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Falck, Oliver; Guo, Yuchen; Pfaffl, Christian

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Oliver Falck, Yuchen Mo Guo and Christian Pfaffl

Lost Economic Output Due to High Bureaucratic Burden

KEY MESSAGES

- This study examines the overall economic costs arising from high levels of bureaucracy. We also shed light on whether and to what extent the digitalization of administrative processes can reduce the economic costs of bureaucracy
- The results of our international analysis show that a fundamental reduction in bureaucracy is accompanied by a 4.6-percent average increase in real GDP per capita
- If Germany had implemented a fundamental reduction in bureaucracy in 2015, GDP per capita would have been EUR 2,449 higher in 2022. On average for the years 2015 to 2022, this would have corresponded to an annual increase in real GDP per capita of EUR 1,766, or EUR 146 billion in total per year
- Our results also show that a digitalization push in public administration can increase the level of real GDP per capita by 2.7 percent while maintaining the same level of bureaucracy
- The positive impact of digitalization is particularly strong in countries with high levels of bureaucracy

BUREAUCRACY IS ON THE RISE

Bureaucracy describes a form of organization that is characterized by decisions based on clear guidelines and planned administrative action within defined structures. Bureaucracy thus provides a uniform, transparent framework for all citizens and companies. Decisions, such as administrative approvals, are made according to uniform rules. In general, this is a positive feature, the core of a constitutional state, and a prerequisite for fair competition.

However, the term "bureaucracy" has negative connotations when citizens and companies have the impression that too much regulation imposes unnecessary burdens on them. In addition, the term "bureaucracy" is often used to refer to inefficient, non-service-oriented administrative processes. Public debate in Germany has long called for a reduction in bureaucracy, usually arguing that the bureaucratic burden pushes actual economic activity into the background and imposes additional costs that negatively affect Germany's economic competitiveness. In a recent survey of economic experts conducted by the ifo Institute, excessive bureaucracy was by far the most frequently cited obstacle for Germany as a business location (Dörr et al. 2024).

To examine the bureaucratic burden impact, the first question is how it has evolved in recent years. One possible way of measuring it is the so-called compliance cost, which includes the time required and the direct costs incurred by citizens, businesses, and public authorities in complying with a legal requirement. Figure 1 shows a significant increase in compliance costs since 2021, with the main burden being borne by businesses.

Compliance costs are an indicator of the direct bureaucracy costs for firms. However, they do not take into account the total economic costs that can arise as a result of high bureaucracy, such as when firms leave the market or invest abroad due to excessive bureaucracy. Or a low start-up dynamism because firms do



is Head of the ifo Center for Industrial Organization and New Technologies and is a Professor of Economics, particularly Empirical Innovation Economics, at the Ludwig Maximilian University of Munich.

Oliver Falck

Yuchen Mo Guo

is a Junior Economist and Deutsche Telekom Doctoral Student at the ifo Center for Industrial Organization and New Technologies and LMU Munich, and currently Visiting Fellow at the Growth Lab at Harvard University. **Christian Pfaffl**

is an Industry Specialist at the ifo Center for Industrial Organization and New Technologies.



not even enter the market due to excessive bureaucracy-related barriers to entry. In addition, there is a risk that firms will no longer be able to focus on their actual business activities, i. e., the production of the best possible goods and services, focusing instead on making the best possible use of regulations. The goal of maximizing profits (rent creation) is then replaced by rent seeking, which is inefficient from an economic perspective. Rent seeking describes the goal of generating income without making a productive contribution.

The aim of this study is to draw a macroeconomic picture of the costs of bureaucracy. In a first step, the relationship between bureaucracy and economic performance is estimated econometrically using a cross-country empirical analysis. We quantify the macroeconomic costs of bureaucracy by calculating how much higher real GDP would be if Germany were to reduce bureaucracy. The second step focuses on the question of whether digitalization can help reduce the bureaucratic burden in order to generate higher economic output.

BUREAUCRACY AND ECONOMIC OUTPUT

Data

We aim to empirically explore the relationship between bureaucracy and economic performance. For the main variable, real GDP per capita, we use data from national accounts, sourced from the World Bank, which allows for analysis up to 2022 using internationally comparable macroeconomic indicators.

Additionally, we use data from the World Bank's "Doing Business" Index (2006–2020), one of the most extensive surveys on business regulation and business friendliness. It reflects the general business environment based on data from annual surveys of 12,500 experts across 190 countries on topics such as the cost of starting a business, access to electricity, and investor protection. It also provides direct information on compliance costs for companies, such as the time required for tax returns, obtaining building permits, or importing and exporting goods.

For our analysis, we focus specifically on the "Doing Business" aspects most relevant to bureaucracy. We use the survey data to construct a "bureaucracy" subindex, emphasizing compliance costs caused by bureaucratic regulations. This subindex helps directly assess the impact of bureaucratic burdens on economic performance.

Our bureaucracy index is made up of the following dimensions, which reflect the bureaucratic burden in the "World Bank Doing Business" data set: effort to obtain a building permit (days and number of bureaucratic processes), effort to register property (days and number of bureaucratic processes), effort to file tax returns (hours per year and frequency per year), and effort to import or export goods and services (num-

Figure 1

Development of Annual Compliance Costs (Federal Laws)



 2011
 2012
 2013
 2014
 2015
 2016
 2017
 2018
 2019
 2020
 2022
 2023
 2024

 Source: Normenkontrollrat.
 so

ber of documents required, days needed for customs clearance¹). Our combined bureaucracy index is standardized to have a mean value of 0 and unit standard deviation,² thus allowing for negative values and the lower the value of the index, the lower the measured bureaucracy burden.

Figure 2 shows the development of this bureaucracy index over time for various OECD countries. In an international comparison, Germany is just below the OECD average, but well above Sweden, the country with the lowest bureaucracy index. In addition, Germany's bureaucracy has stagnated over the last 15 years, in contrast to other OECD countries that have seen a significant reductions over time, such as France around 2006, when a broad reform of public administration was initiated under Nicolas Sarkozy's government ("Révision générale des politiques publiques (RGPP)").

Methodology: Identification of Broad-Based Reforms to Reduce Bureaucracy

In order to estimate the relationship between the bureaucratic burden to companies and a country's economic performance, we use a data-driven approach to identify broad-based public administration reforms in the data. Broad-based public administration reforms aim to solve structural inefficiencies in a coordinated manner. Accordingly, the greatest effect on the economy is to be expected from a broad-based reform and

² The index is formed by first standardizing each of the variables so that all variables have a mean value of 0 and a standard deviation of 1 (i.e., the so-called z-score is formed). The summarized bureaucracy index then consists of the sum of the standardized variables, each of which depicts the aforementioned dimensions of bureaucracy. The index is again standardized to a mean value of 0 and a standard deviation of 1 by dividing the sum of the individual dimensions by the standard deviation of this sum.



¹ Between 2005 and 2006, the survey methodology and the unit of measurement for the import and export variables were changed. Until 2005, the time spent was measured in days, after 2006 in hours, although there is no clear correspondence between hours and years for all countries. However, the data for 2006 contains both variants of the variable. When calculating our index, we equate the variables measured in days with the new variables measured in hours. In this way, the hours surveyed can be converted into days on a country-specific basis to harmonize the variables between the survey methods up to 2005 and after 2006. Our results are invariant to alternative approaches with the break.



not from an isolated reform of individual measures. After all, companies are confronted with bureaucracy and public administration in many areas. These include, for example, employee payroll taxes, turnover and profit taxes, work permits, operating permits, building permits, and import and export permits. Reforms addressing just one of these areas would cover only a small part of the overall bureaucratic burden, whereas comprehensive, broad-based reforms covering a large number of bureaucratic areas and dealings with authorities offer a far better chance of providing noticeable relief for companies.

Accordingly, our empirical analysis focuses on cases of broad-based bureaucracy reduction. We use so-called "spikes" in bureaucracy reduction, such as in the case of France in 2006: the bureaucracy index for France fell by 0.89 index points from 2006 to 2007^3 from 0.57 to -0.32 (Figure 2). We define a broad-based reduction in bureaucracy as the largest 1 percent of all annual reductions in the bureaucracy index across all countries. Our dataset contains 27 countries with "spikes" in bureaucracy reduction, including EU members Croatia (2006), France (2006), Poland (2012), and Portugal (2010).⁴

Empirically, we use these broad-based bureaucracy reduction events in a difference-in-differences approach. This estimation approach compares the development of real GDP per capita in countries with broad-based bureaucracy reduction with countries without such reductions in order to isolate the effect of the reforms. By taking into account differences before and after the reform in both groups, we can eliminate distortions due to other, simultaneously occurring influences and trends, such as a general tendency towards less bureaucracy and higher GDP for all countries over time. This approach also eliminates initial differences in levels between countries with and without broad-based bureaucracy reductions. This results in the estimation equation:

$GDP_{it} = \eta_i Country + \theta_i Year_t + \beta Reform_{it} + e_{it}$

where GDP, is the logarithmized level of real GDP per capita in country *i* at time *t*. η_i *Country* are fixed country effects that adjust for general differences in bureaucracy and GDP between countries. In OECD countries, for example, GDP is higher on average and bureaucracy is lower, or they differ from non-OECD countries in the probability of implementing a broad-based reduction in bureaucracy. Not taking these country-specific differences into account would overestimate the effect of a broad-based reduction in bureaucracy on GDP. $\theta_{,}$ Year, are fixed annual effects that absorb general trends over time that affect all countries equally. Thus, the general trend in GDP is rising over time in all countries. Bureaucracy reforms occurring more frequently in later years would also lead to overestimating the effect of a broad-based reduction in bureaucracy on GDP. Reform, is an indicator of whether a fundamental bureaucracy reform has taken place in country *i* at time *t*. For example, France introduced a broad-based bureaucracy reform in 2006. In this case, the indicator *Reform*, would be 0 for France before 2006 and 1 after 2006. For a country without a bureaucracy reduction, such as Germany, *Reform*_{it} assumes the value 0 for the entire period. Thus, the coefficient β is the estimated average percentage effect of broad-based bureaucracy reduction on the level of GDP per capita. e_{it} is an error term that picks up differences in GDP that are not captured by the explanatory variables in the model. The coefficient β in the estimation equation represents the classic difference-in-differences estimator.

Data on GDP and the bureaucracy index is generally available for 184 countries for the period from 2006 to 2022.⁵ For some countries, however, this data is not available from 2006 onward, but only from a later date. This ultimately results in 2,910 country x year observations that can be used for the empirical estimation.⁶

Results: Broad-Based Reduction in Bureaucracy and Economic Performance

Table 1 shows our estimates for the percentage correlation between broad-based bureaucracy reduction and the level of real GDP per capita. The conventional difference-in-differences estimator shows that a broad-based reduction in bureaucracy is associated with an average increase of 3.7 percent in real GDP



³ Or 0.89 standard deviations, as one index point corresponds to one standard deviation in the bureaucracy index's unit of measurement.

⁴ If a country shows several spikes in bureaucracy reduction in succession, we take the first spike as a fundamental reform. Subsequent declines in the bureaucracy index are presumably to be regarded as subsequent effects in the wake of those initial fundamental reforms.

⁵ The "World Bank Doing Business" data is available from 2006 to 2020. For our identification strategy, we assume that the index does not change from the 2020 value in 2021 and 2022. As this leaves potential countries with bureaucracy reforms after 2020 in the control group, this leads to an "underestimation" of the "true" effect. Our results are invariant to alternative approaches.

⁶ Our results remain robust regardless of whether we keep or exclude countries without data over the entire period in our estimation sample.

per capita. However, this may be biased if reforms were introduced at different times in different countries. Therefore, we focus on the results based on the alternative and robust difference-in-differences estimators. The effects from these estimates are consistently above the conventional difference-in-differences estimator, at between 4.6 percent and 5.3 percent, but are not statistically significantly different from the conventional difference-in-differences estimator. We therefore take the most conservative estimate from the robust estimators of de Chaisemartin and D'Haultfœuille (2020) as our preferred estimate. According to this estimate, real GDP per capita in the period after a broad-based reduction in bureaucracy is on average 4.6 percent higher than before. We interpret this as the net macroeconomic gains in real GDP per capita associated with a broad-based reduction in bureaucracy.

The 4.6-percent effect reflects the average impact across all years following a reform, but it may start small and grow over time. Figure 3 shows the percentage difference in real GDP per capita between countries with and without a broad-based reductions in bureaucracy, relative to the reform (time t=0). Up to four years before the reform, the difference is not significant, indicating similar GDP trends between the two groups. This suggests that our estimates are not biased by initial GDP differences. After the reform (from time t=1), significant differences emerge, with the effect growing from 1.6 percent in the first year (t=1) to 8.3 percent after ten years (t=10). Thus, the positive impact of reducing bureaucracy develops gradually over time.

Figure 4 shows the hypothetical development of real GDP per capita in Germany if a broad-based reduction in bureaucracy had occurred in 2015. In this scenario, such a reform would have increased real GDP per capita by EUR 673 in the first year and by EUR 2,449 in 2022. On average, this would amount to an additional EUR 1,766 per year in real GDP per capita from 2015 to 2022. In total, the costs of bureaucracy due to lost economic output for Germany amount to a total of around EUR 146 billion per year. Existing estimates by the Normenkontrollrat (German National Regulatory Control Council) put the direct costs of bureaucracy due to compliance costs alone at EUR 65 billion. As the costs of bureaucracy in this study include both the direct and indirect costs of bureaucracy for the economy, they are more than double the direct costs alone.

The average reduction in bureaucracy in our data is 0.85 index points, similar to the gap between Sweden (-2.04) and Germany (-1.28) in 2015. For German GDP per capita to reach the levels shown in Figure 4, its bureaucracy burden would need to match Sweden's. For comparison, compliance costs for tax returns are nearly double in Germany (218 hours) compared to Sweden (122 hours). Registering real estate in Germany involves six procedures (52 hours), while Sweden requires just one (7 hours). Significant reforms would be needed for Germany to catch up with Sweden, but our estimates suggest that the potential GDP gains would well justify the effort.

Digitalization of Administrative Processes to Reduce Bureaucracy

One of the most effective tools for reducing the bureaucratic burden of existing regulatory density appears to be the digitalization of public administration, as indicated by the development of the bureaucracy cost index published by the German Federal Statis-

Table 1

Broad-Based Bureaucracy Reduction and Real GDP per Capita

	Log GDP per capita	
Difference-in-differences estimator	0.0370*** (0.0135)	
de Chaisemartin and D'Haultfœuille (2022)	0.0463*** (0.0150)	
Borusyak, Jaravel and Spiess (2023)	0.0530*** (0.0192)	
Callaway and Sant'Anna (2021)	0.0533*** (0.0166)	
Countries Period Observations	World Bank Sample 2006 – 2022 2,910	
Robust standard errors in brackets, * p < 0.10, ** p < 0.05, *** p < 0.01		

Source: Own calculations.

Figure 3

Estimated Effect of a Broad-Based Reduction in Bureaucracy on Real GDP per Capita





Lost Output Due to Bureaucracy in Germany



 Z010
 Z011
 Z012
 Z013
 Z014
 Z013
 Z016
 Z017
 Z018
 Z019
 Z020
 Z021
 Z022

 Source: Authors' calculations.
 © ifo Institute



tical Office (Figure 5). It measures the direct costs incurred by companies because of traditional "paperwork," such as submitting applications or providing supporting documents.⁷ According to the bureaucracy cost index, direct bureaucracy costs for businesses have fallen by around five index points since 2012. The abrupt drop in bureaucracy costs at some points in time is striking. The German Federal Statistical Office argues that the resolution of improvements in digital administration has led to a reduction in bureaucratic costs. These decisions include, for example, the introduction of electronic certificates of incapacity for work or the introduction of electronic invoicing in the business-to-business (B2B) area. Can the digitalization of administration also help reduce the economic costs of bureaucracy?

To investigate this empirically, we use data from Eurostat's Digital Economy and Society Index (DESI), covering digitalization in the 27 EU countries from 2014 to 2020. One subindex, "digital public services for businesses," measures the percentage of public services available online for starting a company and

⁷ The administrative costs are part of the compliance costs (Figure 1), which comprise the total measurable time and costs incurred in complying with federal regulations. The compliance costs therefore also take into account costs arising, for example, from monitoring measures, adjustments to internal processes, and the procurement of goods and services.



Note: If the federal government introduces legal regulations that will relieve companies of bureaucracy costs in the future, the bureaucracy cost index decreases. If it passes regulations that create new bureaucratic burdens for companies, this leads to rising bureaucracy cost index values. Source: German Federal Statistical Office.

Figure 6

Figure 5

Development of the Digitalization Index in Selected Countries



conducting business activities, such as tax processes and changing a company's legal form.

Figure 6 shows the index's development for selected countries over time, ranging from 0 (low digitalization) to 100 (high digitalization). Denmark, Estonia, and Ireland led with scores of 100 in 2019, while Germany is positioned mid-range among EU countries in the digitalization of public administration, particularly concerning key bureaucratic processes for companies.

Analogous to the procedure for identifying significant bureaucracy reforms, we use spikes in the degree of digitalization through large spikes in the sub-indicator "digital public services for companies." In this way, we identify nine countries with a digitalization spike: Belgium (2014), Bulgaria (2016), Croatia (2014), France (2014), Germany (2014), Greece (2015), Latvia (2015), Slovakia (2016), and Sweden (2014).⁸

We estimate a similar model to quantify the relationship between digitalization pushes and real GDP per capita, controlling for the bureaucracy index to assess the impact of digitalization under a given bureaucracy level. We also interact the digitalization boost with the annual bureaucracy index to study if the effect differs between countries with low and high levels of bureaucracy.

We estimate the following model:

 $GDP_{it} = \eta_i Country_i + \theta_t Year_t + \alpha Digitalization Push_{it}$ + $\gamma Bureaucracy Index_{it}$

+ δ Digitalization Push_{it} × Bureaucracy Index_{it}+ e_{it} ,

whereby fixed effects for countries $(\eta_i Country_i)$ and years $(\theta_i Year_i)$ are taken into account. α is the effect of a digitalization push in public administration on the level of real GDP per capita. With γ Bureaucracy Index_{it} we control for the annual level of the bureaucracy index, i.e., the compliance costs for bureaucracy. δ Digitalization Push_{it} × Bureaucracy Index_{it} is an interaction term between the digitalization push and the value of the bureaucracy index for country *i* in year *t*. The greater δ is, the higher the effect of a digitalization push in public administration for a country with a high bureaucracy burden compared to a country with an average bureaucracy burden in relation to the countries in our analysis.

Table 2 shows that a digitalization spike in public administration is linked to a 2.7 percent increase in real GDP per capita at a given level of bureaucracy. An average digitalization spike is 14.3 index points, similar to the gap between Denmark (98.3) and Germany (83.7) over the observation period. If Germany reached Denmark's digitalization level, its real GDP



⁸ France, for example, improved its digitalization index by 1.2 index points in 2014. This brought France from 23rd place in a European comparison, far below the European average in 2014, to 17th place in 2015. This is related to the Conseil national du numérique (National Digital Council), which was initiated in France in 2012 and set itself the goal of accelerating the digitalization of the economy and society which led, for example, to a comprehensive national digitalization strategy being adopted between 2014 and 2015.

per capita could be about 2.7 percent higher. Figure 7 illustrates the development of real GDP per capita for Germany with a hypothetical digitalization boost in 2015: a digitalization boost would increase real GDP per capita by an average of 2.7 percent, or EUR 1,159, per year after the reform.

The first row of Table 2 shows the correlation between a digitalization push and log GDP per capita for a country with an average bureaucracy index. The second row shows the additional effect for a country with a bureaucracy burden one standard deviation above average: in such countries, a digitalization boost is associated with an additional 5.2-percent increase in GDP per capita. Therefore, the digitalization of public administration has a positive effect on GDP, particularly in countries with a high bureaucratic burden.

POLICY CONCLUSIONS

The results of our empirical analysis confirm the presumed benefits of a lean bureaucracy, showing that a comprehensive reduction in bureaucracy is associated with economic benefits. Germany's high bureaucratic burden for companies, thus, leads to its missing out on economic performance. The role of digital administration is also confirmed by our analysis, making plain that digitalization can help turn bureaucratic processes more efficient, generating economic growth in the process. However, processes should be streamlined overall and aligned with digital capabilities. New regulations, administrative procedures, and funding programs should be reviewed for digital feasibility.

In view of these results, politicians should focus on a comprehensive reduction in bureaucracy. Although a major reforms are needed to catch up with countries with a low bureaucracy burden, the expected benefits should justify the effort.

A two-pronged strategy is needed to benefit from lean bureaucracy. On the one hand, bureaucracy must be made fundamentally lean and efficient, while on the other, essential bureaucratic processes must be streamlined and fully digitalized. The digitalization of administrative processes is also a matter of great urgency due to the increasing labor shortage caused by demographic change. Staff members tied up in handling administrative processes are no longer available to the economy. In addition, digitalization is needed to maintain government administrative tasks in the face of growing staff shortages: without sufficient digitalization, administrative procedures are likely to take even longer in future.

Decisive political action is required to achieve a broad-based reduction in bureaucracy. However, this often poses a political economy incentive problem: if a government implements far-reaching reforms in the current legislative period, it will usually be associated only with the negative, immediate effects of the reform (e.g., job losses). However, as in the case of administrative reforms considered here, the positive effects

Figure 7





Table 2

, ,		
	Log GDP per capita	
Difference-in-differences estimator	0.0272** (0.0123)	
Digitalization push × Bureaucracy index	0.0520** (0.0229)	
Bureaucracy Index	-0.0566 (0.0431)	
Countries Period Observations	EU countries 2014–2020 162	
Robust standard errors in brackets, * p < 0.10, ** p < 0.05, *** p < 0.01		

Source: Authors' calculations.

Bureaucracy and Digitalization

of a reform often appear only after some delay, i.e., possibly only after another government has already been elected. The new government can then claim the positive effects for itself, being insulated from the negative, immediate effects at the time of the reform. This incentive problem complicates the implementation of necessary reforms and makes it clear that a successful reform toward a lean and efficient bureaucracy can be achieved only as a long-term political goal. Our findings clearly illustrate both the economic costs of delayed bureaucracy reform, and the potential benefits of deep reforms and digitalization efforts.

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