



Contents lists available at ScienceDirect

Economic Modelling

journal homepage: www.journals.elsevier.com/economic-modelling

Aggregate fluctuations and the effect of large corporations: Evidence from Finnish monthly data

Paolo Fornaro^{a,*}, Henri Luomaranta^{b,c}^a Research Institute of the Finnish Economy, Finland^b Statistics Finland, Finland^c Toulouse 1 University Capitole, France

ARTICLE INFO

JEL classification code:

C22

C55

E32

Keywords:

Business cycles

Granular residual

Business groups

ABSTRACT

We investigate whether the granular hypothesis holds for the Finnish economy. In particular, we test if a sizable share of macroeconomic fluctuations is generated by firm-specific shocks to sales and productivity. We examine monthly firm-level data and find that the idiosyncratic shocks affecting large corporations explain around a third of business cycle fluctuations. This fact holds true both when we use the cross-sectional averages of sales and the estimated common factors, to control for common shocks. Moreover, we observe that the largest four corporations are the main drivers of this result. Finally, we detect a clear break in this relationship coinciding with the Great Recession. In particular, from 2010 onward the firm-level shocks lose their explanatory power. The findings of this paper point toward the importance of studying the granular hypothesis in a dynamic context, taking into account the possibility of breaks.

1. Introduction

The origins of business cycle fluctuations have been one of the most debated and explored topics in macroeconomics. Traditional frameworks, such as the real business cycle model of Kydland and Prescott (1982), identify the main shocks as being economy wide (e.g. aggregate productivity shocks) and having somewhat mysterious origins. Subsequent works, such as Long and Plosser (1983) and the later literature (see, e.g., Horvath, 2000; Conley and Dupor, 2003), consider sectoral disturbances in order to explain the fluctuations of the aggregate economy. In his seminal paper, Jovanovic (1987) proposes a model where microeconomic shocks are capable of generating business cycle variations.

Recently, with the works of Gabaix (2011) and Acemoglu et al. (2012), the interest around the possible effects of firm-level activity on the aggregate economy has risen. Gabaix (2011) formulates the granular hypothesis, i.e. he considers firm size as the key transmission mechanism of microeconomic (firm-level) shocks. Many modern economies are characterized by having a fat-tailed distribution of firms (in terms of size), where the value added of few big companies accounts for a large fraction of the GDP. A major consequence of this granularity is that the diversification arising from a high number of enterprises is not sufficient to eliminate the impact of idiosyn-

cratic disturbances. An alternative explanation is provided by Acemoglu et al. (2012), who identify linkages between firms as being the main transmission mechanism. Related to this work, Frijters and Antić (2016) develop a theoretical model that connects economic downturns with the collapse of trade networks, originating endogenous trade cycles.

Di Giovanni et al. (2014) examine the universe of French firms and their annual sales growth, finding that the firm-level component explains a substantial share of aggregate fluctuations and that this is mainly due to firm linkages. Stella (2015) adopts similar methods as Foerster et al. (2011) to examine the granular hypothesis. In particular, Stella (2015) uses a dynamic factor model to estimate the firm-level idiosyncratic shocks and finds that the granular hypothesis does not hold for the U.S. economy.

In this work, we test the granular hypothesis of Gabaix (2011) for Finland, using monthly enterprise groups' data. There have been multiple studies concerning the Finnish macroeconomy, especially in regards to the real business cycle. One notable example is Gorodnichenko et al. (2012), where the authors formulate a dynamic stochastic general equilibrium model to describe how the collapse in the trade relationships with the Soviet Union contributed to the dramatic Finnish recession of 1991–1993. Kuusmanen and Kämppi (2010) study how fiscal policy shocks affect Finnish real economic activity, finding that an increase in

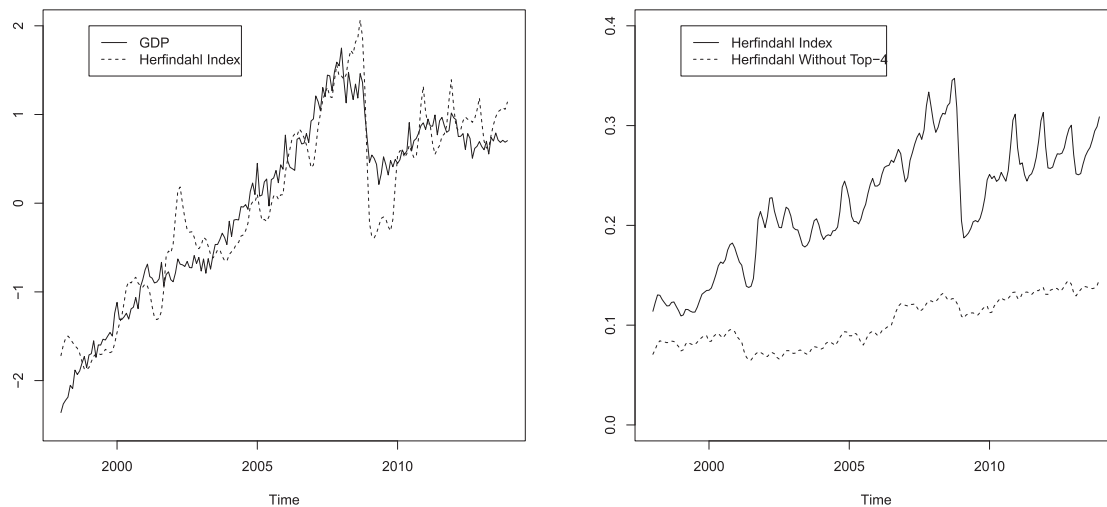
* Corresponding author.

E-mail address: paolo.fornaro@etla.fi (P. Fornaro).<https://doi.org/10.1016/j.econmod.2017.11.012>

Received 15 February 2017; Received in revised form 10 October 2017; Accepted 12 November 2017

Available online XXX

0264-9993/© 2017 Elsevier B.V. All rights reserved.



(a) Herfindahl index and Finnish monthly output. (b) Herfindahl with and without the top-4 corporations.

Fig. 1. The Herfindahl index for the top-57 Finnish corporations.

government spending leads to a crowding out effect in the private sector. Moreover, there have been multiple works focused on the macroeconomic modeling of the Finnish economy (see, e.g., Tarkka, 1985; Lehmus, 2009; Kilponen et al., 2016).

Despite intensive macroeconomic research, there have been relatively few studies relating microeconomic shocks to aggregate fluctuations, even though the Finnish economy represents one of the most prominent examples of granularity. In fact, many would argue that Finland is (or at least was) a single-firm economy, where Nokia activities represent a considerable share of GDP. For instance, Ali-Yrkkö et al. (2010) show that Nokia's production between the end of the 1990's and the Great Recession has accounted for more than 2% of Finnish GDP and 10% of exports, with a peak of more than 20% of total exports during the 2000–2006 period. These considerations might explain why there has been a relatively small research effort on analyzing the impact of large firms' shocks: when looking at the Finnish economy, researchers might focus on the role of Nokia and disregard the other large business groups. Given the importance of Nokia during its golden years, this view might be justified. However, Nokia has recently faced a substantial decline and it is arguable that the study of microeconomic shocks should extend to a wider group of companies. To reinforce this point, in Fig. 1, we compute the sales Herfindahl index of the top-57¹ Finnish enterprise groups. It is defined as the squared sum of the sales to GDP ratio of the companies we are interested in, where a higher index value implies that these groups are accountable for a larger share of aggregate output. In Fig. 1 (a), we report the scaled Herfindahl index for Finland, together with the deflated monthly output measured by the Trend Indicator of Output (TIO). In Fig. 1 (b) we report the sales Herfindahl using the whole set of firms in our data, against the same index obtained by excluding the top-4 corporations from the calculations.

These plots give us some valuable preliminary insights about the dynamics of the Finnish economy from 1998 to 2013. First of all, the Herfindahl index has not been stable over time, but has actually shown a substantial procyclicality (the correlation coefficient between TIO and the Herfindahl index is 0.92). This supports a possible granular hypothesis for the Finnish economy, where aggregate fluctuations are heavily influenced by the success of large companies. The procyclicality of enterprise groups' sales is paired with the findings of

Moscarini and Postel-Vinay (2012). In particular, they find that the net job creation rate of U.S. large firms is strongly procyclical, compared to the one of smaller companies.

In Fig. 1 (b), the solid line depicts the Herfindahl index computed using the sales of the largest 57 Finnish enterprise groups, while the dashed line represents the same measure computed excluding the top-4 corporations from the data. While the two indices are fairly close during the late 1990's and early 2000's, we see a dramatic increase in the spread between them during the mid-2000's up until the Great Recession. Moreover, it is fairly evident that the Herfindahl index shows a much more stable behavior when we remove the four largest corporations from the data, and that the top-4 companies in our dataset have been heavily affected by the Great Recession of 2008–2009. This suggests that few, very large, companies can be considered as a key factor in the Finnish economy and that their performance has been tightly linked with business cycle fluctuations.

In this paper, we consider the approach of Gabaix (2011) using Finnish corporation-level sales. Specifically, we estimate the granular residual and evaluate its impact on Finnish economic activity. One new key contribution of this research lies in the use of monthly data. Microeconomic level shocks are likely to have a large effect in the short run, but their impact on aggregate fluctuations might be attenuated when considering data at lower frequencies (which are commonly used in previous work due to their availability). For example, a strike in an enterprise occurring during a certain month can have a substantial effect on the aggregate output for that period, but its impact might disappear when considering the whole year, due to temporal aggregation. Another advantage of this type of data is that it allows us to analyze the relationship of interest on a fairly short time span, without incurring small sample problems. This means that we can verify the granular hypothesis for different subsamples and examine if events such as the Great Recession have affected it. In addition to the econometric analysis, we provide a short narrative where we consider how key events affecting large firms might have impacted the Finnish economy, using public sources.

Another important distinction from previous research is that we group together firms that belong to the same corporation, to better represent their influence on the Finnish market. Modern enterprise groups include hundreds of subsidiaries and disregarding them from the calculations would lead us to underestimate the actual influence of a company on the economy through its controlled firms. The empirical literature on internal capital markets and resource allocation suggests that

¹ We initially selected the top 100 Finnish companies by sales value. We then removed corporations which experienced extreme fluctuations or had data issues, ending up with 57 firms.

Download English Version:

<https://daneshyari.com/en/article/7347210>

Download Persian Version:

<https://daneshyari.com/article/7347210>

[Daneshyari.com](https://daneshyari.com)