

# Mind the Gaps: Firm-level Heterogeneity in Productivity and Wages in Times of the Slowdown

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A slowdown in the growth of productivity has been documented for most developed countries, including the Netherlands (OECD, 2017a). While the financial crisis has had a strong impact on economic performance, the slowdown started well before that, and it can therefore not fully explain the meagre productivity figures. From a macro-economic point of view, other explanations offered include the lack of innovation and technological change and secular stagnation, while the role of (mis)measurement in this respect appears to be small (Byrne et al. 2016).

From research on productivity making use of firm-level data, it is well known that there is substantial heterogeneity across firms with respect to the level and growth of productivity. OECD (2015, 2016) find that there is an increasing gap between firms at the production frontier and those that are behind. In fact, productivity at the frontier has been growing steadily, while growth for the lagging firms has only been marginal. This finding could suggest a lack of diffusion of knowledge and technology from frontier firms to the rest of the economy. Moreover, the rate of creative destruction through business dynamics (i.e. entry, exit and reallocation) seems to have gone down. This suggests that the aggregate slowdown could be the result of low productivity growth for non-frontier firms, in combination with a lack of efficient reallocation towards the more productive firms.

Besides putting another perspective on the aggregate slowdown, such differences in firm productivity can also have implications for the wages that a firm pays to its employees. In this respect, OECD (2017b) finds evidence that firms with a higher productivity, pay higher wages to their employees. Productivity differences between firms, and an increasing productivity gap between frontier and non-frontier firms, can therefore be an important driver of differences in income. This observation ties the productivity slowdown discussion to the inequality debate.

Against this background, we will investigate the productivity slowdown for the case of the Netherlands. The main research question we want to explore is whether the observed productivity slowdown is an economy-wide phenomenon, or whether we can determine specific firms or industries that have managed to keep up performance growth. If so, what are the characteristics of such firms and industries? And, does the gap in productivity between successful and unsuccessful firms translate into wage differentials and bear implications for income inequality?

Using growth accounting data, the aggregate slowdown over the past two decades in the

Netherlands will be described, and we will document differences across industries. Using firm-level data we will then describe the distributions of productivity and wages (and their respective growth), in order to document the heterogeneity in surrounding the industry-level figures. Are there any (growing) differences between frontier and non-frontier firms, and if so, is this true for all industries or for certain parts of the economy only? For example, do digitization and the use of ICT play a role in this respect, in the sense that it may create concentrated (winner-take-it-all) markets?

The second goal of the paper is to compare the characteristics of firms operating on the frontier and those that are not. Are frontier firms more innovative, either in a technological or non-technological sense? Have they invested more ICT or R&D? Do they have a higher-quality labour force? Are there differences in their export behaviour or type of ownership? What is the role of size, age, and business demographics in explaining aggregate growth? The intended result of this analysis is to provide detailed profiles of firms with higher or lower productivity (growth). Although our analysis does not deal with any issues of causality, these profiles should be informative to policymakers about successful strategies to promote productivity growth in a targeted way.

The final goal is to explore the relation between differences in productivity and wages, and assess whether heterogeneity in firm performance is a main driver of wage inequality. Earlier studies have found that between-firm productivity dispersion is important to explain the variation in wages. In the current debate around stagnant wages and the falling share of labour in production, it seems important to tie together evidence on the overall productivity slowdown, diverging productivity between firms, and the gap in wages.

The firm-level analysis will be based on an extensive linked database with information on the population of firms in the Dutch business register, and various surveys and registers maintained by Statistics Netherlands. This allows us to investigate a broad range of firm characteristics and cross combinations of variables. The time coverage varies across sources but the main period of analysis will concern 2001 to present, going back to 1995 in some instances. This allows us to compare pre- and post-Great Recession trends. The dataset combines information on the population of firms from the business register (including employment, age, and entry and exit) with survey-based information on the structure of production, investment, innovative behaviour, use of technology, and other firm characteristics such as trade status and locus of ownership. This combination of information allows us to decompose aggregate (industry-level) productivity changes into micro-level components (e.g. entry, exit and reallocation). In addition, we can look at firm-level heterogeneity in productivity (and its growth), make detailed profiles of firms along the productivity distribution (e.g. characteristics of leaders versus laggards), and finally to investigate the relation between productivity and wages at the firm-level.

Industry-level data are sourced from the Dutch Growth Accounts and National Accounts. The growth accounts contain information on industry output, together with levels and growth contributions of factor inputs and productivity. These data are currently available for 33 industries and for the period 2001-2015. Longer time-series for industry-level labour productivity can be

obtained from National Accounts series on valued added and hours worked.

#### References

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