Business tendency surveys and macroeconomic fluctuations

Daniel Kaufmann a, Rolf Scheufele b, *

a KOF Swiss Economic Institute, ETH Zurich, Leonhardstrasse 21, LEE G 116, CH-8092, Zurich, Switzerland
b Swiss National Bank, Economic Analysis, P.O. Box, CH-8022 Zurich, Switzerland

ARTICLE INFO

Keywords:
Business tendency surveys
Dynamic factor models
Mixed frequencies
Missing observations
Nowcasting
Forecasting

ABSTRACT

This paper investigates the information content of a large sectoral mixed-frequency business tendency survey for Switzerland relative to competing early available monthly information. Using a factor-augmented regression framework, we find that a broad set of dimensions of the survey provides additional information for explaining CPI inflation, employment growth and the output gap. However, the survey contains no additional information for GDP growth. A pseudo out-of-sample forecasting exercise suggests that the survey information is particularly useful for forecasting the medium-term CPI inflation.

1. Introduction

Qualitative business tendency surveys have been used to track the business cycle since at least the 1920s. Historically, the first business tendency surveys were conducted because the official statistics were released infrequently and with long delays (OECD, 2003). Although quantitative hard data have become available more readily over the last decades, business tendency surveys are still regarded as a useful source of information in real time. This paper examines whether the abundantly available sectoral survey information for Switzerland does indeed help to track and forecast macroeconomic dynamics more effectively than other information that is available early.

There is ample international evidence that survey data help to track economy activity. For the European Union and the euro area, many studies have reported that survey information is useful for forecasting real activity (see Carriero & Marcellino, 2011; Frale, Marcellino, & Proietti, 2010; Giannone, Reichlin, & Simonelli, 2009; Klein & Özmucur, 2010; Lemmens, Croux, & Dekimpe, 2005). Moreover, for the euro area, Banbura and Rünstler (2011) and Keeney, Kennedy, and Liebermann (2012) show that the publication lags of quantitative hard data are still an important reason why survey information is valuable. The usefulness of surveys has been confirmed by Hansson, Jansson, and Lof (2005) for Sweden, Matheson (2010) for New Zealand, Lahiri and Monokroussos (2013) for the US, Luciani and Ricci (2014) and Martinse, Ravazzolo, and Wulfsberg (2014) for Norway, Modugno, Soybilgen, and Yazgan (2016) for Turkey, Dahlhaus, Guétinette, and Vasishth (2015) for several emerging market countries, and Bragoli (2017) for Japan. For Switzerland, Etter and Graff (2013) investigate whether surveys predict production and orders and Silverstovs (2013) examines a survey-based leading indicator for employment.

The literature agrees that aggregate survey indicators, such as the PMI, contain valuable information for nowcasting GDP growth because they are available in a timely manner (see Banbura, Giannone, Modugno, & Reichlin, 2013 and references therein). The surveys underlying such indicators are often optimised for nowcasting and associated with a particular economic concept. Indeed, Banbura and Modugno (2014) and Banbura, Giannone, and Reichlin (2011) find that there is little gain in using disaggregate information for nowcasting GDP growth. However, it

* Corresponding author.
E-mail addresses: kaufmann@kof.ethz.ch (D. Kaufmann), rolf.scheufele@snb.ch (R. Scheufele).

http://dx.doi.org/10.1016/j.ijforecast.2017.04.005
0169-2070/© 2017 International Institute of Forecasters. Published by Elsevier B.V. All rights reserved.
remains less clear whether the existing aggregate indicators for Switzerland make an efficient use of the abundantly available sectoral survey information, in particular for medium-term forecasting. We examine this question by conducting a broad assessment of a large sectoral Swiss business tendency survey covering various sectors and economic concepts, and compare its information content to those of prominent aggregate indicators. In addition, we also broaden the analysis by exploring the predictive content for GDP growth, employment growth, CPI inflation, and the output gap.

The qualitative survey data are collected by the KOF Swiss Economic Institute, which is a business cycle research institute. Today, the survey covers eight sectors of the economy and a broad range of economic concepts, such as prices, real activity, the labor market, and capacity utilization. We examine the information content of surveys relative to competing information by assembling early available monthly hard data, as well as a set of prominent aggregate leading and coincident indicators, reflecting the typical state of information of an analyst tracking the Swiss economy. The macroeconomic variables are related to the disaggregate survey and hard data using a factor-augmented regression framework (see Stock & Watson, 2002b). The number and combination of factors to be included in the model are determined using the consistent information criteria developed by Groen and Kapetanios (2013). Therefore, our approach builds on a large body of literature on summarizing the information from large-dimensional data sets using dynamic factor models (see e.g. Bai & Ng, 2008; Stock & Watson, 2010 for an overview), which have been proved useful for both now- and forecasting, for example by Banbura et al. (2013), Kuzin, Marcellino, and Schumacher (2013), Luciani (2014) and Stock and Watson (2002b).

The data set has a substantial fraction of missing values. First, the surveys are conducted at both quarterly and monthly frequencies. Second, many of the survey questions were not part of the original surveys, but have been added since. Third, we restrict the data at the end of the sample to the typical state of information of an analyst tracking the Swiss economy, which implies that a relevant fraction of the hard data is missing. We tackle the mixed survey frequencies and missing observations by estimating the factors using the EM-algorithm of Stock and Watson (2002b), which was also applied by Schumacher and Breitung (2008). The estimator is simple to apply and allows the information content of the large mixed-frequency data set to be summarised. However, one shortcoming of this approach is that it does not take into account the dynamics of the common factors or the idiosyncratic components, which Banbura and Modugno (2014) and Poncela and Ruiz (2016) showed can hamper forecast performance and inference, particularly when a large fraction of data points are missing. Because our focus is on comparing the relative information contents of various sources of data, an additional comparison among alternative approaches to factor estimation is beyond the scope of this paper.

Our results can be summarised as follows. In-sample, the surveys contain relevant additional information for CPI inflation, employment growth, and the output gap. The correlation with the output gap may be related to the fact that, unlike similar surveys for the US, many questions ask about the firm’s situation relative to a normal level of activity. This is also in line with the finding that survey data do not improve the model fit for GDP growth relative to hard data. A broad set of dimensions of the survey data are useful. In particular, quarterly survey questions add information supporting the use of a mixed-frequency approach. When examining the survey data with regard to the corresponding economic concepts, the most striking result is that not only do survey questions about prices have explanatory power for CPI inflation, but so also do capacity constraints, real activity and the labour market. We then compare the predictive performances of various versions of the factor model to those of models based on aggregate coincident and leading indicators. It turns out that the business tendency survey improves the medium-term forecasts, in particular, for CPI inflation. In contrast, the sectoral survey adds no relevant information for nowcasts or short-term forecasts, despite taking into account realistic publication lags of the quantitative hard data.

In what follows, the paper first presents the various data sources, then introduces the methodology used to estimate the factors and select the model. Next, Section 4 examines first the in-sample explanatory power of various dimensions of the KOF survey, then the out-of-sample predictive content. Finally, we offer some conclusions.

2. Data

The KOF Swiss Economic Institute polls firms from eight sectors of the Swiss economy: manufacturing, project engineering, construction, retail, wholesale, services, financial services, and restaurants and hotels. Most of the questions are qualitative in nature; for example, firms are asked whether their competitive position has improved, deteriorated, or remained unchanged.

We obtained the sectoral aggregate of the share of responses in each answer category. The majority of questions have three ordered answer categories (see Table 1 for examples; a complete list of the data set is given in the Appendix). We therefore follow Carlson and Parkin (1975) and use a probability approach to transform the data to

2 KOF is an abbreviation of Konjunkturforschungsstelle, which can be translated as business cycle research institute.

3 As was emphasised by Banbura and Rünstler (2011) and Giannone, Reichlin, and Small (2006), it is critical to take into account missing data at the end of the sample due to publication lags when assessing the state of the economy in real time.

4 These sectoral aggregates are constructed by first aggregating individual firms’ answers into various groups, separately for three firm-size classes (small, medium, large), where each individual answer is weighted by the firm size, approximated by the number of employees in the sample. For each group, the firm-size classes are then aggregated using the corresponding share of employees in the population, which may differ from the share of employees in the survey sample. Finally, the group levels are aggregated to the overall sector level using the share of value added or the share of employees in the population. For more information, see http://kof.ethz.ch, Surveys, Business Tendency Surveys, Metainformation.
دریافت فوری متن کامل مقاله

امکان دانلود نسخه تمام متن مقالات انگلیسی
امکان دانلود نسخه ترجمه شده مقالات
پذیرش سفارش ترجمه تخصصی
امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
امکان دانلود رایگان ۲ صفحه اول هر مقاله
امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
دانلود فوری مقاله پس از پرداخت آنلاین
پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات