

BBVA-Google economic indicators

Madrid, 16 January 2012

Introduction

- Objective: to present **BBVA-Google economic indicators**, on this occasion relating to the Spanish Tourism sector
- These indicators improve the **accuracy** and **speed** at which tourist inflows and overnight stays are forecasted
- Searches allow **new and extremely useful** indicators to be obtained to estimate tourism trends in Spain
- **High added value in social and economic terms**, given their contribution to corporate decision-making
- Upholding **excellence** and **technology** in the pursuit of **knowledge**

Motive behind the project

Information is key to taking the right economic decisions

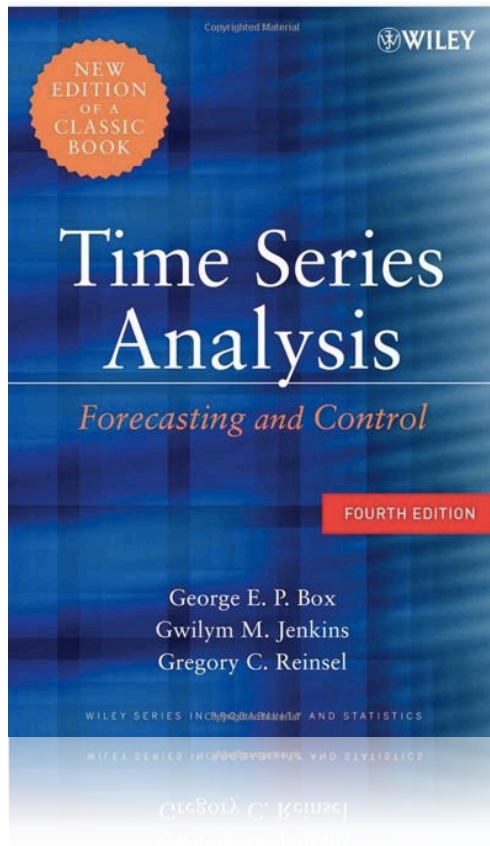
We know past data in retrospect (*backcasting*).
Examples: GDP, LFS, ... human capital

We intuit the present (*nowcasting*)

We do not know future (*forecasting*)



The usual approach to the problem



Extrapolating past trend observed to the future

Univariate ARIMA models
(Box and Jenkins, 1976)

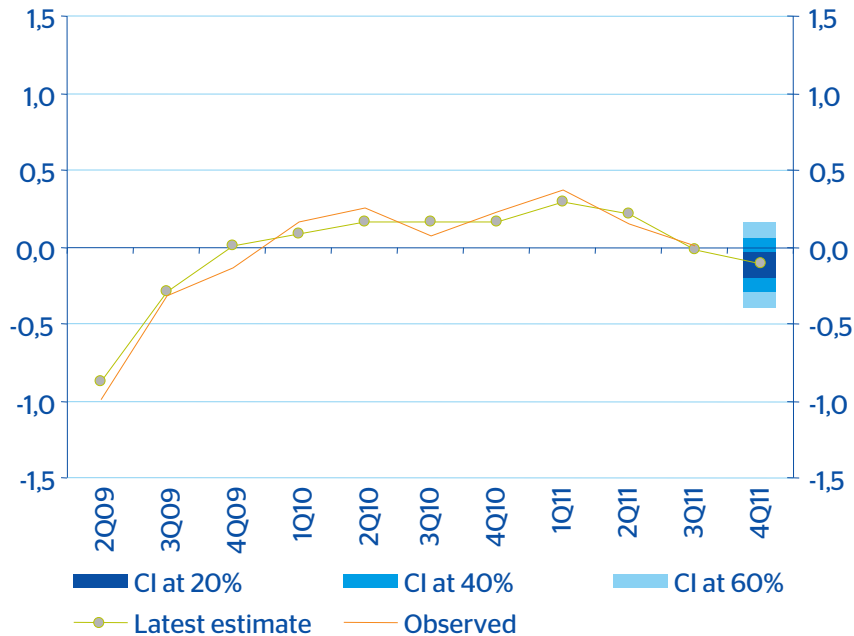
Multivariate VARMA models

Long tradition since the 1970s, used widely nowadays

The background in BBVA Research

Spain: observed GDP growth and forecasts based on the MICA-BBVA model (%qoq)

Source: BBVA Research
Current forecast: 13 January 2012



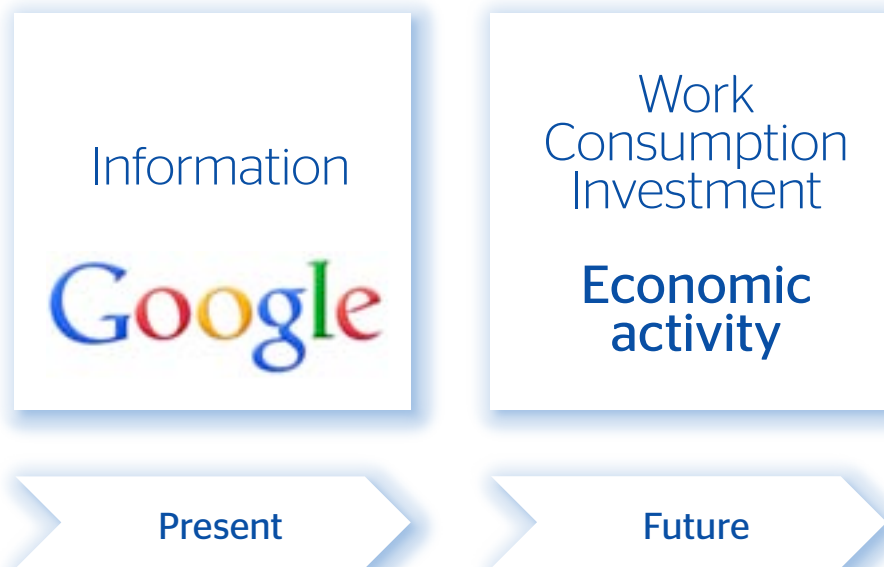
In 2009 we embarked on a large-scale project to apply new methods

Dynamic Factor Models: learning process (*KF*) that updates parameters

Estimates real time GDP growth (*nowcasting*) and evaluate indicators

Very good results in Spain, EMU, Mexico, USA ...

The challenge of improving forecasts



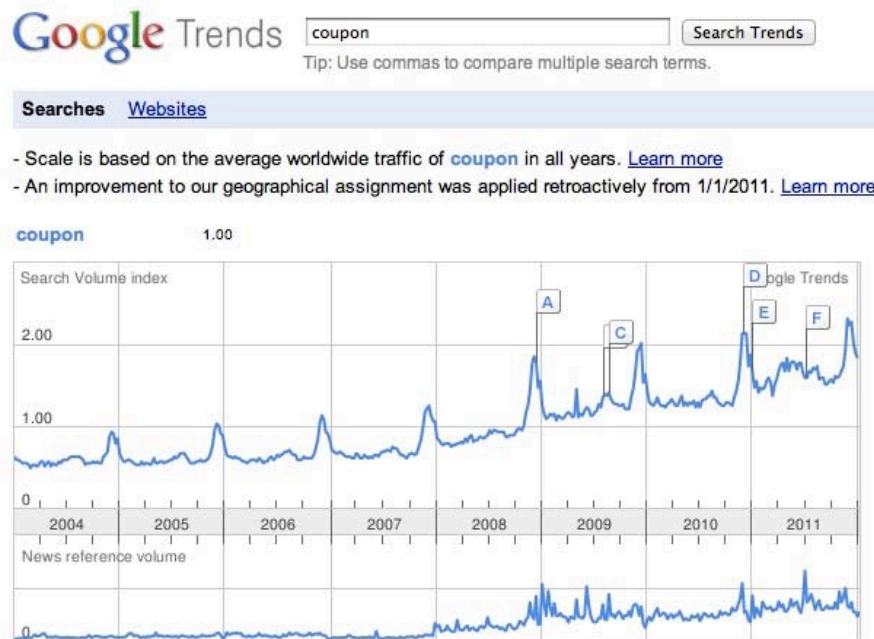
How can forecasts be improved?

Through indications of the future observed in the present

Internet: a powerful tool that can be used to find information before taking decisions

Google is the leading Internet search engine

The background in Google



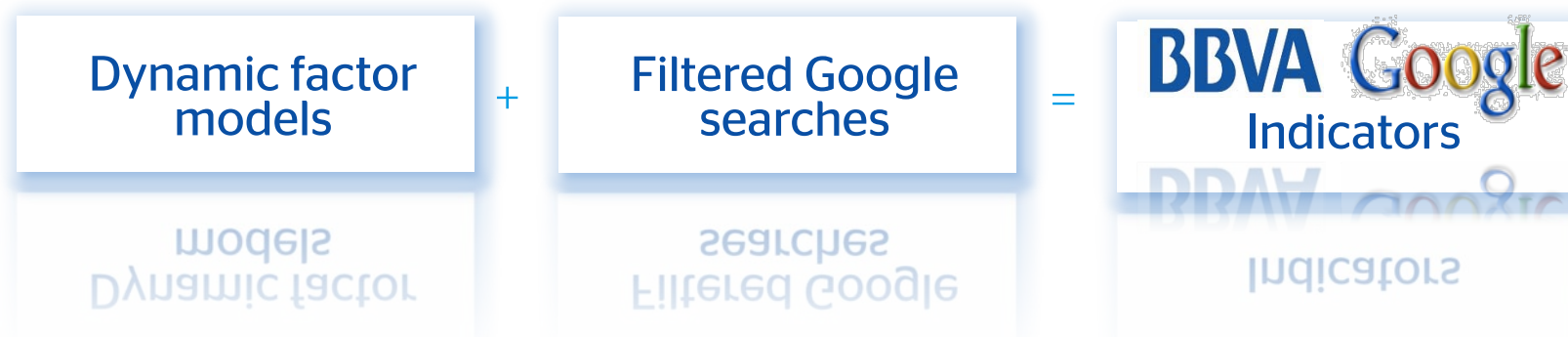
Choi and Varian (2009):
Predicting the Present with Google Trends

AR models with searches to predict the present
beat those that do not include them

Examples: retail, vehicle and house sales, and
tourism

Can searches help to forecast the future?

The project



This collaboration project was developed for application in various countries and sectors considered to be of strategic importance for BBVA and Google

Pilot project: Tourism in Spain

Percentage accounted for by tourism

	2008	2009	2010
GDP	10.4	9.9	10.2
Exports	26.5	23.9	27.0
Balance of payment revenues	11.6	12.2	12.2
Employment	11.0		

Source: INE, Cuenta Satélite del Turismo, and BdE

Tourism is a strategic sector

Accounting for more than 10% of GDP and employment, and 27% of exports,

12% of revenue in the external Balance of Payments

Preliminary data make us optimistic about actual results

Variables forecasted

Foreign tourist inflows

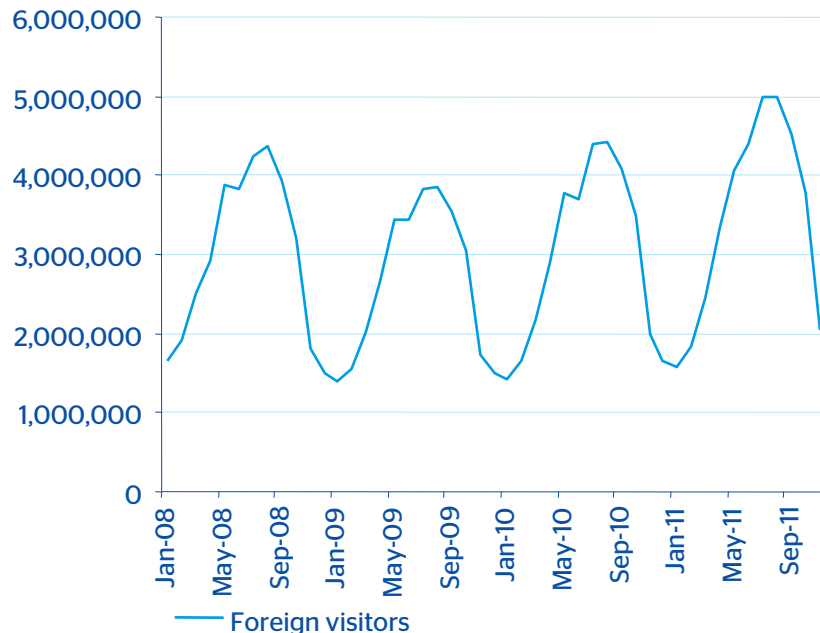
People living abroad making one or more overnight stays

Overnight stays

Every night spent by a Spanish or foreign visitor in a hotel establishment

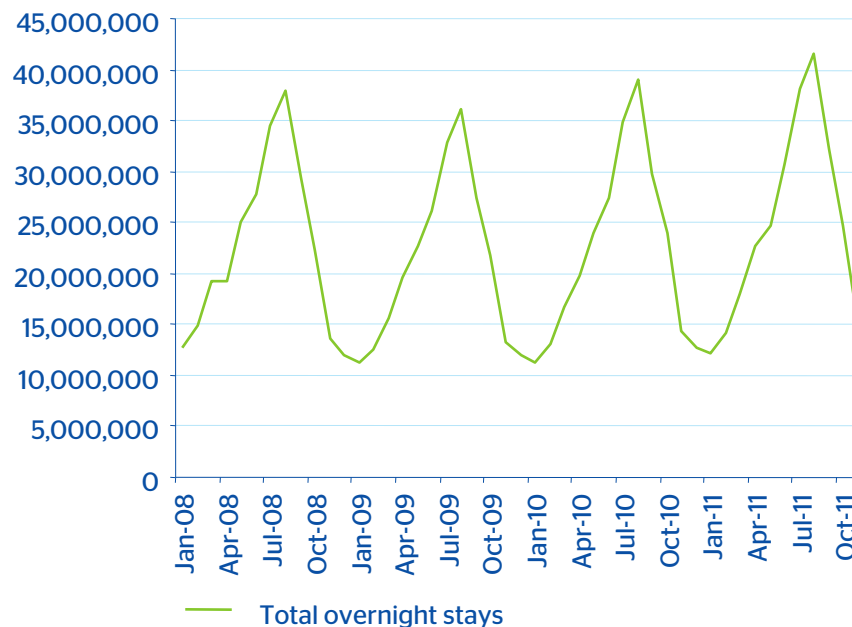
Foreign tourist inflows

Source: INE



Total overnight stays in hotels

Source: INE

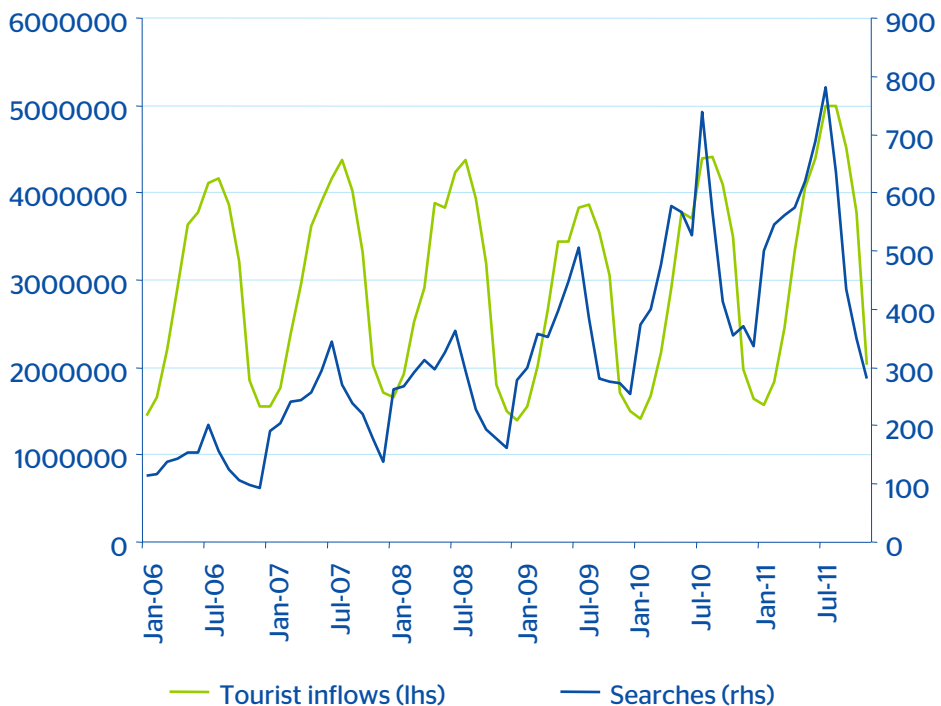


Both published on around the 22nd or 23rd of the following month

Google searches

Foreign tourist inflows and Google searches

Source: INE and Google (Base=100, January 2006, RHS)



Weekly data since 2006 in English, German, French and Italian (+ Spanish for overnight stays)

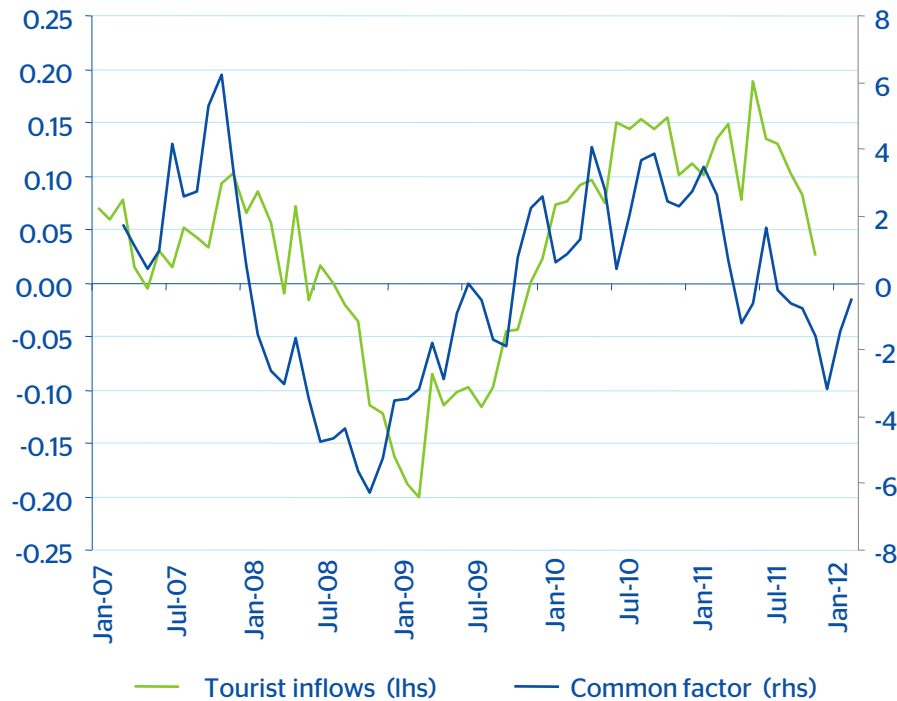
A similar seasonal pattern to tourist inflows but one month ahead

The correlation is significant and extremely high (0.6) even factoring in yoy growth rates

Results: a common factor in these variables

Tourist inflows and BBVA-Google indicator searches

Source: INE, Google and BBVA Research



The model allows the non-observable factor to be forecasted ...

clarifying the trend of tourist inflows and searches ...

using a recursive process where the model itself learns from its mistakes

Results: improved forecasting capacity

Forecasting errors

Foreign tourist inflows	Back-casting	Now-casting	Fore-casting
AR model	1.00	1.00	1.00
AR model incl. searches	0.98	0.90	0.82
FD model incl. searches	0.94	0.81	0.76

Mean squared error (AR=1.0, January-December 2011)

Searches contain useful information that helps forecast the present and the future

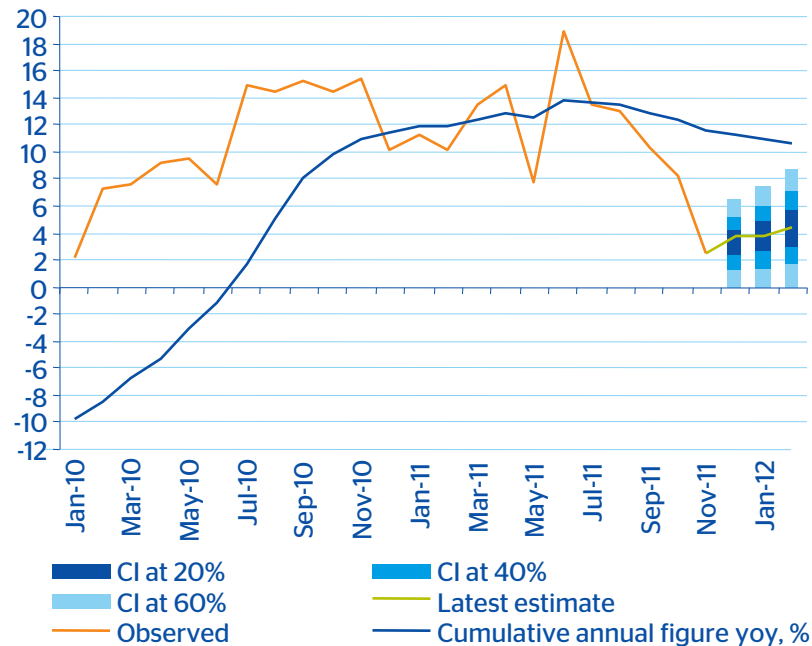
Forecasting capacity improves by between 18% and 20% when searches are included

Improving between 24% and 31% when searches are included and dynamic factor models is specified

Results: forecasts at February 2012

Tourist inflows and BBVA-Google indicator forecasts

Current forecast: 16 January 2012
 Source: INE, Google and BBVA Research



Tourist inflows will reach 1.92 million, 4.4% more than in February 2011

39.8 million visitors are forecasted from February 2011, 10.7% more than in the previous year

Overnight stays are expected to reach 14.3 million, 0.5% more than in February 2011

Results: publications

Flash notes containing monthly forecasts

Scientific publications describing technical details of the methodology used and results obtained



All forecasts will have free access to the public, for the benefit of society as a whole, sharing and disseminating the knowledge acquired through this collaboration

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