

Should Precision Manufacturers Specialize or Diversify?

Rewards and Risks Drawn from 10 Years of Data

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Executive Summary

Should precision manufacturers specialize in serving customers in one industry or should they diversify across multiple industries? Which strategy is superior for creating shareholder value? Precision manufacturing strategy rests on choosing the correct path yet little information is available to compare one approach with the other. Manning Advisors extensively studied publicly-traded, supply-chain focused precision manufacturers in the volatile period from 2005 through 2014. After grouping companies into specialized baskets for aerospace, medical devices, electronics, and automotive as well as a basket for diversified companies we compared the baskets to see which group achieved the best performance.

The results show that diversified manufacturers handily outperformed electronics and automotive specialists. While slightly outpaced by medical specialists and sharply beaten by aerospace firms, diversified precision manufacturers delivered returns with far less risk than their higher performing peers.

What are the implications of the findings? Planners may choose to evaluate their strategic direction against a base case of diversification. While specialization can provide exceptional results, it does so with higher risks, risks that have to be tempered as the company looks to build sustained shareholder value.

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Two Questions That Frame the Investigation of Diversification vs. Specialization

Leaders face two core strategic questions when building precision manufacturing companies. The first question is ***“Should the firm concentrate on serving customers in a single, specific industry or should it work with customers across a variety of industries?”*** Variations of this question come up at most annual planning sessions. The second question is ***“Have past decisions to specialize or to diversify built company value?”*** is less considered but as necessary for setting strategy.

It’s not surprising that manufacturers are divided on “specialization vs. diversification” strategies. Most of the available information favoring one approach over the other is anecdotal. There is little information in corporate reporting, the business press, or academia about the benefits of one approach versus the other. With so much at risk, a thorough evaluation of these two strategies is critical to building shareholder value.

The Approach:

Turn to the Stock Markets

Lacking information directly demonstrating the outcomes of specialization and diversification, i.e. “We tried **x** and **y** happened,” the best available method is to use valuation data from the stock markets. Studying publicly-traded companies has the dual virtue of easily accessible SEC data and valuation data grounded in actual transactions. With stock market data as the base, the next task was to select criteria for applying that data.

Three were selected:

Select a timeframe for the study of value that spans at least one economic cycle.

We used the ten year period from 2005 through 2014. This timeframe includes two periods of strong economic growth (2005-2007, 2010-2014) and one sharp downturn (2008-2009).

Relevance to a North American audience

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All companies studied are based in the United States or Canada though all generate revenues from around the globe. Many of the companies manufacture on other continents as well.

Pick the right place in the supply chain

We studied manufacturers with a significant supply chain and/or contract manufacturing business rather than companies solely focused on selling branded product to end-users. For example, we looked at companies like Moog and Triumph Group rather than OEMs like Boeing or Lockheed. Another example was to track the value creation patterns of Greatbatch, a medical component/assembly manufacturer, rather than Medtronic, a medical device company. While many of the companies we examined were not “pure-play” contract manufacturers, all had significant supply chain businesses.

Create Baskets of Companies Following Different Diversification and Specialization Strategies

From the criteria, we created “baskets” of specialized and diversified companies to study. We defined specialized companies as firms with over 50% of their revenues coming from a single industry. Baskets were created for companies specializing in:

- Aerospace
- Medical Devices
- Electronics
- Automotive



A basket of diversified manufacturers was also selected. The diversified manufacturers picked serve a number of end-use markets. No single market represents more than 50% of their revenues in the 10 year period.

For each basket a representative sample of companies that had followed a specialization or diversification approach was selected.

The sample sizes are:

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	Basket	No. of companies in basket
	Diversified	17
	Aerospace	8
	Medical Devices	6
	Electronics	8
	Automotive	6
	For a list of companies used in each basket, please see Appendix A.	
	In addition, the S&P 500 during the same ten year period was tracked as a control.	

Gather Data and Calculate Results

After the baskets were assembled, relevant data was gathered for the companies in the baskets:

Track market value for each company in the basket for the 10 year period

Each company's market value was calculated one business day after the close of its fiscal year for each of the ten years in the study.

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Calculate an index from the market values to determine the percentage rise or fall in each company's value for each year

Market values were indexed and tracked for each company. The indices for all of the companies in each basket were averaged for each of the 10 years. This technique assigned equal weight to each company in the basket. It prevented the market value of a large diversified manufacturer like General Electric from drowning out results of smaller companies.

The other statistical adjustment used was a "trimmed mean", whereby we threw out the highest performing company and the lowest performing company in each basket. This helps to reduce skew due to sharply out of the ordinary results.

Compare how each of the specialized baskets performed against the diversified basket and against the S&P 500

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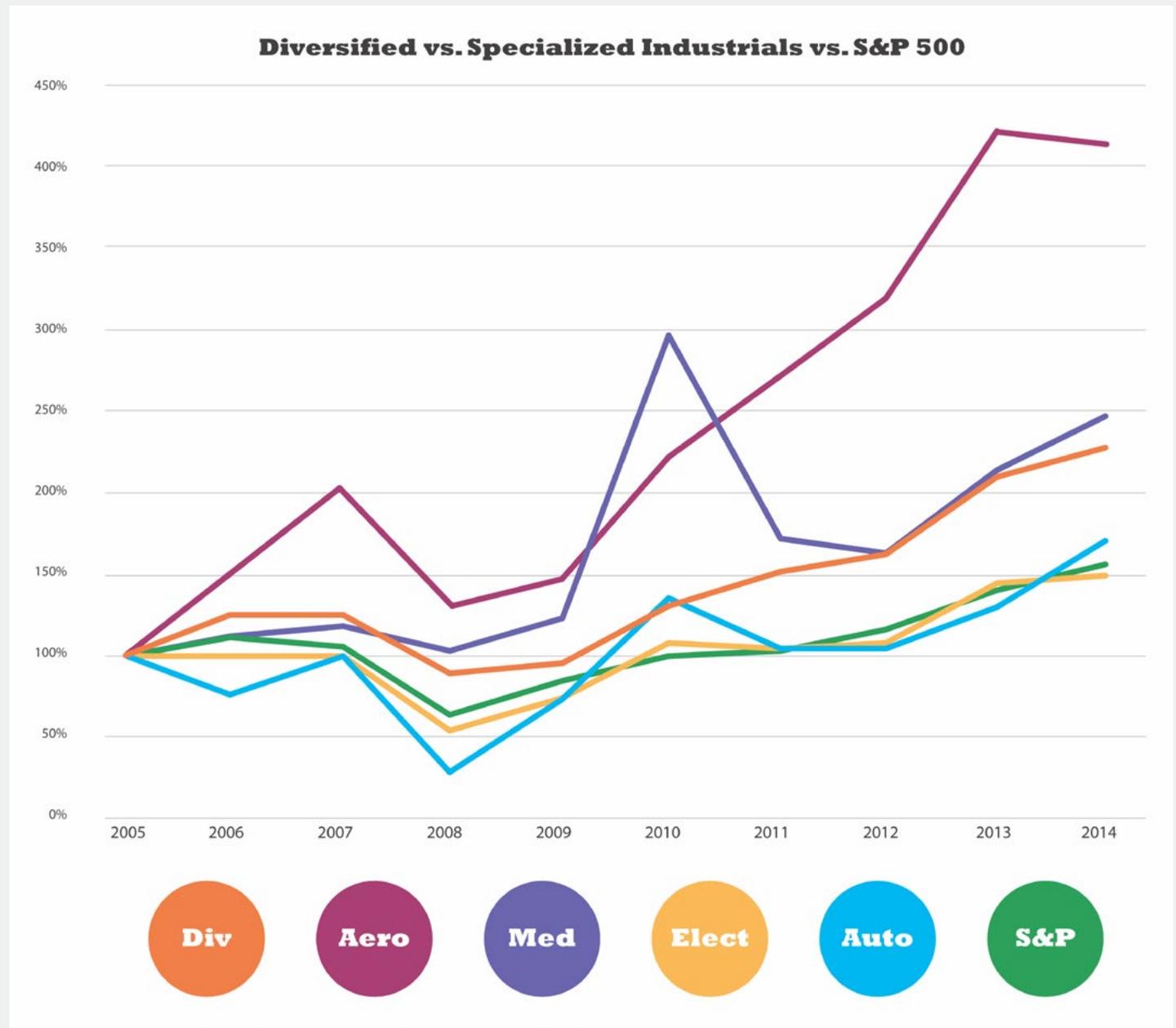
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Index Average Market Value	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Diversified Manufacturers	100	126	127	89	96	131	151	163	210	227
Aerospace Specialists	100	151	204	131	146	223	272	319	421	413
Medical Specialists	100	112	117	103	122	296	174	163	213	248
Electronics Specialists	100	101	102	54	74	107	104	108	144	150
Automotive Specialists	100	77	101	28	74	136	105	103	130	169
S&P500	100	112	108	65	84	100	103	117	139	156

At first glance, the data raised questions with its mixed picture of the effect of specialization. While aerospace companies grew sharply in value why didn't the often-vaunted medical device businesses grow comparably? Further, while automotive suppliers had a challenging decade replete with bankruptcies of their customers (and some companies themselves), why did they outperform electronics, an industry that is growing today and expected to do so in the future?

Analysis – Measuring Risk As Well As Return

The value creation results illustrated on the graph do not provide all the relevant answers to the question of specialization vs. diversification. The issue of risk has to be introduced. Were any of the specialization strategies riskier than others? Does diversification temper risk?

In business, brilliance and luck are often confused. Consider a CEO asked by their board to recommend a value creation strategy but he or she is not be required to balance the strategy against risk. A logical outcome would be to plunk the company's capital expenditure budget on 23 Red at a roulette table in Las Vegas. After all, it pays off at 35-1. It would be a wonderful return on investment if the number hit but the risk is rarely worth the hoped-for result.

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Like return on investment, risk can be measured from the data collected. We elected to concentrate on the variance of the results in each given year. The more the results from year to year “jump around,” the higher the variance and therefore, the higher the risk in building value. Risk can be positive or negative but the bounciness of the results is an indicator of how the markets considered each basket’s risk profile from year to year.

For those familiar with statistical analysis, we calculated the standard deviation of the annual data points around the calculated mean line for each basket. For those not familiar with this statistical technique, a standard deviation approaching zero indicates there is little variance. The larger the standard deviation, the greater the variance in results from year to year. The higher the variance, the greater the risk.

The results of the risk analysis differ notably from the return data:

Except for the 500 companies of the S&P, diversified manufacturers and electronics specialists delivered their returns with the lowest risk while medical and aerospace had the highest risk associated with their returns.

Basket	Standard Deviation	Rank
Diversified	0.23	2 (tie)
Aerospace	0.49	5
Medical	0.73	6
Electronics	0.23	2 (tie)
Automotive	0.41	4
S&P500	0.19	1

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Balancing of Risk and Return – Diversification Works

Common sense tells us that both risk and reward must be weighed in selecting core strategies like diversification and specialization. Expressing the balance between the two mathematically is an undertaking more ambitious than required for this paper. Sticking just with simple observation the data shows that diversified manufacturers generated above average value creation with lower than average risk than any other precision manufacturing basket.

Why the Difference in Results – Reliable Demand?

Besides diversification vs. specialization findings, managers in these business are certain to ask why some baskets saw such exceptional differences in performance. Intuitively it seems that the profitability associated with certain types of manufacture — e.g., medical device margins are higher than automotive components — explains the results. There may be some validity in that view but we think the reliability of future demand plays a larger role in value creation than is generally acknowledged. Let us study each of the baskets.

Aerospace

From 2005-2014 the aerospace supply chain benefited from two demand super cycles. The first, focused on North American aerospace manufacturers, was the prolonged wars in Iraq and Afghanistan. There was, in essence, an extended United States government subsidy flowing to the industry — which has slowed in the last two years.

The second super cycle was more profound. The rise in commercial aircraft sales coupled with the obsolescence of all current jet engines near-guarantees another fifteen-plus years of strong demand for Boeing, Airbus, and for their supply chains. Commercial aircraft are expected to rise from 21,000 in service in today to over 42,000 in 2033.¹ To fly profitably, existing and new aircraft require the next generation of fuel-efficient engines.² Order books are full and will continue to grow, assuming no major market disruptions such as a sharp increase in interest rates, fuel costs, or a notable recession.

Between 2011 and 2014, 853 transactions were completed.³ Many of these transactions were Tier 1 suppliers looking to bulk up their capabilities and market share in their selected areas of specialization.

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Medical Devices

The medical device market also benefits from a long-term demand super cycle as populations age and developing economies become more prosperous. While the attraction for many specialized medical supply chain firms is the higher margins associated with their goods, the medical device industry shares with the aerospace industry a rarely questioned perception by its participants of steady-to-increasing orders from year to year.

During the period of our study medical device supply chain companies grew in value, but not at the pace many in the industry had thought. Two possible reasons stand out. The first is that, coming into 2005, roll-ups were rampant, driving values up sharply. The second reason appears to be uncertainty about changes in medical reimbursement, particularly in the United States. For more information on these topics please see the Manning Advisors report 2015 Trends in Global Medical Device Strategy.⁴

Electronics

Increasingly difficult to grasp as a single industry, the electronics industry is better understood as a group of related industries flying in loose constellation. High flyers in value creation decades ago, many electronics supply chain companies now face stiff competition and commoditization.

Unlike aerospace and medical, electronics companies have not benefited from guaranteed or near-guaranteed demand. Profit margins are under tremendous pressure. Still, some firms have shown healthy profits. It seems to be mainly the uncertainty of demand that plagues this sector.

Automotive

Automotive is the industry least likely to surprise. The years 2005 thought 2014 saw sharp losses for North American supply chain companies. Once again, two reasons stand out. The first is the oppressive margin conditions auto suppliers faced heading into the period. Low gross margins coupled with high legacy costs made value creation an exercise in financial engineering rather than of operational or marketing excellence. Secondly, the 2008-2010 recession saw North American automakers in economic extremis or declaring

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bankruptcy with a follow-on wave of supplier reorganizations.⁵ Bankruptcies, the ultimate reflection of uncertainty in manufacturing, made demand prediction next to impossible. Short of the obsolescence of the automobile it would be difficult to imagine a more challenging environment for survival, let alone for value creation.

Coming out of the recession North American auto suppliers faced a mixed picture. Some were able to shed unproductive operations and reorganize liabilities but were still over-focused on GM, Ford, and Fiat/Chrysler. While these suppliers have strived to work with foreign manufacturers' North American operations, they will never have the same lock on market share (and demand) they once enjoyed.



Diversified Manufacturers

Given the broad range of industries served by diversified manufacturers it is difficult to assign a few simple reasons for their results in the period studied. What stands out is the evenness at which they grew value, both in good times and bad. There are three general observations that can be made about the performance of diversified manufacturers in this period:

- Diversified manufacturers in the 10-year period continued to look for new areas of diversification. They regularly started or acquired business units serving customers they had never served before. From year to year some of these changes were minor but the process was continuing.
- Even in the most challenging economic times, not all groups of customers in all industries performed poorly.
- Risk increased when manufacturers in this group tried to reach customers too far from their core market.

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How Should These Results Be Applied in Strategic Planning?

The results of this study demonstrate that different specialization strategies yielded notably different results in value creation for shareholders. While successful companies which have specialized will likely find the rationale for maintaining their focus, it is important to question diversification and specialization strategies. Manning Advisors argues that diversification should be the base hypothesis to be defended or to be cast aside. We do not mean to say companies must diversify. Rather, it should be recognized that diversification offers benefits that other strategies have difficulty matching. If a superior path can be found through specialization it should be followed. If not, it should be questioned why diversification would not be the preferred path.

Next Round of Questions on These Results

The findings on these pages demonstrate what happened to a sample of precision manufacturers over a ten year period. The whys — detailing why one strategy worked better than another — are only initially addressed. For example, no comparison was made between overall profitability and value growth. Similarly, the study did not examine whether more value was created through organic expansion or acquisition along with the follow-on effects of the financing required. In the coming months Manning Advisors will be looking more deeply into the next set of issues associated with these findings, including:

- Is there a meaningful link between operating income, free cash flow, and/or any other financial metric of value creation for these companies?
- How much did the companies spend on acquisitions vs. organic investment in growth?
- Was it better to be a target or a survivor? Did acquired companies do a better job of building value for their shareholders by allowing themselves to be acquired if compared against the financial results of the companies which acquired them?
- What is the relationship of demand super cycles and value creation?

Please look for our findings in the coming months.

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For More Information

Manning Advisors welcomes your questions and comments on this topic and others relating to corporate strategy and value in the industrial sector. Please contact to Tony Freeman, Managing Director, at tfreeman@manningadvisors.com or directly at 917.868.0772. Additionally, those wishing a copy of the dataset used in this study are invited to contact Mr. Freeman.

¹ Source: Boeing Corporation, Current Market Outlook 2015-2034, page 3.

² Source: Rolls-Royce Civil Aviation, Market Outlook.

³ Source: M&A International Inc., Aerospace and Defense Report, 2014 In Review, page 19.

⁴ Manning Advisors, 2015 Trends in Global Medical Device Strategy.

⁵ In 2009 General Motors and Chrysler Corporation filed for Chapter 11 reorganization. As a result the majority of suppliers in the Automotive basket either went through Chapter 11 proceedings or took other drastic measures for survival.

⁶ All financial data taken from each company's annual reports and 10K filings. Stock price information was taken from CapitalIQ.

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Diversified Manufacturers	Ticker
General Electric	GE
Honeywell International	HON
The Danaher Corporation	DHR
ITW (Illinois Tool Works)	ITW
Ingersoll-Rand	IR
ITT	ITT
Nordson Corporation	NDSN
Roper Industries	ROP
Gorman-Rupp	GRC
Mueller Industries	MLI
Worthington Technologies	WOR
Sparton Corporation	SPA
The Emerson Electric Company	EMR
Parker (Parker Hannifin Corporation)	PH
Curtiss-Wright Corporation	CW

Aerospace/Defense	Ticker
United Technologies	UTX
Moog	MOG-A
Triumph Group	TGI
Raytheon Company	RTN
LMI Aerospace	LMIA
HEICO	HEI
Precision Castparts	PCP
B/E Aerospace	BEAV
Medical	Ticker
Atrion Corporation	ATRI
Merit Medical Systems	MMSI
Greatbatch	GB
STERIS	STE
Symmetry Medical, Symmetry Surgical	SMA, SSRG
Teleflex	TFX

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Teledyne Technologies	TDY
Vishay Intertechnology	VSH
JDS Uniphase Corporation	JDSU
Texas Instruments	TXN
Analog Devices	ADI
Jabil Circuit	JBL
Amphenol Corporation	AMP
Vicor Corporation	VICR
Automotive	Ticker
Meritor	MTOR
American Axle & Manufacturing	AXL
Lear Corporation	LEA
The Dana Holding Corporation	DAN
BorgWarner	BWA
Superior Industries International	SUP
S&P500 Index	^GSP

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