The thesis contains three essays on aggregate productivity growth. In the first two essays, we explore whether using information from firm-level data help forecasting aggregate productivity growth. The third essay attempts to establish a context for the findings of the previous two. In addition, it investigates two questions related to procyclical productivity and the so-called granular hypothesis.

Chapter 2 contributes to the productivity forecasting literature by exploring whether progress can be made by departing from the assumption of a representative firm and the notion that productivity is the outcome of a data generating process at the aggregate level. Instead, we look for guidance to heterogeneous firm models where aggregate productivity growth is the outcome of explicit innovative activity at the firm level and market allocation and selection processes. Using data on Dutch manufacturing firms, we find that productivity components prove useful for forecasting aggregate productivity developments.

In Chapter 3, we forecast aggregate productivity growth using data on U.S. manufacturing establishments. We confirm the results described in Chapter 2, i.e. that firm-level information may help forecasting aggregate productivity growth. The main contribution of this chapter is that it presents a method that accommodates micro-aggregated components to estimate unobserved structural productivity in a state space model. We also extend on Chapter 2 because we use data on manufacturing establishments to forecast trend productivity growth for the entire economy. Our results have practical bearing on macroeconomic forecasting. Over business cycle frequencies, output growth is correlated with measured total factor productivity growth, which is a key determinant of potential output. Potential output, in turn, is a crucial argument in policy functions of central banks owing to its implications for inflationary pressure. Therefore, better forecasts of trend productivity should improve forecasts of potential output.

In Chapter 4, we explore a recent theoretical model of heterogeneous firms. Our simulation results provide evidence on three issues. First, we show that the productivity components described in Chapters 2 and 3 correctly detect shocks to the productivity distribution. This finding helps us understand why the firm-level information used for the productivity components of Chapters 2 and 3 prove useful in forecasting aggregate productivity. Second, we find that changes in the cyclical behavior of aggregate productivity may be related to changes in firms’ factor adjustment. To our knowledge, our study is the first to demonstrate the relationship between cyclical productivity and both
labor and capital adjustment costs using a model of firm-level heterogeneity. Finally, we show that the productivity and market share evolution of large firms may explain aggregate productivity fluctuations if the firm-size distribution is fat-tailed. This is an important finding because if firm-size matters for aggregate developments, then the moments calculated using data on the largest firms may prove useful proxies when data on the entire distribution is not available.