

Help-wanted Index

Benjamin Amoah

The Labour Force Survey (LFS) has, since its inception in 1945, divided the working-age population into three mutually exclusive classifications: employed, unemployed and not in the labour force, according to international standard definitions. From the survey, two well-known labour market indicators—the employment rate and the unemployment rate—are derived and published monthly. What is not available from the LFS is some measure of unmet labour demand—vacant positions that employers would like to fill. One monthly indicator of this is provided by the Help-wanted Index (HWI) (see *Data sources and limitations*).

Since changes in the unmet demand for labour affect hirings, and because changes in hiring affect employment and unemployment levels and rates, the relationships between the HWI and employment and unemployment rates have remained a subject of interest for labour market researchers.

Despite the interest, relatively little has been written about the relationship between the index and these two labour market indicators. Two studies on the subject reached different conclusions (VanBlarcom, 1985; Hagggar-Guénette, 1989). The former did not find any association between them, while the latter did.

This article re-examines the association between the HWI and employment and unemployment rates over a later period, 1981 to 1999. Since hirings are the connecting link in the associations, the relationship between the HWI and hirings is also studied. The goal is to determine the extent to which changes in the HWI lead changes in those labour market variables that have a clear functional relationship with changes in employers' intention to hire.

This study uses three criteria to assess the performance of the index. First, it looks for consistency in the manner in which the index tracks or relates to hirings,

Benjamin Amoah is with the Service Industries Division. He can be reached at (613) 951-0178 or amoaben@statcan.ca.

employment rates and unemployment rates, three variables that are used to analyze trends in the labour market. Second, it determines the strengths of these relationships, if any. Since the conceptual link between the HWI and hirings is direct, the strongest relationship is expected to exist between these variables. The association with the employment rate may not be as strong, owing to the effect of separations, and that with the unemployment rate will probably be weakest, because the connection is less direct. Finally, the study assesses the lead/lag times between the index and the benchmark variables. The index is expected to be a lead indicator of labour market conditions; that is, changes in the index are expected to signal future changes in the other variables.

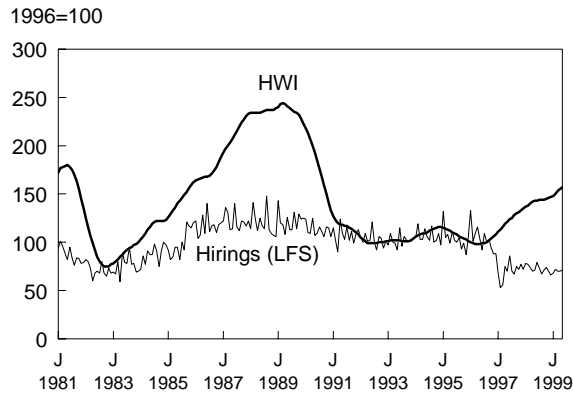
The HWI and hirings link

Literature on the empirical relationship between the HWI and hirings is sparse. This study makes use of two sources of hirings data. One source is the monthly job tenure data from the LFS, which can be used as a proxy for hirings. The other source is the annual Longitudinal Worker File (LWF), which measures hirings explicitly.

As mentioned, each hiring fills a vacancy—an unmet labour demand. The more vacancies there are, the more job advertisements are published and the more hirings take place, and vice versa. Thus, one would expect a positive correlation between the HWI and recent hirings.

But is this borne out by the data? For the period 1981 to 1999, a positive relationship existed between the HWI and recent hirings (Chart A).² The cross-correlation coefficients (see *Cross-correlation coefficient*) also indicate a positive relationship, as theory suggests. However, the extent of the association is not as high as expected. This may be explained by data limitations: the use of LFS job tenure as a proxy for monthly hirings and the HWI undercount. Also, as expected, the HWI leads hirings by a couple of months (when

Chart A: The HWI and LFS recent hirings are very weakly correlated.

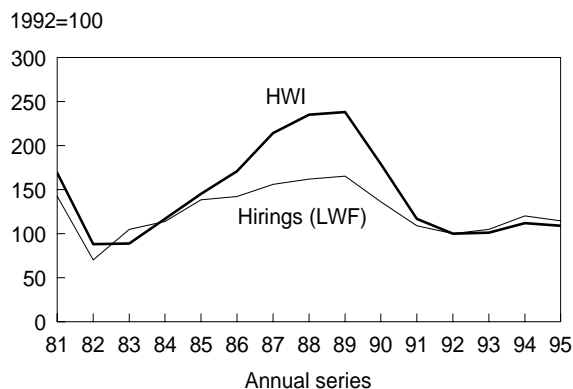


Sources: Help-wanted Index; Labour Force Survey

the cross-correlation coefficient is highest [0.5262]). Not only is the correlation coefficient quite low, but the lead of two months is very weak as well. The correlation coefficients for the other leads are barely distinguishable from that of two months. In fact, the coefficient for a lead of two months and that for a lag of two months are not substantially different.

The relationship between the HWI and annual hirings from the LWF is also positive (Chart B). In fact, the cross-correlation coefficient (0.931) establishes

Chart B: The HWI and LWF hirings are more strongly correlated.



Sources: Help-wanted Index; Longitudinal Worker File

a much stronger relationship than that between the HWI and the LFS recent hirings. No lead/lag periods were identified, primarily because the LWF series is annual and the time between advertisements and hirings is usually less than a year.

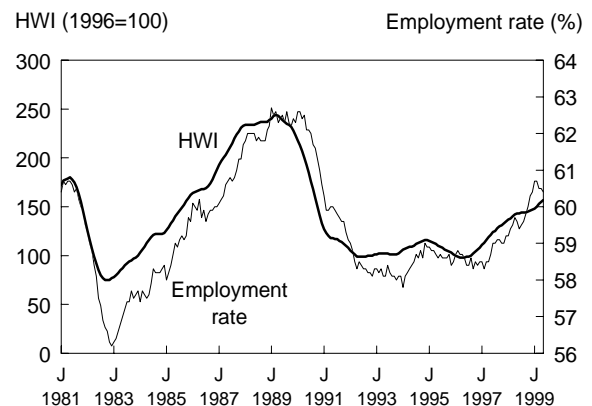
HWI and the employment rate

The employment rate is the percentage of the working-age population (15 years and older) that is employed. Interest in this measure stems from its close relationship with aggregate demand in the economy (Green, 1977). The rationale for this assumption is simple: since the denominator, the working-age population, is relatively stable from month to month, changes in the rate are primarily the result of changes in employment (the numerator). And since the level of, and changes in, employment are generally a function of demand for goods and services, changes in the rate generally reflect changes in aggregate demand in the economy.

Available data suggest a positive relationship in movement between the HWI and the employment rate (Chart C). They also show that the HWI reaches its turning points first. In other words, the HWI roughly leads the employment rate, which is consistent with expectations.

The high cross-correlation coefficients also suggest a close association between the two indicators, as well as a four-month lead by the HWI (the point at which

Chart C: The HWI and the employment rate are closely linked.



Sources: Help-wanted Index; Labour Force Survey

Data sources and limitations

The **Help-wanted Index (HWI)** provides a count of job advertisements published in 22 metropolitan area newspapers. (See Appendix 1 of Statistics Canada [1989] for the list of newspapers used.) Begun in 1973 by the Department of Finance and carried on by Statistics Canada since 1974, the index is patterned after one developed by the Conference Board of the United States in 1964. It is compiled once a month using the Saturday that corresponds to the reference week for the Labour Force Survey, usually the week including the 15th day of the month, and released in the first or second week following the reference month.¹

The HWI tabulates only advertisements placed in the classified sections of selected newspapers, but neglects those in other sections. Furthermore, it does not include government job advertisements or those placed on the Internet (an increasingly popular source) or with private employment agencies. Nor does it capture openings that are filled only through informal contacts (family or friends), which have become an important job search method (Grenon, 1998). It also fails to attach weights to advertisements (in other words, to differentiate between a request for 50 employees and a request for one person). In short, the HWI provides incomplete information on vacancies and hence unmet labour demand. Whatever the degree of undercoverage of the HWI, that is, whatever the error in the estimates of level, what really counts is any bias in the measure of change in the unmet demand for labour. It may well be that the sources of undercoverage in the HWI are fairly constant through time, so the HWI's measures of change are relatively unbiased. And it is this emphasis on timely measurement of change in employers' intention to hire that prompted the production of an index rather than a time series of counts of advertisements.

the coefficient is highest [0.952]). These findings are similar to those for the city of Phoenix in the early 1980s (Friedman, 1982). However, while the correlation with a four-month lead is the highest, those for other leads are almost as high, demonstrating that they are nearly as likely to occur.

HWI and unemployment

The unemployment rate is the ratio of the unemployed (jobless people actively looking for jobs or waiting to start a job in the next four weeks, or those on temporary layoff) to the labour force. Policy makers are interested in this variable mainly because it reflects the interaction between labour supply and demand. An

Job tenure information is from the monthly **Labour Force Survey (LFS)** and has been available since 1976. These estimates measure the length of time between the survey reference week and the start date of the respondent's present job. Because the focus of this analysis is on hires, only employees are considered. For this study, new hires are defined as persons with job tenure of less than one month. The principal problem with this as a proxy for hirings is that it covers only those workers who started with their current employers in the reference month, that is, from the beginning of the reference month to the end of the survey reference week in that month. Because the survey reference week is generally the week including the 15th day of the month, the last day of the reference week can be the 15th of the month or the 21st. This variability in the length of the period over which hirings are measured will introduce a variability in the number of hirings, which will be independent of the volume of hiring taking place.

Job tenure data in the LFS are based only on the main job (no such information exists for the second job). This may lead to an underestimation of the hiring statistics per period. However, since only about 5% of workers are multiple jobholders, the effect on the estimates should not be significant. (For details on concepts, collection methods and data quality, see Statistics Canada [1992].)

The other source of hirings information is the **Longitudinal Worker File (LWF)**. The LWF uses administrative data from Human Resources Development Canada's Record of Employment form and the Canada Customs and Revenue Agency (formerly Revenue Canada) T4 Supplementary file. These hirings represent job vacancies filled during the year. (For details, see Statistics Canada [1998b]).

increasing unemployment rate generally indicates that more people are looking for jobs than jobs are becoming available.

Unlike the employment rate, whose changes are primarily the result of changes in the numerator (employment), changes in the unemployment rate can originate from either the numerator (number unemployed) or the denominator (labour force) or both. Thus, it is possible, in times of improved job prospects, to find increases in employment (due to increases in hires) co-existing with a rising unemployment rate as people return to the labour force. Not surprisingly, volatility in the unemployment rate is higher than that of the employment rate. This tends to affect its relationship with the HWI.

Cross-correlation coefficient

The cross-correlation coefficient (r_{xy}) is a numerical expression of how closely two time series relate to each other. When large values of one series are associated with large values of the other, the series correlate positively. If, on the other hand, large values of one series are associated with small values of the other, the series correlate negatively. When $r_{xy} = 1$ (or -1), it indicates a perfect positive (or negative) fit (correlation) between the two time series. Lead/lag times correspond to the peak (or trough) of the cross-correlation coefficients.

Cross-correlation coefficients: The Help-wanted Index and selected labour market indicators, 1981-1999

Lead/lag (months)	Hires	Employment rate	Unemployment rate	Time span (months)
5	0.5231	0.949	-0.8107	215
4	0.5240	0.952	-0.8155	216
3	0.5258	0.950	-0.8152	217
2	0.5262	0.944	-0.8101	218
1	0.5248	0.933	-0.7997	219
0	0.5224	0.918	-0.7847	220
-1	0.5243	0.898	-0.7659	219
-2	0.5226	0.875	-0.7416	218
-3	0.5204	0.847	-0.7136	217
-4	0.5177	0.817	-0.6818	216
-5	0.5150	0.784	-0.6467	215

Source: Labour Force Survey

At least in theoretical terms, a rise in the HWI will be associated with a future increase in hiring. All things being equal, this results in a drop in the number of unemployed, and consequently, in the unemployment rate. (Conversely, a drop in the HWI would indicate a future drop in hiring and an increase in the unemployment rate.) As such, a negative relationship is expected between the HWI and the unemployment rate. The HWI is also expected to lead the unemployment rate.

Data from the LFS show that increases in the HWI are associated with a fall in the unemployment rate (Chart D). For the period 1981 to 1999, the HWI led the unemployment rate most strongly by four months—the point with the highest cross-correlation coefficient (-0.8155). Other leads also show correlations that are almost as strong. The negative relationship between the two series is clearly evident: as the HWI fell during the 1981-82 and 1990-92 recessions, the unemployment rate increased. Then, as the economy recovered, the HWI rose, employers hired more people, and the unemployment rate fell.

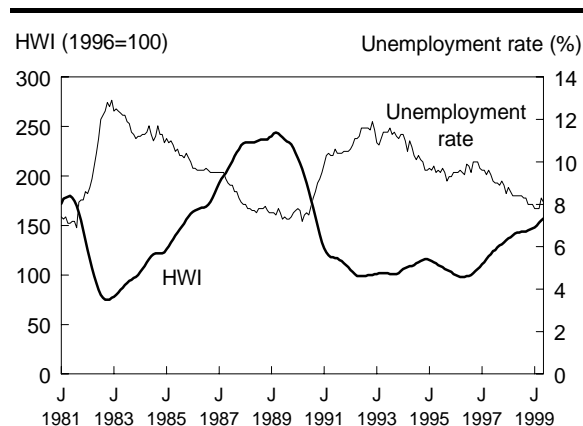
As expected, the relationship between the HWI and the unemployment rate is slightly weaker than that between the HWI and the employment rate. This is shown by the lower cross-correlation coefficients.

Summary

Based on data from the 1980s and 1990s, the HWI appears to be a predictor of labour market conditions. This is consistent with Hagggar-Guénette's findings for the 1980s.

Rises in the index imply that in about four months the employment rate should increase. As well, when the HWI rises it takes a similar interval (four months) for it to be reflected in a fall in the unemployment rate—the expected inverse relationship. The index is positively but very weakly associated with hirings, with the dominance of the two-month lead being barely discernible.

Chart D: The HWI and the unemployment rate are inversely related.



Sources: Help-wanted Index; Labour Force Survey

Owing to the theoretical direct relationship between the index and hiring, a much stronger relationship (than between it and the other variables) was expected. However, this was not the case, perhaps because of limitations in the use of LFS job tenure as a proxy for hirings. The strongest relationship was established between the index and the employment rate, followed by the unemployment rate and hirings.

Perspectives

■ Notes

1 For a detailed description of the HWI, its collection, release and revision to construction methodology, see Statistics Canada (1989 and 1998a).

2 The LFS underwent a comprehensive revision in 1997. Since then, the relationship between the index and LFS tenure-based hiring appears to have been affected—as these indicators seem to be moving in opposite directions (that is, they don't exhibit the same trends).

■ References

- Friedman, S. K. "The Help-wanted Advertising Index: A leading indicator of the local economy." *Business Economics* 17, no. 3 (May 1982): 61-64.
- Green, C. "The employment ratio as an indicator of aggregate demand pressure." *Monthly Labor Review* 100, no. 4 (April 1977): 25-32.
- Grenon, L. "Looking for work." *Perspectives on Labour and Income* (Statistics Canada, Catalogue no. 75-001-XPE) 10, no. 3 (Autumn 1998): 22-26.
- Haggar-Guénette, C. "Job ads: A leading indicator?" *Perspectives on Labour and Income* (Statistics Canada, Catalogue no. 75-001-XPE) 1, no. 2 (Autumn 1989): 53-63.
- Statistics Canada. *Help-wanted Index, 1981-1998*. Catalogue no. 71-540-XIB. Ottawa, 1998a.
- . *Permanent Layoffs, Quits and Hirings in the Canadian Economy, 1978-1995*. Catalogue no. 71-539-XPB. Ottawa, 1998b.
- . *Guide to the Labour Force Survey*. Catalogue no. 71-528-XPB. Ottawa, 1992.
- . *The Help-wanted Index, 1988*. Catalogue no. 71-204-XPB. Ottawa, 1989.
- VanBlarcom, B. "The Canadian Help-wanted Index as an economic indicator." Master's thesis. Wolfville, N.S.: Acadia University, 1985.