



Comisión  
Nacional de  
**Evaluación y  
Productividad**

# EXECUTIVE SUMMARY

## Annual Productivity Report

2017

## **Productivity Report 2017**

This 2017 Productivity Report is the second of the National Productivity Commission. Since the 2016 Report was published, there have been critical consensus in the public debate: first, on the need to substantially improve productivity in the country; second, on the relevance of this occurring in all sectors, including the public sector; third, on the central role that traditional sectors such as mining still have in aggregate productivity.

This report updates our productivity estimates, adding a projection for 2017 and a review of previous estimates based on new information availability. Additionally, the report analyzes the link between productivity and well-being, connecting this concept with that of quality of life; it discusses the effect of alternative sources of information and methodological measurements for productivity estimates and deepens the relationship between these concepts and company characteristics, establishing a connection between their size and efficiency. Finally, the most notable findings of specific studies developed by the Commission during the current year are presented.

The main messages of this 2017 Annual Productivity Report are the following:

1. During 2017, it is estimated that the Chilean economy's aggregate total factor productivity (TFP) fell by a figure ranging between -0.7% and -0.1%, depending on the cyclical adjustment used, by unemployment or salaried employment, respectively. Meanwhile, in the non-mining economy, productivity grew between 0.2% and 0.9%.
2. For 2016, the figures reported in the 2016 Annual Productivity Report were updated. Corrections were made to the cyclically adjusted TFP growth estimation by salaried employment corrected from the previously reported -0.5% to -0.2%. This increase of 0.3 percentage points is due to, among other factors, the adjustment in GDP growth during 2016, from the projected 1.5% to 1.6% reported by the Central Bank of Chile.

3. The disturbing reduction in the growth rate of TFP since 2000, from 1.2% in the 2000-2005 quinquennium, to -0.6% in the 2005-2010 quinquennium and to -0.2% in the 2010-2015 quinquennium, continues. The change in TFP remained negative in 2015-2016. Although mining TFP is the leading cause of this slowdown, non-mining TFP also shows a slowdown, which, although less acute, is equally worrying: from 2.4% in the 2000-2005 quinquennium to 0.9% or less since 2005-2010. The deceleration of TFP is transversal to the economy.

4. During 2016, four out of eight sectors (mining, industry, electricity, gas, and water; trade, hotels, and restaurants) showed falls in productivity. Thus, recent sectorial evidence accounts for the stagnation of productivity observed during the last period in the Chilean economy. The deceleration in productivity is also a cause for concern in developed countries since the 2008 recession.

5. The behavior of productivity is necessary because the evidence of a positive relationship between productivity and well-being is overwhelming. Countries that attain elevated levels of productivity also experience higher per capita income, leading to improved quality of life. This includes increased wages and enhanced employment prospects, a greater abundance of resources for diverse and higher-quality goods and services, additional leisure time for individuals, improved healthcare and education, greater provision of public goods, and a cleaner, more sustainable environment. Despite this, it is necessary to consider that other aspects relevant to well-being, such as income distribution, levels of security, and respect for individual rights, are not guaranteed by improving productivity.

6. A sensitivity analysis comparing the evolution of productivity in Chile using alternative data shows that the definitions of the productive factors, adjustments to their use and quality intensity, and methodological assumptions significantly alter TFP measurement. In particular, the TFP of a year (although not the long-term TFP) appears to be very sensitive to cyclical adjustments, mainly impacting quarterly and annual measurements (generating differences of up to 0.7 percentage points).

Differences of the same order can occur depending on the ways of measuring the labor factor (for example, the quality of human capital) and variants of physical capital (for example, whether it is aggregated or disaggregated in machinery and construction). The most significant difference in the estimate results from using a measurement of "capital services" (recently available) instead of the standard capital measurement ("stock" or accumulated capital). The traditional measurement ("stock") shows an average annual growth rate of TFP of 1% in the period 1990-2015, while the figure drops to 0% when using the capital services series. However, each series agrees with the firm, and persistent deceleration in TFP has been observed since 2000, a trend that has yet to be reversed. That is, the stagnation observed in productivity over long periods is robust to the information and methodologies used. The sensitivity analysis suggests that reviewing more extended periods avoids changes (cyclical fluctuations) from altering structural evidence, making TFP measurement difficult.

7. The sensitivity analysis is critical when considering that productivity (such as eliminating institutional distortions and changes that promote the creation and adoption of better technologies and productive processes) is observed over long periods. Thus, the TFP analysis, and policy recommendations, should be made considering periods of several years. This does not imply that a particular year's measurement is irrelevant but should be analyzed in perspective.

8. Using firm-level data by size for the period 2005-2015, an analysis of the relationship between productivity and firm size is presented. According to the study, sales and value-added in Chile are generated by larger firms, which are more productive (value-added per worker) than smaller firms. Although the sample does not consider micro-enterprises and self-employed workers (a relevant fraction of employment), with the available data (two-thirds of total work), large firms account for half of the jobs and 80% of sales.

9. There is a significant productivity gap (value-added per worker) with developed countries, as, on average, firms in OECD countries have productivity 2 ½ times higher

than that of Chilean firms. Moreover, although over the past ten years, productivity in Chile increased more among larger firms, the most significant productivity gap with firms in OECD countries occurs among large firms. Indeed, large firms in developed countries are three times more productive than those in Chile, while micro and small firms in OECD countries show twice the productivity of their Chilean counterparts.

10. Sales and employment expansion occur mainly in high-growth and fast-growing firms, called "gazelles" (whose sales grow by over 20% per year for three years or more). In Chile, these firms represent 5% of total firms and 19% of sales but explain 75% of employment growth and 88% of productivity growth. From this, new firms are crucial to expanding economic activity if they grow and scale. Thus, productivity would increase due to better allocation of resources and through increased efficiency within firms, especially in larger ones.

11. This evidence gives rise to various challenges for public policy. Given how widespread our productivity gap is, a significant portion of the factors that explain it must be common to all firms and sectors. That is, some obstacles hinder our development. For example:

- i) Strategic obstacles such as those related to the underutilization of human capital due to an inadequate training and education system, the high dependence on exports of a few natural resources, or the limited efforts in research and development;
- ii) Microeconomic obstacles and market failures, such as inadequate or excessive regulations, uncompetitive markets, and a lack of long-term credit, especially for new or smaller firms;
- iii) Institutional obstacles, such as the absence of a modern state;
- iv) Macroeconomic obstacles in a context of slower global expansion and concern over recent productivity slowdowns in developed countries.

12. There are also management problems in the private sector. Chile appears far below-developed countries in terms of outstanding managerial presence, as the World Management Survey indicates. The study conducted by this Commission on Productivity in the Large Copper Mining sector reveals compelling evidence of significant variations in process efficiency among local mines. These differences persist even when considering factors such as the regulatory framework or geological conditions, highlighting the presence of high heterogeneity within the industry.. In addition, the most productive mines in the country are significantly less efficient than an international sample of successful companies. There is ample room for improvement within companies by adopting and adapting the best practices and technologies available in Chile and abroad.

13. Questions persist concerning the factors that explain low productivity in Chile. Longitudinal surveys of companies, conducted regularly in developed countries, are needed to provide relevant evidence and enrich the local analysis. It is necessary to have data series that enable productivity monitoring according to international best practices to implement good public policies. The recent publication by the Central Bank on a capital services series built according to OECD recommendations is a step in this direction. It is necessary to advance in the disaggregation of different types of capital and improve employment, salary, and hours series at a national level and on an annual frequency. Adjusting working hours and quality is fundamental to understanding the contribution of employment to economic growth and calculating productivity.

14. We reiterate our recommendation in the Productivity Agenda Review report, published in 2016, regarding legislating so that data obtained with public resources are effectively public to contribute to developing informed technical debates, enhancing research, and improving public policy quality.

15. The consensus reached in recent years on the importance of recovering high rates of productivity expansion in most sectors of the country's economy requires assuming

this task by strengthening the institutions responsible for its analysis. This is the only way to promote a long-term view of the national productivity problem. A positive step has been the recent requirement through a Presidential Instruction that a productivity report accompanies economic area bills. Furthermore, expanding the provision to all bills with a regulatory impact discussed in Congress is highly convenient, and according to the recent agreement protocol between Congress and the Budget Directorate to parliamentary motions with an effect on the economy.

The report is organized into four sections. The following section explains the relationship between productivity and well-being, bringing together the concepts of efficiency and quality of life for people. The ensuing section presents the productivity estimates of the National Productivity Commission updated until 2017 and a sensitivity analysis of these estimates considering different sources of information and calculation methodologies. Section 3 analyzes the relationship between productivity and company size, identifying efficiency gaps in advanced countries. Finally, Section 4 presents the main results found in the studies carried out by the Commission during this year.