Credit scoring with an eye to the future

Question: How do you choose between two borrowers both of whom have a 720 credit score? Answer: Can't; need additional information. How about, the first borrower is from an economically stagnant region and the second borrower from an area that is in the midst of an economic boom? Now we can choose. How? Broadly speaking, the first borrower's future income prospects are not as bright as the second borrower's. True, both borrowers have identical credit scores –an assessment of their credit risk based on past individual behavior. But again, broadly speaking, borrowers make good on their financial obligations from future income—a factor that is not easily controlled by the individual and not captured in credit scores. Final answer: The second borrower from the economically booming area presents a better credit risk.

A simple application

Charge-off rates are an objective, quantifiable assessment of credit quality. We examined over 300,000 loans originated by a marketplace lender between January 2012 and December 2014—a large, seasoned, and recent pool of loans. WAIN Street's Local Economic Vitality is a subnational ranking based on "economic health". Using the borrower's location, we assigned to each loan a Local Economic Vitality score as of the loan's origination date. The table below summarizes the results: by using Local Economic Vitality we can create tranches of different credit quality within traditional credit score bands.

	Local Economic Vitality				
Credit score band	Bad	Weak	Track	Vibrant	Booming
Fair (580 - 669)	191	100	-7	-44	-67
Good (670 - 739)	63	64	-10	-42	18
Very Good (740- 799)	56	53	23	-37	-40
Excellent (800 - 850)	-12	-60	23	13	136

Table 1: Difference in charge-off rates (basis points) within credit score bands. Each cell's value is the equal weighted charge-off rate of loans in that segment less the credit score band's equal weighted charge-off rate. Values less than zero mean the segment charge-off rate is less (better) than the credit score band's charge-off rate.

A portfolio construction example

Credit quality is an important component of loan pricing and portfolio construction. By way of example, from the analysis presented above, one could infer two easily implementable charge-off minimizing criteria for portfolio construction—prefer loans to borrowers from "Vibrant" locations and avoid loans to borrowers in economically weaker localities. As the table below shows, both criteria sizably decrease charge-off rates without decreasing borrower credit quality as measured by traditional standards.

Loan pool	% Charge-off	Credit score	Debt to income	% Rent	% Loans
All loans	10.2%	**697**	17.2%	43.1%	100%
Only Vibrant segments	9.8%	**696**	17.2%	42.2%	48%
Excluding Bad and Weak segments	9.9%	**696**	17.2%	42.3%	70%

Table 2: Summary of loan performance and credit quality.

A professional investor could construct a more sophisticated strategy that incorporated economic vitality as an independent credit performance factor in addition to traditional borrower-specific criteria such as credit score, available income, net worth, and occupation.

Why does this work?

Local Economic Vitality is new information that is relevant to credit performance and complementary to what's captured by traditional credit scores. Credit scores reflect past borrower behavior such as payment history, credit utilization, length of history, etc. that is predictive of future behavior. Local Economic Vitality is a subnational ranking derived from macroeconomic factors including labor market conditions, industrial production, sales, housing market conditions, and financial conditions. It summarizes the macroeconomic context of a borrower and is a gauge of the borrower's future economic prospects.

New information

There is a very weak association between credit score and Local Economic Vitality. In the data analyzed, the average credit score is 697—about the same as the national average. The average credit score by Local Economic Vitality has very little variation (3 point range) and tracks the overall average.

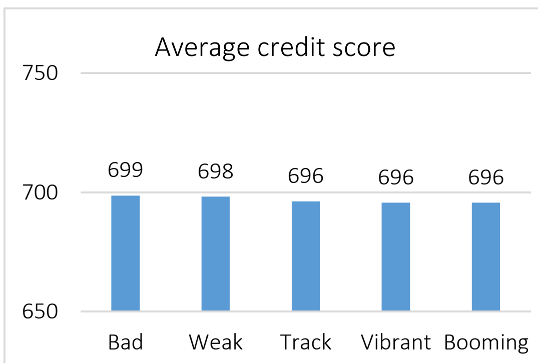

Figure 1: Credit score by Local Economic Vitality.

Consistent gauge of borrower economic situation

The association between debt to income (DTI) and Local Economic Vitality is intuitive. Indebtedness amongst borrowers from economically stronger locations is higher likely because of greater access to credit and higher homeownership. The percent of borrowers who are renters is an inverse gauge of

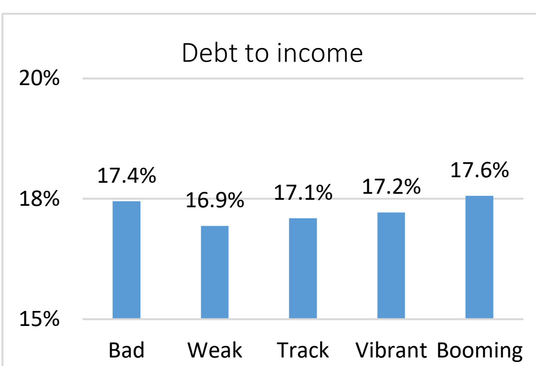

Figure 2: Debt to income by Local Economic Vitality.

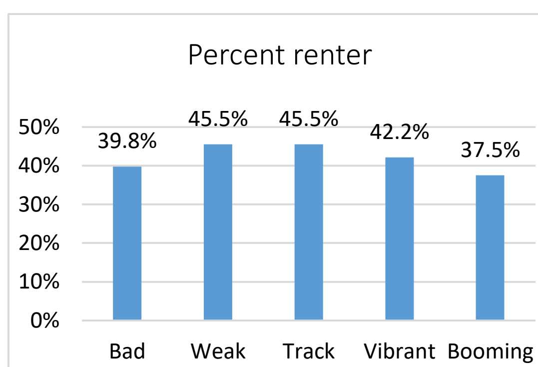

Figure 3: Percent renter by Local Economic Vitality.

homeownership. As the chart above shows, the incidence of homeownership is higher (fewer borrowers are renters) in economically stronger locations. The data also show some aspect of "cherry picking" by the originator–borrowers from the economically worst off areas are more likely to be homeowners than borrowers from stronger areas.

Relevant to credit performance

There is measurable variation in charge-off rates by Local Economic Vitality. The pattern is intuitive—charge-off rates are lower (better) in areas where the economy is stronger. The "unexpectedly" larger value for charge-off rate in the economically strongest areas (labeled as "Booming" in the chart) is likely a reflection of "adverse selection" in the originator's data.

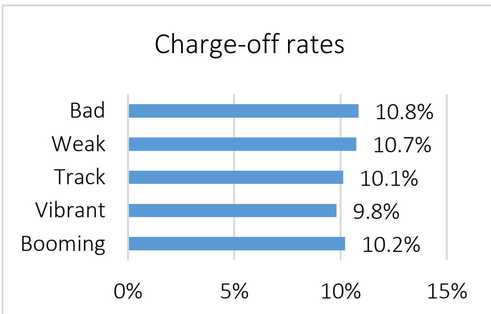

Figure 4: Charge-off rates by Local Economic Vitality.

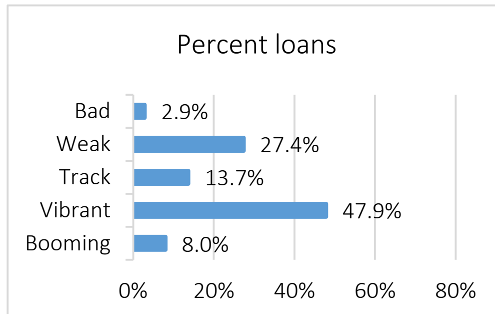

Figure 5: Percent of loans by Local Economic Vitality.

Conclusion

Credit score accuracy can be improved by incorporating macroeconomic factors that are not used in score construction yet influence consumer credit performance. Derived from macroeconomic factors, WAIN Street's Local Economic Vitality is a subnational ranking that provides new information about borrower economic well-being. Using Local Economic Vitality, it is possible to create tranches of different credit quality within credit score bands. This additional segmentation can be used to improve loan pricing and portfolio construction.

Caveat emptor

This analysis is based on data from a national marketplace lender. Hence, the pool of borrowers is restricted to those that applied and were granted credit which may not be representative of other lenders' customers. Ex. Nationally about 20% of consumers are scored in the Excellent (800 – 850) class versus 1% of borrowers in the data used for this analysis. Lenders and investors should verify these results against their own data.

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