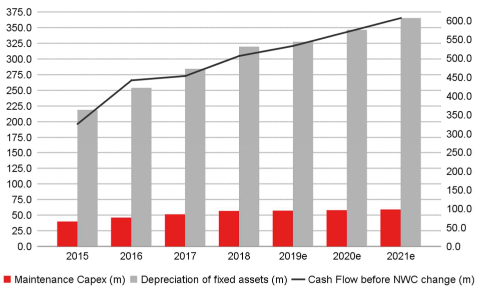
Consolidated cash flow statement

In EUR m	2015	2016	2017	2018	2019e	2020e	2021e
Net income	138	154	182	176	192	209	227
Depreciation of fixed assets	219	254	285	320	328	347	366
Amortisation of goodwill	0	0	0	0	0	0	0
Amortisation of intangible assets	0	0	0	0	0	0	0
Increase/decrease in long-term provisions	-30	33	-14	10	13	13	14
Other non-cash income and expenses	0	0	0	0	0	0	0
Cash Flow before NWC change	**327**	**442**	**453**	**506**	**533**	**569**	**607**
Increase / decrease in inventory	-1	-78	-86	-111	-3	-13	-14
Increase / decrease in accounts receivable	-47	-86	-54	-59	-32	-26	-28
Increase / decrease in accounts payable	41	44	80	29	9	10	11
Increase / decrease in other working capital positions	0	0	0	0	0	0	0
Increase / decrease in working capital (total)	-7	-119	-60	-141	-27	-29	-31
Net cash provided by operating activities [1]	**144**	**142**	**71**	**219**	**195**	**212**	**224**
Investments in intangible assets	0	0	0	0	0	0	0
Investments in property, plant and equipment	98	102	109	136	140	145	150
Payments for acquisitions	0	0	0	0	0	0	0
Financial investments	-90	20	-8	-49	0	0	0
Income from asset disposals	3	2	2	3	0	0	0
Net cash provided by investing activities [2]	**-185**	**-80**	**-115**	**-181**	**-140**	**-145**	**-150**
Change in financial liabilities	-17	-19	145	71	-15	-15	-15
Dividends paid	-34	-39	-44	-50	-50	-55	-60
Purchase of own shares	0	0	0	0	0	0	0
Capital measures	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0
Net cash provided by financing activities [3]	**-51**	**-59**	**101**	**21**	**-65**	**-70**	**-75**
Change in liquid funds [1]+[2]+[3]	**-92**	**4**	**58**	**59**	**-10**	**-4**	**-1**
Effects of exchange-rate changes on cash	0	0	2	1	0	0	0
Cash and cash equivalent at end of period	**202**	**205**	**264**	**313**	**302**	**299**	**298**

Financial Ratios

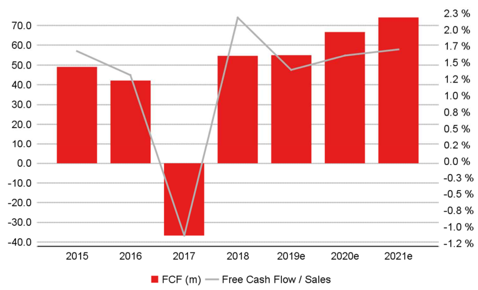
	2015	2016	2017	2018	2019e	2020e	2021e
Cash Flow							
FCF	49	42	-37	55	55	67	74
Free Cash Flow / Sales	1.7 %	1.3 %	-1.1 %	2.2 %	1.4 %	1.6 %	1.7 %
Free Cash Flow Potential	164	188	216	216	228	248	269
Free Cash Flow / Net Profit	33.5 %	26.2 %	-21.3 %	47.2 %	28.6 %	31.9 %	32.6 %
Interest Received / Avg. Cash	0.7 %	0.1 %	0.3 %	0.3 %	0.3 %	0.3 %	0.3 %
Interest Paid / Avg. Debt	3.1 %	2.5 %	2.2 %	2.2 %	1.6 %	1.6 %	1.7 %
Management of Funds							
Investment ratio	3.6 %	3.3 %	3.2 %	3.6 %	3.5 %	3.5 %	3.4 %
Maint. Capex / Sales	1.5 %	1.5 %	1.5 %	1.5 %	1.5 %	1.4 %	1.4 %
Capex / Dep	44.8 %	40.0 %	38.4 %	42.4 %	42.7 %	41.8 %	41.0 %
Avg. Working Capital / Sales	21.4 %	21.5 %	21.9 %	22.8 %	24.3 %	23.8 %	23.4 %
Trade Debtors / Trade Creditors	218.3 %	213.8 %	182.0 %	182.7 %	186.7 %	188.6 %	190.4 %
Inventory Turnover	6.0 x	5.4 x	5.0 x	4.4 x	4.5 x	4.6 x	4.7 x
Receivables collection period (days)	70	73	71	70	71	69	68
Payables payment period (days)	46	49	56	55	54	53	51
Cash conversion cycle (Days)	84	91	88	100	98	96	94

CAPEX and Cash Flow
in EUR m



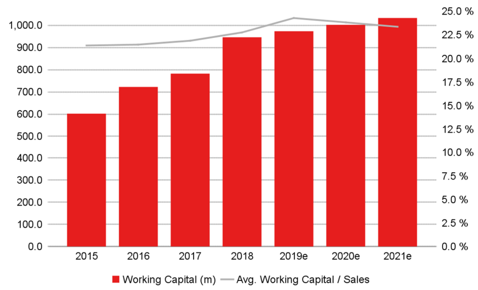
Source: Warburg Research

Free Cash Flow Generation



Source: Warburg Research

Working Capital



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Company	Disclosure	Link to the historical price targets and rating changes (last 12 months)
Jungheinrich Pref.	6	http://www.mmwarburg.com/disclaimer/disclaimer_en/DE0006219934.htm

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-B-	**Buy:**	The price of the analysed financial instrument is expected to rise over the next 12 months.
-H-	**Hold:**	The price of the analysed financial instrument is expected to remain mostly flat over the next 12 months.
-S-	**Sell:**	The price of the analysed financial instrument is expected to fall over the next 12 months.
"-"	**Rating suspended:**	The available information currently does not permit an evaluation of the company.

WARBURG RESEARCH GMBH – ANALYSED RESEARCH UNIVERSE BY RATING

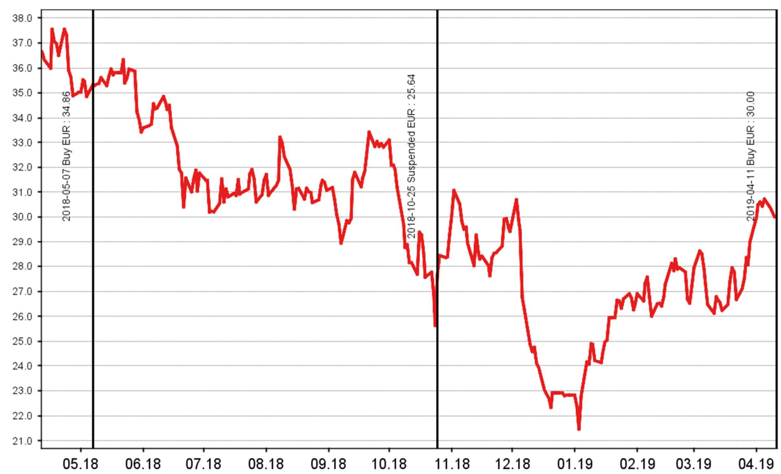
Rating	Number of stocks	% of Universe
Buy	127	64
Hold	58	29
Sell	5	3
Rating suspended	8	4
Total	**198**	**100**

WARBURG RESEARCH GMBH – ANALYSED RESEARCH UNIVERSE BY RATING …

… taking into account only those companies which were provided with major investment services in the last twelve months.

Rating	Number of stocks	% of Universe
Buy	31	79
Hold	6	15
Sell	0	0
Rating suspended	2	5
Total	**39**	**100**

PRICE AND RATING HISTORY JUNGHEINRICH PREF. AS OF 11.04.2019



Markings in the chart show rating changes by Warburg Research GmbH in the last 12 months. Every marking details the date and closing price on the day of the rating change.

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