FIRST QUADRANT

Sector Rotation: The New Holy Grail Or The Latest Fad?

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FQ Perspective

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We are often asked for our view on the importance of sector-oriented strategies. We have a simple answer to that:

1. Sectors are important.
2. It is *not* obvious that sectors have grown relatively more important through time.
3. Pure sector strategies are not the most efficient way to capture sector effects.

We don't agree with all that is being said these days about sectors. Perhaps most controversially, we do not think that the evidence is clear that sectors are significantly more important than they have been historically. Consistent with that, we don't think that sectors have become more important than countries. Finally, we don't think sector-only investment strategies are the best way to manage sector risks and opportunities.

Conventional wisdom seems to hold that sectors have become more important – more important than they used to be, and more important than countries. This assumption is most prevalent with regard to those countries included in the European Monetary Union. As some of the attributes that have historically contributed to differences in the performance of these economies and these financial markets have either disappeared or diminished, it does, indeed, make sense that those differences that persist will now be relatively more important. We would expect sectors to have become more important than some factors as a result. It is not obvious that they have become more important than countries, however, as important differences still exist between these countries. Differences in industrial sectors are just one of the attributes that differentiate countries in Europe. There are different tax regimes, different wage and labor regulations, different fiscal policy objectives, differences in human capital, and differences in financial regulation. Country differences still matter.

The academic evidence has, until most recently, generally concluded that country effects dominate sector effects. In fact, in a study of European markets by Rouwenhorst in 1999 even argues this case for European markets, where he finds that countries explain 7% of the cross-sectional variance of equities returns, while sectors only explain 1%.

> "Since 1982, country effects in stock returns have been larger than industry effects in the geographically concentrated and economically integrated countries of Western Europe. This situation continued during the 1993-1998 period despite the convergence of interest rates and the harmonization of fiscal and monetary policies following the Maastricht Treaty."[1]

[1] *Rouwenhorst, Geert K., "European Equity Markets and the EMU," Financial Analysts Journal, May/June 1999, pp. 57-64.*

More recently, two studies[2] have estimated that the importance of sector exposures relative to country exposures has changed. The studies have attributed more importance to sector exposures than to country exposures when measuring their relative influences on individual stock returns. Importantly, even for these studies, the shift in relative importance is a very recent phenomena, observed in the final years of the 1990's. Our own interpretation of the data suggest that while sectors have, indeed, been of increasing importance in the last three years of the 1990's, there is reason to doubt that this is a sustainable condition. First of all, this very recent and very sudden change in the importance of sectors is driven almost entirely by the influence of the technology sector, during a technology sector bubble. Second, short-term variations of this sort, i.e., changes in the relative importance of factors that drive individual stock returns, are not uncommon, and are frequently followed by a return to previously normal conditions. In this case, a return to normal would mean a decline in the importance of sectors relative to their importance as measured in the last three years of the 1990's. We see similar examples in all asset classes. It is questionable, therefore, whether there has been any kind of long-term change.

So How Much *Do* Sectors Matter?

The question about how influential sectors are in determining individual stock returns is interesting because it tells us how large the potential opportunity of sector rotation strategies may be. There is no question that there are opportunities to add value through sector selection or sector rotation type strategies. While opportunity alone is insufficient to inform us of the relative merits of active strategies, comparing the opportunity sets of different active strategies does provide us with a coarse starting point.

To isolate the individual sources of variation, we've calculated the monthly standard deviations of *relative* returns in each of the four sources of return we've defined below. The monthly standard deviation of stock price, for example, is measured by first removing the MSCI market return to strip out the country and currency effects. We then measured the standard deviation of these relative returns in the global (MSCI World) context. This tells us how large the potential opportunity is in managing individual stock exposures while maintaining neutral country and currency weightings.

Country returns are then measured in a hedged context to strip out the currency effect. This measures, therefore, the opportunity that a strategy that is active only on the country decisions, remaining neutral on individual stock and currency exposures. Currency opportunity is measured in a similar fashion, and returns are calculated to reflect the use of currency forward contracts since that's what an active currency strategy would use.

The global sector returns, unfortunately could not be handled in the same way, as the data vendor (Datastream) bundles the country and currency effects in with the sector return in a manner which we couldn't strip out. This means that the returns to sectors include both country and currency effects, and overstate the dispersion of sector returns in the table below. Since the academic debate regards how much return to attribute to sectors versus countries, there's no obvious way to put forth pure country and pure sector effects to start with!

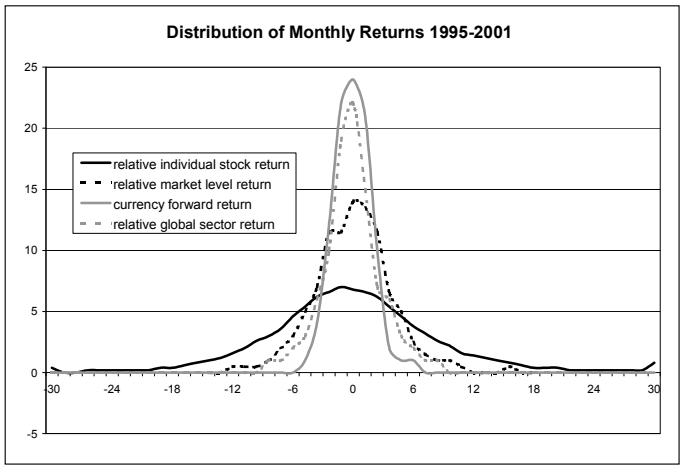
[2] *Sean P. Baca, Brian L. Garbe, and Richard A. Weiss, "The Rise of Sector Effects in Major Equity Markets," Financial Analysts Journal, September/October 2000, pp. 34-40, as well as Stefano Cavaglia, Christopher Brightman, and Michael Aked, "The Increasing Importance of Industry Factors," Financial Analysts Journal, September/October 2000, pp. 41-53.*

Annualized Standard Deviations of Monthly Relative Returns (1995-2000)

Individual Stock Price Return	Hedged MSCI Market Level Price Return	Global Sector Return	Currency Return
34.84	15.14	11.35	2.92

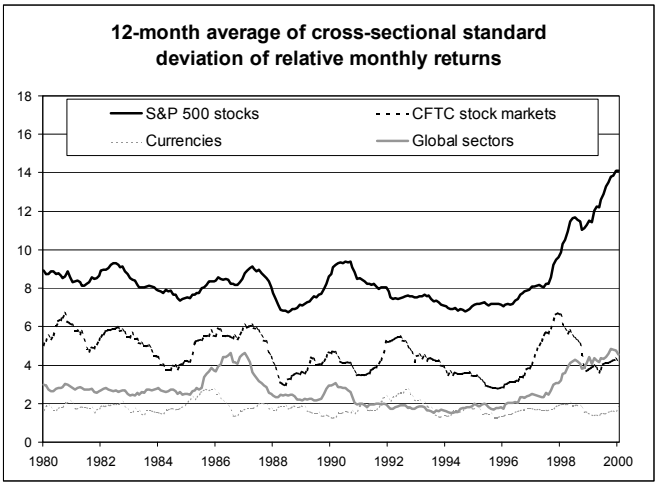
Stock selection, of course, shows the largest standard deviation, with an annualized standard deviation of nearly 35%. The dispersion of returns amongst equity market indices included in MSCI World has less than half the magnitude of standard deviation at over 15% annualized relative return. Our measure of sector dispersion, which we've noted overstates the degree of dispersion attributable to sectors, is just over 11%, while currencies offer an annualized standard deviation of just under 3%.

These measures of standard deviation are somewhat biased to reflect a smaller degree of difference than there actually is. Kurtosis (often referred to as "fat tails") measures the degree to which a distribution is wider than would be the case under the assumption of a normal distribution. Kurtosis is especially present in the individual stock returns, which means that the measure of standard deviation for the individual stock returns understates the true level of dispersion, i.e., there's even more opportunity in stock selection than the measure of standard deviation suggests. The distribution of equity index returns is more normal in shape, while sector returns and currency returns exhibit just the opposite problem, meaning the standard deviations of sector and currency returns overstate their level of dispersion. This can be seen in the plot of the distributions following.



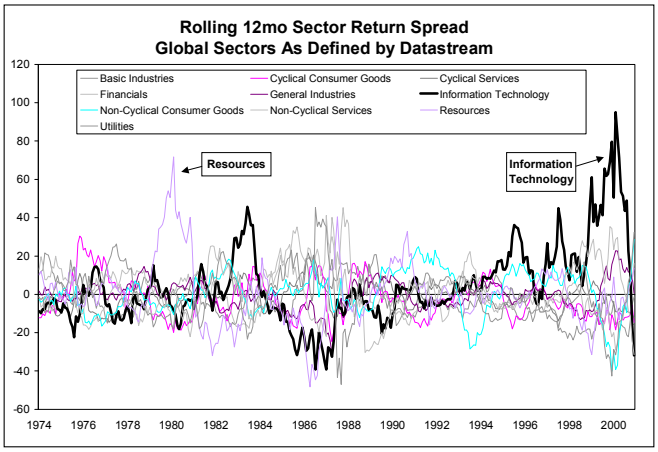
The date range over which these observations were drawn also creates a bias. Both the sector and the individual stock distributions in the chart above reflect levels of dispersion that are much higher than what is normal historically for these returns. We measured these distributions over the recent six-year period so that data from all markets included in MSCI World today would be reflected. If we extend the analysis further back, we begin to loose data for some of the markets, so we limited our investigation to this short period. The downside associated with using this date range is that both sector and individual stock volatility spiked upwards during the TMT (Technology, Media, Telecom) bubble. We don't see any reason to believe that this is a permanent change in volatilities, so we would certainly be skeptical of considering this recent period to be the norm.

Looking to a longer history of dispersion supports this view. As you can see in the chart below, the cross-sectional dispersion of individual stock returns has been higher in the US[3] over the last three years than it has ever been over the last twenty. Similarly, cross-sectional sector return dispersion has been at its peak during the last three years, having only seen similar levels once before in the latter half of the 1980's. Meanwhile, the cross-sectional dispersions of equity market returns and currency returns have been generally quite normal by historical standards.



Note that while in the above chart there is a very recent trend where sectors have become more influential, the trend is not at all statistically significant. Similar short-term trends in the relative importance have been seen before. For example, sector dispersion increased quickly in the mid- to late-1980's, but quickly fell back towards previous, normal levels. If sectors behave in the same way again this time – as we believe they will – this will run counter to the arguments stated recently in the literature claiming that sector returns are becoming much more important than countries.

This recent change in view about their relative importance is driven by one simple fact: the technology sector has been so volatile that it, on its own, largely explains the rising significance of sectors relative to countries. In the following chart, it is clearly apparent that the Information Technology sector has been unusually volatile recently, while the other sectors have shown no significant increase in volatility whatsoever. The case of one sector experiencing unusual volatility for a brief moment in time has precedent. Resources saw a similar short-term spike in volatility at the end of the 1970's and early 1980's.



[3] *We chose to use the S&P 500 rather than a global stock universe in this case. The global stock universe would have a shrinking number of stocks as we go further back in time, biasing the dispersion of stock returns downwards. By using the S&P 500, we always have the same number of stocks in the analysis.*

How Should Sectors Be Managed?

Despite our view that sectors are probably no more important today than they were in previous decades, the evidence does, of course, suggest that sectors matter. We just don't think sectors are the new Holy Grail of global investing. They *can* be a good source of alpha, just as they always have, and just as they will always continue to be. The important question is how one should exploit the opportunity that the dispersion of sector returns presents.

So what is the optimal means of exploiting forecasts of sector returns? We can't trade sectors. We can trade bundles of stocks that are constructed to reflect sector exposures, but we mustn't forget that individual stocks tend to have exposures in more than one sector. General Motors produces automobiles, but its significant OnStar business belongs to the technology sector, the General Motors Acceptance Corp. in the financial services sector. Most stocks have exposures to multiple industries and sectors, so buying baskets of stocks are not, therefore, a pure play on sector effects, and there are significant inherent risks associated with this approach.

It would be preferable to manage these other risks in conjunction with the sector risk for two reasons. First, managing style and stock specific risks present in a stock portfolio should be accounted for if one was to use baskets of stocks to exploit sector return forecasts. If these are ignored, they will pollute the process, eroding the value added captured by the sector forecasts. Second, trading stocks is expensive, so one should seek to have as many sources of alpha attached to any individual stock transaction as possible. If one has to choose between stocks in a sector as part of a sector bet, why not choose between them based upon forecasts as to how their different risk characteristics will perform and thereby add more prospective alpha to the decision? One stock may have more of a growth orientation, which may contribute positively, or negatively to near-term relative performance. Another may have more leverage and be more sensitive to the interest rate environment. Yet another may have more exposure to foreign economies which will affect its relative prospects dependent upon the current state of foreign economies. We'd like to see as much alpha embedded in each (expensive) transaction as possible.

This is the approach that First Quadrant has taken to earning alpha from sector rotation. We've been doing this since 1991 in our own domestic stock selection work, and have been exploiting sector opportunities in our international stock selection work since 1993 when we began managing international equities. It is not, however, always the case that an investor will want to take risks associated with stock selection along with sector rotation. In such a case, the use of index futures may be superior.

Like baskets of individual stocks, futures on national equity indices do not represent a pure sector play. In fact there is more pollution of the sector play at the index level than there is in individual stock baskets, but there's a also a significant advantage associated with futures which helps to offset the disadvantage associated with that pollution: futures are cheap to trade. Transactions costs are the most certain, and possibly the most significant source of "pollution" associated with the attempt to turn forecasts into alpha. One might say there is less "negative alpha" to overcome in trading futures than in trading in cash securities, therefore.

Interestingly, even if and when sectors become more important than countries, futures will remain a more efficient means of capturing sector effects than trading baskets of stocks that are passive within sectors. The academic debate about the relative importance of sectors and countries is a debate about attribution, not about implementation. In a world where all that differentiated countries were differences in sector composition, it would still make more sense to trade country

index futures to exploit sector effects. Why? Until a deep and liquid futures market exists for trading sector indices, it will remain more efficient to rotate sectors by rotating countries that reflect those differences in sector composition than it will be to trade sectors by buying and selling baskets of stocks. One will pay less to pursue alpha, and will capture more net-of-transactions cost alpha as a result. Stock trading only makes more sense when there are enough additional sources of alpha such as views on individual stocks within the sectors that will more than offset the higher transactions costs.

Conclusion

In short, sectors continue to matter, no more or no less than they always have. We advocate managing sectors, not as a separate strategy, but as part of a larger, more diversified set of strategies where sector rotation is just one source of alpha. Strategies that include sector rotation as one of their sources of alpha should have an advantage for a couple of reasons. First, we have found a great deal of success in modeling returns to sectors. Our own domestic sector models suggest an information ratio that is approximately as good as the information ratios associated with individual stock selection and industry selection, and better than style rotation. Second, at the global level, there is only minimal competition in sector rotation. This is important because it means that little of the potential alpha will have been competed or arbitraged away. This makes sector rotation as a source of alpha very attractive.

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