

Financial structure and the heterogeneous impact of monetary policy across industries

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Abstract

The two general channels by which monetary policy impacts output are the neo-classical cost of capital channel and the credit channel. This paper decomposes the output response to a change in the stance of monetary policy to each of these channels. We use a unique industry level data set that measures the financial characteristics of firms operating at the industry level through time. We bring these financial characteristics formally into the regression analysis, thus allowing for a more precise identification of the two channels. The evidence indicates that both channels are active in the Canadian economy.

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1. Introduction

In textbook applications, it is implicitly assumed that the impact of monetary policy is uniform across the entire economy—that is, each industrial sector is assumed to be impacted to the same degree. As such, the heterogeneous impact of monetary policy across an economy is ignored. Although there have been many studies that consider this heterogeneity across the regions of an economy, there are few studies which consider the heterogeneity across industries. This paper works to fill this void.

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To the extent there is heterogeneity in the effects of monetary policy across both industrial sectors and across regions, these differences should be considered in the formation of optimal monetary policies. Hence studies which are able to predict this heterogeneity are very useful.

Studies that measure this heterogeneity typically consider the sensitivity of regional output to changes in monetary policy for the following factors: (1) the mix of interest sensitive sectors; (2) the mix of large versus small firms; (3) the ability and willingness of banks to supply loans; and (4) differences in financial structure. The first captures the neo-classical interest rate channel whereas the remaining are meant to capture the credit channel of monetary policy. It is argued, for example, that monetary policy will have a large impact in regions where there are many small firms as these firms are more reliant on bank financing. In other words, small firms are impacted more from changes in interest rates (monetary policy).

Gertler and Gilchrist (1994) (henceforth GG (1994)) measure the response of firms to changes in monetary policy (for example, a movement to tight money). They use firm size to proxy for capital market access, and as such are able to use a comprehensive dataset for the manufacturing sector, although not at the firm level. The idea is that the cyclical behavior of firms is in part linked to their access to capital markets, and how that access varies over the business cycle. The strategy pursued by GG (1994) is to trace the impact of monetary policy on the time series behavior of small versus large firms. They find that in reaction to a monetary contraction, large firms borrow to finance inventories, whereas small firms shed inventories relatively quickly. In addition to this inventory effect, they show that sales and short-term debt change significantly in response to a change in interest rates, with the effects being larger for small firms. As such, small firms account for a disproportionate share of the reduction in output. They go on to suggest that further studies on cyclically sensitive sectors such as retail and wholesale trade and construction would be very useful.

The current paper does exactly this: we measure the impact that monetary policy has at the industry level, which include retail and wholesale trade as well as many other industries. The stance of monetary policy is measured using the term spread, defined as the difference between the 10-year T-bond yield and the 3-month T-bill yield, as well as the overnight rate, which is the Bank of Canada's key policy rate. More importantly, however, this paper employs a unique data set on the financial conditions of firms across industries, conditions which serve to capture the balance sheet and bank lending linkages of the credit channel, as described in Bernanke and Gertler (1995). This channel is also known as the financial accelerator effect—that is, how changes in a firm's financial characteristics over the business cycle influence the effects of monetary policy. Measures of financial conditions used include measures of liquidity, inventories, coverage ratios, bank borrowings, debt equity ratios, and firm size. These data are available at the industry level and through time. We are not aware of a study that uses such precise data to capture the amplifying effect of the credit channel from a monetary policy change.

The current paper has two objectives. First, we demonstrate that there is indeed heterogeneity in the impact that monetary policy has across industries, and find that manufacturing is the most interest sensitive industry. This therefore confirms the assumption made in many papers which hypothesize that the larger the share of interest sensitive sectors in a region – namely manufacturing – the larger will be the impact of monetary policy. We also document significant correlations between the magnitude of the predicted monetary policy impact at the industry level and the average values of the financial variables at the industry level. For example, it is demonstrated that the higher the average level of bank dependence in the firm's financing at the industry level the larger is the impact of monetary policy for that industry. Furthermore, the larger are firms in

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