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Do Investors Value Agility?

Peter Benda asks whether significant changes in job postings trends can signal changes subsequent changes in stock price.

Global supply chains were extremely volatile in the "Year of COVID" from early 2020 into 2021. In large part, this was because there was a historical intensity of disruptive factors, which happened to be contemporaneous with the pandemic but not directly related to it.

Agility is essential for companies to thrive during adversity. In this article, we look at whether investors recognize and put a value on one component of agility, which is recruitment. We look at whether significant changes in job postings trends can signal subsequent changes in stock price. We used 2020, the "Year of COVID," with its volatile market conditions, as our laboratory.

Within our limited sample, we found an apparent causal relationship between changes in hiring behavior and subsequent stock price levels, and that big changes in job postings – up or down – appeared to drive higher gains in market value than modest adjustments. Our goal was not to develop a robust model with high statistical confidence or generalizability; nevertheless, we believe our high-level findings are compelling enough to provide a useful touchpoint for those who do build such models.

Scope of effort and definitions

While agility can be defined in terms of many characteristics, and therefore could be modeled quantitatively using a large range of variables, we chose to limit our analysis to job postings only. We believe that focusing on this single factor is appropriate as a first cut because:

- The number of jobs posted explicitly expresses the operational needs or intentions of a company.
- The rate of change in the number of jobs posted

expresses management's urgency and reveals to what extent the workforce is a priority among the operational levers at management's disposal.

- Job postings are relatively easy to acquire from public companies' own websites, while other factors, such as the mix of skills recruited or internal changes in structure, capabilities, or intent, are harder to discern or interpret.

In any case, if our analysis should determine that there is a strong relationship between job postings trends and stock price, that finding alone can be of great interest to some readers.

The input to this analysis is job postings data from the corporate websites of the companies themselves. For purposes of this article, the reader may consider the terms "hiring" and "recruitment" to be synonymous with the posting of jobs.

How do postings relate to the workforce? Growth in the organization's headcount will likely drive a sustained rise in the number of job postings. Conversely, a sustained reduction in postings below the employee turnover rate generally means that the organization is shrinking.

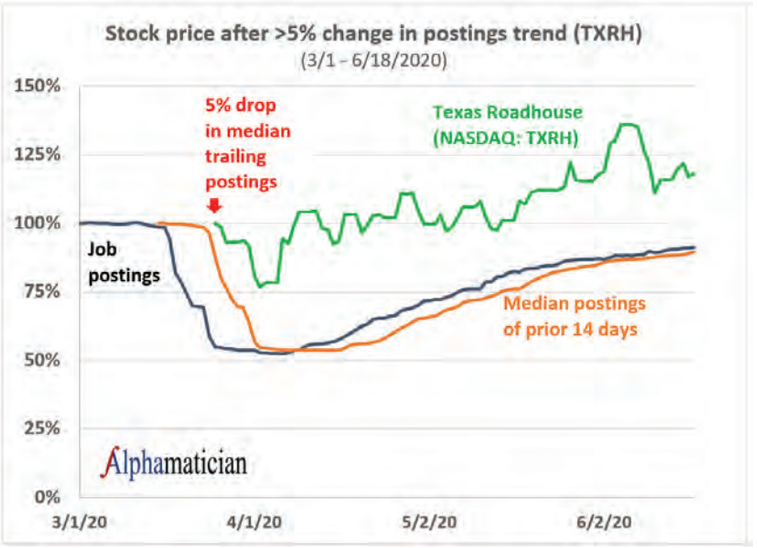
However, a change in the count of job postings does not translate directly into a change in the headcount of the organization:

- Companies may continue to post jobs to grow or to replace employees.
- Posting a job is not the same as filling an open position, and, conversely, many open positions can be represented by a single standard, standing job posting (e.g., "barista").
- Adding contracted labor through procurement may offset recruitment via job postings.

We define "agility" as an organization's ability to respond structurally (i.e., by changing capacity or capability) to changes in its environment over very short time periods (days or weeks). While we won't explore how well job postings serve as a proxy for "agility," we will assert that job postings are an indicator of two different "flavors" of agility:

1. The ability to scale capacity up and down to meet volatile "incumbent" demand.
2. The ability to shed, transform, or create capabilities or business models to exploit changes in the market.

Figure 1: Relationship of stock price with changes in trailing median job postings levels. Source: Alphamatician



Either flavor should enhance business performance. Adjusting the size of the organization to match demand matches costs to revenues and should maximize margins. Restructuring capabilities should allow the company to shed less profitable business models for more profitable ones. Both behaviors may give a company an operating advantage over competitors who are not responding as fast or who have not adapted their business models.

Note that increased hiring in a depressed market (which many companies experienced in 2020) may indicate the second flavor of agility, the ability to transform: a company may increase hiring to roll out a new capability even when, or because, "incumbent" demand has dried up.

Background: 2020–21 was a period of unprecedented volatility

While our original focus was to study how companies responded to supply chain disruptions, this article focuses on the link between hiring, in particular, and stock price. The "Year of COVID" serves as a laboratory for evaluating these relationships because there was so much volatility, from so many causes, that affected companies in diverse ways: disrupted flow downstream and upstream in their supply chains, labor shortages, abrupt drops in customer demand, and tightening of operating constraints (e.g., requirements for work-from-home and safety practices).

Global supply chains, in particular, incurred a dizzying array of disruptions and misalignments between supply and demand. By the end of the calendar year 2020 and going into 2021, important industrial commodities – both products and services – experienced unprecedented price surges and/or shortages. In the US, these included labor markets, steel, lumber, PVC, truckload transportation, and fuel. This year, Starbucks has been in the news for running out of ingredients due to workforce constraints at distribution centers and sourcing shortages.

There were many causes for these disruptions. At the microeconomic level, some were directly or indirectly tied to COVID-19, but some were not. These are some examples:

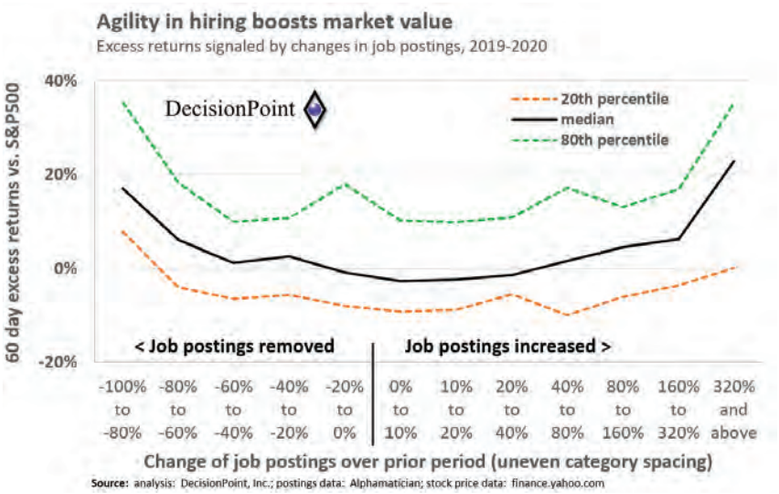
- Mismatched supply to forecast demand due to dramatic changes in consumer purchasing behavior.
- Storm-related capacity reduction and demand volatility, including plant outages from 2020 hurricanes and supply and demand disruptions resulting from the Texas ice storm.
- Unexpected delays in completions of maintenance/ repair closures of critical plant capacity.
- Blockages of shipping lanes and ports (including the backup of the Suez Canal and the backups at the ports of Long Beach and Los Angeles).
- Disrupted operations due to cyber hacking.

As noted earlier, the "Year of COVID" included many unrelated disruptions. None of these factors were 'never-again' events. For one thing, several of the factors above can be linked to climate change. The pandemic itself is arguably a climate change phenomenon, and some of the disruptions were, in fact, climate events. We can anticipate "Year of COVID" disruptions – whether pandemic, climatic, or otherwise – to repeat themselves, perhaps with increasing frequency. So, there is much to learn from this interesting year.

Table 1: Profile of companies included in the analysis

Sectors	Industries	Number of companies	Market Cap, $B (USD)
Basic Materials		4	$ 313
	Copper	1	$ 13
	Gold	1	$ 46
	Other Industrial Metals & Mining	1	$ 246
	Specialty Chemicals	1	$ 7
Communication Services		5	$ 1,187
	Entertainment	4	$ 990
	Telecom Services	1	$ 196
Consumer Cyclical		29	$ 1,981
	Apparel Manufacturing	1	$ 30
	Auto Manufacturers	4	$ 886
	Auto Parts	2	$ 34
	Footwear & Accessories	2	$ 339
	Home Improvement Retail	2	$ 488
	Leisure	3	$ 21
	Lodging	2	$ 80
	Residential Construction	3	$ 53
	Restaurants	9	$ 40
	Specialty Retail	1	$ 10
Consumer Defensive		2	$ 13
	Education & Training Services	2	$ 13
Financial Services		7	$ 2,004
	Banks—Diversified	3	$ 966
	Credit Services	4	$ 1,038
Healthcare		5	$ 1,000
	Biotechnology	2	$ 177
	Drug Manufacturers—General	3	$ 824
Industrials		13	$ 890
	Aerospace & Defense	3	$ 358
	Farm & Heavy Construction Machinery	2	$ 231
	Integrated Freight & Logistic	1	$ 168
	Integrated Freight & Logistics	1	$ 71
	Staffing & Employment Services	4	$ 28
	Trucking	2	$ 33
Real Estate		3	$ 253
	REIT—Specialty	3	$ 253
Technology		12	$ 4,055
	Consumer Electronics	2	$ 568
	Information Technology Services	1	$ 125
	Semiconductors	1	$ 218
	Software—Application	7	$ 869
	Software—Infrastructure	1	$ 2,274
Total		80	$ 11,696

Figure 2: Relationship between stock excess returns versus hiring adjustments 60 days prior



Approach

As noted earlier, job postings can indicate a company's intent for operating in the current or expected business environment:

- When companies cut hiring, this may be a response to market conditions such as reduced demand. Cutting employment cuts costs.
- When companies increase hiring, it may be because they need more capacity for anticipated growing demand, or they are building new capabilities.

In any case, both cuts and gains in hiring can be good for earnings relative to sales. In turn, this can drive stock price. In Figure 1, we see an example of how a rise in stock prices followed a change in the trend in job postings after a number of weeks.

We analyzed job postings data for approximately 80 large publicly traded companies. The jobs posting data spanned varying durations of several months throughout 2019 and 2020, mostly in the early COVID-19 period of Q2 2020 to Q3 2020.

The companies sampled in this study represent diverse industries, all of which experienced supply chain disruptions due to COVID-19.

Of the 80 companies included in this analysis, all are traded on US exchanges (NYSE, Nasdaq), with eight headquartered outside the US (Australia, France, Germany (3), Japan, Korea, Switzerland). They span all major sectors except for utilities and energy. We have employed the sector and industry categories in use at finance.yahoo.com. Only one company had both market cap and annual revenues under US$1B. All others had achieved revenues and/or market cap above US$1B in a recent evaluation. Table 1 summarizes the companies.

For the purposes of this study, we quantified the change of median job postings from one time period to another. We recorded signals when the percent change in the number of job postings met certain thresholds (e.g., "postings reduced by 20 percent to 40 percent"). We tracked the subsequent change in stock price to determine the relationship, if any, between the signal and the stock price. To net out systematic risk, we divided the change in the S&P 500 index into the change in individual stock price during that period. Using the S&P 500 as a benchmark was a simplified approach for calculating excess returns, or alpha, related to the signal.

For example, if Company A had a median of 100 postings for the last two weeks of March and then a median of 150 job postings for the last two weeks of April, we would record a 50 percent increase in postings at the end of April. Company A's trend signal would have been recorded as being in the "40 percent to 80 percent" category. We would calculate the 60-day excess returns by taking the ratio of the stock price at the end of June to the stock price at the end of April and dividing out the gain of the S&P 500 index to account for systematic changes. Finally, we aggregated the excess returns by category of signal threshold

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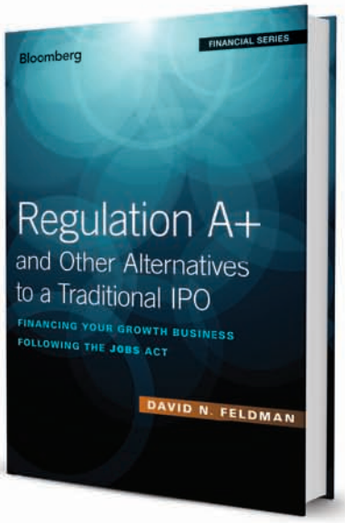

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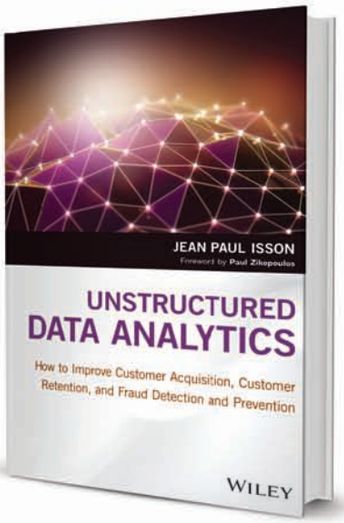

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("40 percent to 80 percent") to plot changes in stock price relative to changes in job postings.

Results

Figure 2 shows the median change in excess returns (solid black line), as well as the 20th and 80th percentile ranges (dotted lines). The percentile curves show the spread of performance of the stocks through the range of adjustments to their hiring.

These results are exciting, in terms of supporting our thesis that agility is a driver of value. Our goal was to assess whether investors recognize and put a value on agility, and we believe that this data suggests that they did, at least for this group of companies and for this period of evaluation (2020 to early 2021).

As a result of complete supply and/or demand upheaval during the early months of the pandemic, many companies completely terminated hiring for a period, and job postings dropped by as much as 100 percent. In some cases, the change-over occurred abruptly (within days). Subsequently, companies restarted hiring, sometimes ramping up nearly as abruptly. In one case, a company increased hiring from five postings to over 1,400 in one month.

The data suggests that a moderate cut in postings (15–25 percent) was a potential signal to boost investor confidence in the company's actual performance, or perceived competitiveness. However, the real story is that bold responses attracted more confidence: those companies which either cut postings dramatically (60 percent or more) or significantly ramped up jobs (by 300 percent or more) from an earlier baseline generally attracted more investor confidence, presumably because it translated into better performance or perceived competitiveness.

Some of these companies will show up in more than one category: if they cut postings by 100 percent, the same companies could generate multiple signals; they could generate signals at successive posting-reduction (or increasing) thresholds (0 percent to –20 percent, –20 percent to –40 percent, etc.). Further, if they cut postings and subsequently added postings, they could generate signals both in reduced-postings and increased-postings categories.

Conclusions

Our analysis of company and investor behavior in the 2020–21 time period suggests several insights:

- Investors recognized and rewarded a company's agility, as measured by hiring behavior.
- The value of agility works both ways: both cutting and adding jobs attracted investor confidence above market levels.
- Robust response was better than minor tweaks: the magnitude of excess stock returns related to the magnitude of cuts or gains. Higher cuts and higher gains were related to higher excess returns than smaller cuts/gains.
- Agility was characterized by fast action, over days or weeks.
- Impact on stock price was characterized by months. Not surprisingly, stock prices were frequently volatile at the same time that companies cut job postings.

Using hiring data to predict stocks is not a new topic, and there are studies that validate the use of jobs data to find alpha in investments. What may be new here is the indication that aggressive changes are rewarded, and are rewarded substantially. On the other hand, modest changes, under some threshold, may not stimulate or signal any competitive advantages.

We believe a key takeaway for business leaders is that incremental changes are not as valuable as bold changes in times of crisis. What defines "bold" and "crisis" is up for discussion, but this is a reminder that timely and deliberate action in managing the workforce up or down, or into new models is essential when the environment is changing.

The study raises a lot of questions, and we would like to close by suggesting how financial analysts could improve and extend on the results of this study:

- Do your own validation; our selection of companies, time period, and model design may have generated nongeneralizable results.
- Develop and test a multifactor model for agility.
    - For example, factor in the change in the mix of skills being recruited.
    - Define sub-models for types of agility; for example, in this article, we posited that agility shows up in at least two ways: (1) the scaling of capacity for 'incumbent' demand, and (2) the transformation of the capability to exploit new opportunities.
    - Account for factors that might look like agility but aren't, such as government protections or just lucky circumstances.
- Expand the scope of the model for generalizability:
    - Increase the universe of companies and industries.
    - Increase the time frame to include 'normal' economic conditions, not just 2020.
    - Apply statistical modeling to assess confidence and get better insight into likely causal relationships.
- Apply the model to understand situational applicability
    - Test model under differing market conditions (e.g., expansion versus contraction).
    - Assess the weighting of factors by role in the supply chain or by type of business model. Agility in consumer-focused industries will have more to do with product innovation, customer relationships, and distribution, whereas extraction industries may focus more on the flexible deployment of capital.

Disclaimer

As noted above, this analysis was limited to a narrow sample of unscientifically selected companies over a uniquely volatile period of time. We are not recommending our targeted methodology as a method of investment management, nor asserting that we expect it can generate returns (or prevent losses).

Sources

Alphamatician has provided the job postings data, which has been pulled from the careers pages of corporate websites. Stock price and sector/industry categorization data is from finance.yahoo.com.

About the Author

Peter Benda is a management consultant who helps organizations become more resilient by improving performance, optimizing strategy for upside and downside risks, and commercializing value. He has consulted extensively in mining, financial services, and heavy industry and has led high-tech startups, including investment data services, 'green' materials development, and logistics. He is President of DecisionPoint, Inc., based in Glen Allen, Virginia.

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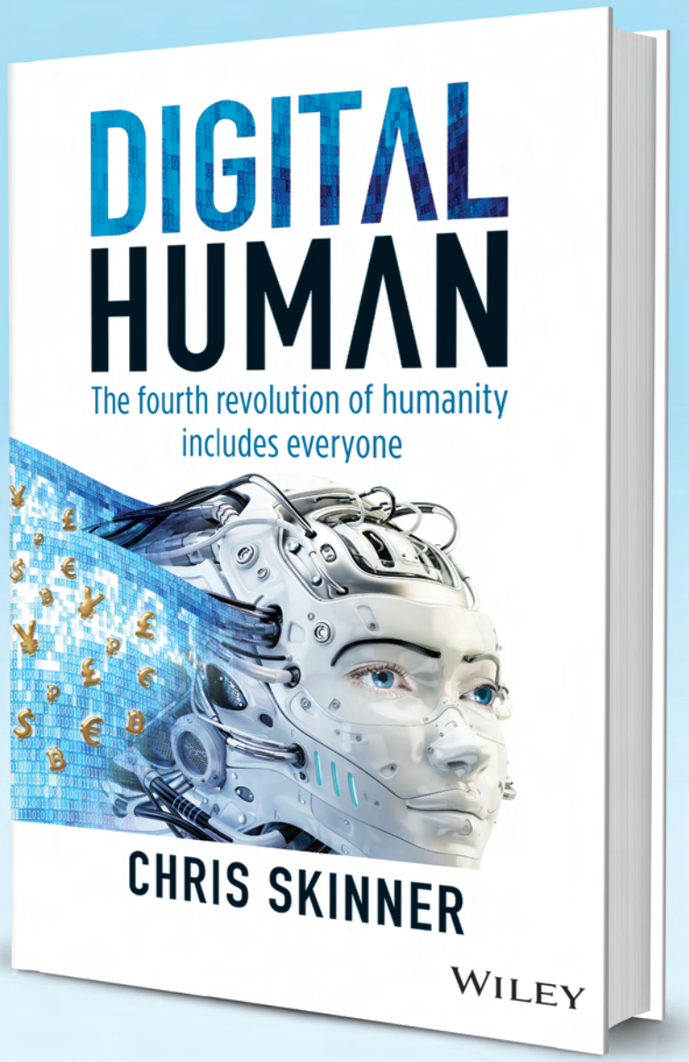

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