The potential of Big Data

Can patterns in consumer spending predict economic sentiment?

LE London Economics

December 2013

About London Economics

London Economics is a leading economics consultancy specialising in public policy economics. As specialist economic consultants, we offer a comprehensive range of skills, covering all aspects of economic and financial analysis and policy development. We provide services across the following fields:

- policy design and analysis
- literature reviews covering a range of languages
- undertaking regulatory impact assessments
- comprehensive and robust appraisal
- design of pilot initiatives
- survey design
- primary data collection and analysis
- data merging and data matching
- secondary data analysis of large scale data sets
- benchmarking
- cost effectiveness analysis
- cost benefit analysis
- economic forecasting
- sophisticated econometric analysis
- qualitative analysis
- project management of complex research
- projects covering more than one country, and
- ministerial and senior executive briefing

London Economics' Head Office

71-75 Shelton Street, London, WC2H 9JQ, United Kingdom.

w: www.londecon.co.uk e: info@londecon.co.uk

t: +44 (0)20 7866 8185 f: +44 (0)20 7866 8186

@londoneconomics

The potential of Big Data

Can patterns in consumer spending determine the level of economic sentiment?

BBVA is the first banking institution to make *Big Data* on real trading activity publicly available. In particular, hourly credit card transaction data was provided for the cities of Madrid and Barcelona on a geographically granular basis for a period of six months toward the end of 2012 and beginning of 2013.

London Economics used this opportunity to explore the potential of Big Data in the context of macroeconomic policymaking. In monetary policy, for example, having access to timely information on economic sentiment is crucial to making good decisions on interest rates. If monetary policy decision-makers are wrongly informed about economic conditions they may set rates at a level that exacerbates rather than ameliorates economic problems – accelerating booms and busts. Moreover, once rates are set they can usually only be updated periodically (for instance, every month) despite revised information on the economy coming to light. In short, timely information is key but, at present, only less-than-timely survey data is used.

London Economics developed a visualisation that considers the hypothesis that consumer spending in retail stores is a leading indicator of economic sentiment. If this is the case, access to high frequency data on credit card transactions can provide a very powerful tool to assess consumer confidence in the economy, long before this information is collected through consumer surveys.

Using the data that was made available by BBVA combined with consumer survey data collected by the Directorate General for Economic and Financial Affairs (DG ECFIN)[1], correlations between total spending on consumer goods and services and the Consumer Confidence Indicator (CCI) were investigated.

Evidence was found of positive and significant correlations between the difference in spending in Madrid on high-spending days (e.g. Saturdays) relative to low-spending days (e.g. Sundays or Mondays) and the consumer confidence indicator for Spain.

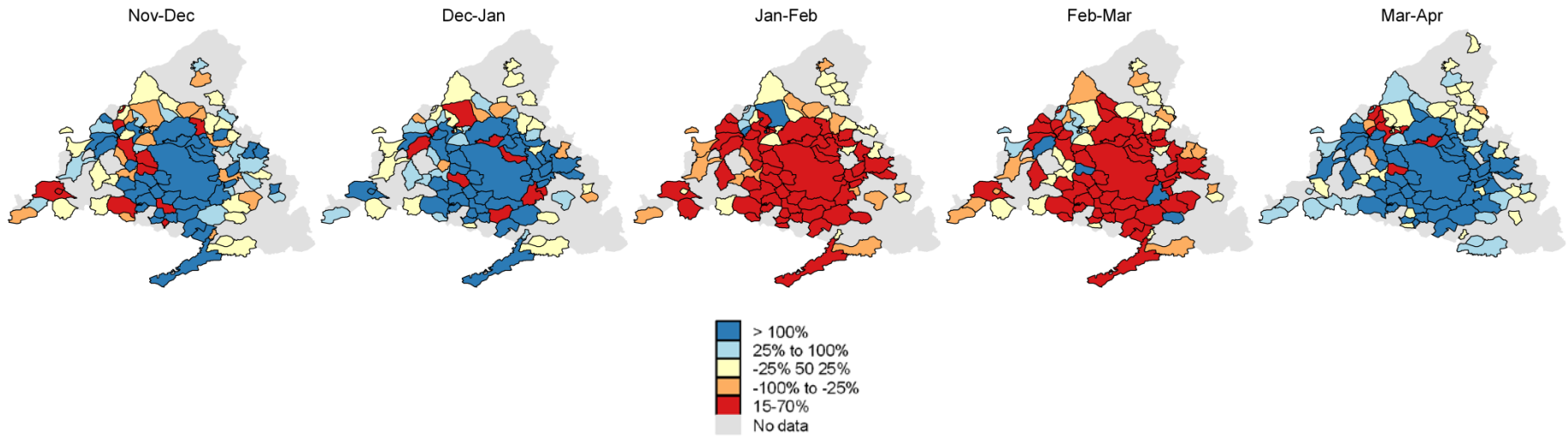
Given this evidence we constructed a measure of consumer confidence in Madrid using data on average daily payments made to *food retailers* in all available postcodes for the region.

Our visualisation below shows the monthly growth rate in consumer confidence across all municipalities in Madrid for which we have data. The darker shaded regions are where consumer confidence fluctuates the most.

The main lesson from this visualisation is that consumer confidence has a bigger impact on credit card spending in retail stores located in the centre of Madrid than in the periphery, perhaps because this constitutes more leisurely or nonessential spending and that this could be used months in advance of other data to forecast shifts in economic sentiment.

[1] http://ec.europa.eu/economy_finance/db_indicators/surveys/index_en.htm

Growth rate in Consumer Confidence based on current account spending on food, by municipal area in Madrid



:

London Economics,
71-75 Shelton Street,
London, WC2H 9BP
Email: info@londecon.co.uk
Tel: +44 20 7866 8185
Fax: +44 20 7866 8186