

Once faster than the car industry

Why construction productivity has been falling since 1970 and why new tools do not fix it

At a glance

Between 1935 and 1970 the number of homes per construction worker in the United States often grew faster than the number of cars per worker in the car industry. Then the curve turned, and construction productivity has been falling ever since while the rest of the economy rose: in 2020 the labour productivity and the total factor productivity of construction stood below their 1950 level, while those of the economy as a whole stood 290% and 230% higher respectively. The explanation with the strongest support in the research is not about tools and not about craftsmanship: project-level regulation makes projects smaller, smaller projects make firms smaller, and small firms do not invest in technology. The European figure fits that picture, because according to the investment survey of the European Investment Bank only 24% of construction firms introduced anything new in 2023, against 32% on average. In December 2025 the European Commission turned that diagnosis into policy for the first time.

24%

Of construction firms introduced a new product, process or service in 2023, against 32% in the EU as a whole (EIB Investment Survey 2024, cited in COM(2025) 991)

Foreword

Construction is the only large sector where a worker produces less today than half a century ago. That is a striking sentence and it is not a provocation: it comes from a series of economic studies that point in the same direction time after time, with different methods and different datasets. This report is about what the best explanation for that is, and why that explanation is uncomfortable for anyone who sells technology to construction.

For this report it looked at the work of Goolsbee and Syverson, at the study by D'Amico, Glaeser, Gyourko, Kerr and Ponzetto on land-use regulation, at the criticism of it, at the structural business statistics of Eurostat, at the investment survey of the European Investment Bank and at the European strategy for housing construction of December 2025. The evidence is largely American, and where that limits the conclusions, it is said so.

The content applies on 17 July 2026. The research this report refers to is ongoing, and the European measures it describes are largely still at the announcement stage.

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01 The figure nobody believes

Start with the chart this whole subject hangs on. In *The Strange and Awful Path of Productivity in the U.S. Construction Sector*, published in January 2023, Austan Goolsbee and Chad Syverson of Chicago Booth put two series side by side: the productivity of the American construction sector and that of the economy as a whole, from 1950 to 2020. Well into the nineteen sixties both measures of construction grew steadily, and they did so faster than their counterparts for the whole economy.

Around 1970 they began to fall. That decline turned out not to be temporary but to hold for half a century. In 2020 the labour productivity and the total factor productivity of the whole economy stood 290% and 230% higher respectively than in 1950, while both measures for construction had sunk below their 1950 level. The Richmond Fed summarised it in an economic brief of December 2025: labour productivity in construction fell by more than 30% between 1970 and 2020, while the productivity of the American economy doubled over the same period.

The first reaction of any economist to such a series is that the measurement is wrong, and that is a reasonable reaction. Construction prices are difficult to deflate, because a building is not a box of cornflakes and its quality changes. Goolsbee and Syverson took that objection seriously and therefore also looked at measures that need no deflator: homes per worker, and square metres of home per worker. Homes per worker falls in both data series they use.

The usual explanations do not work out either. It is not underinvestment: over the same period the capital investment rates in construction were as high as in the economy as a whole. Nor is it a marginal industry. Between 1950 and 2020 construction accounted on average for 4.3% of American gross domestic product, and Foerster and colleagues concluded in 2022 that the productivity problem of construction explains more than a quarter of the decline in American annual growth of 2.8 percentage points since the Second World War, which comes down to roughly a thousand billion dollars per five years.

What this part does not deliver is an explanation. Goolsbee and Syverson bring no new data; they use the same figures from the Bureau of Economic Analysis as their predecessors and search systematically for causes. Their conclusion is above all that the usual suspects are not it. The explanation came from another corner, and it starts with a period everyone has forgotten.

Source: Austan Goolsbee and Chad Syverson, *The Strange and Awful Path of Productivity in the U.S. Construction Sector*, NBER working paper, January 2023, summarised in Becker Friedman Institute Economic Finding, January 2023 · Federal Reserve Bank of Richmond, *Five Decades of Decline: U.S. Construction Sector Productivity*, Economic Brief 25-31, December 2025 · Andrew Foerster, Andreas Hornstein, Pierre-Daniel Sarte and Mark Watson, *Aggregate Implications of Changing Sectoral Trends*, 2022 · Chicago Booth Review, *US Construction Has a Productivity Problem*, 25 July 2023

02 The forgotten boom

Leonardo D'Amico, Edward Glaeser, Joseph Gyourko, William Kerr and Giacomo Ponzetto pulled the series further back than anyone before them had done, to 1900, in *Why Has Construction Productivity Stagnated? The Role of Land-Use Regulation*, which appeared as NBER working

paper 33188 and as Harvard Business School working paper 25-027 in November 2024. What they found is an inverted U: the number of homes built per construction worker stood still between 1900 and 1940, shot up after the Second World War, and collapsed after 1970.

The middle section of that curve is the sentence that gives this report its title. In the period from roughly 1935 to 1970 the number of homes per construction worker often grew faster than the number of cars per worker in the car industry, and faster than total industrial output per worker. Construction, the sector everyone knows to be slow, beat the sector that is the symbol of industrial progress for thirty years.

For thirty years the number of homes per construction worker grew faster than the number of cars per worker. Construction beat the car industry.

From that the authors draw the conclusion that steers the rest of their work: there is nothing about construction that makes technological progress inherently impossible. That is a more important sentence than it looks, because the common story about construction is that every building is unique, that the weather is against you, that the ground is uneven and that the sector therefore cannot industrialise. That story was refuted for thirty years by the sector itself.

There is also a warning in it. If construction once advanced faster than the car industry and then lost that, the decline is not a law of nature but an event. Something changed in or around 1970, and that something is then the subject. Whoever looks at the tools instead is looking at the variable that was not special during the boom either: the men who put up a neighbourhood in 1955 had no software.

What did change is known and dated. The productivity decline after 1970 coincides with the rise of local regulation of land use in the United States. Correlation is not yet a mechanism, and it is precisely that mechanism the authors go on to model.

Source: Leonardo D'Amico, Edward Glaeser, Joseph Gyourko, William Kerr and Giacomo A. M. Ponzetto, Why Has Construction Productivity Stagnated? The Role of Land-Use Regulation, NBER working paper 33188 / HBS working paper 25-027, November 2024 (first version 30 December 2023)

03 The mechanism: project rules, not entry rules

The model of D'Amico and colleagues makes one distinction that most discussions about regulatory burden do not make, and it is counter-intuitive. Not all regulation works in the same direction. Regulation of entry to a market works as a fixed cost: whoever wants to cross the threshold has to bear that cost, and that only pays off at sufficient volume. Entry regulation therefore increases the equilibrium size of firms. Regulation at project level does the opposite: it makes projects smaller, and with that it makes the firms that live off them smaller.

Construction is full of the second kind. Local land-use rules determine how large a project may be, how many units fit on it, how high it may go, and whether it may come at all. Each of those rules cuts at the top end of project size. The result is a sector of small firms, not because small firms are better, but because there are no large projects to fill large firms with.

Then comes the step that touches productivity. If larger firms have stronger incentives to invest in technology, then every rule that limits project size lowers not only the economies of scale but also the investment in technology. The model shows that this inefficient shrinking of firm size and technology investment is a distinctive consequence of restrictive project regulation, while classic entry barriers make firms larger instead.

The empirical work in the same study fits the model. American statistical areas with stricter land-use rules have smaller and less productive construction firms, and less construction activity, both residential and non-residential. The United States has higher production costs than equally wealthy countries, and those costs are higher in more strictly regulated American cities.

Then follows the figure that sketches the size of the matter. Under the assumption that half of the observed relationship between establishment size and productivity is causal, American homebuilding firms would be roughly 60% more productive if their size distribution matched that of manufacturing. The authors themselves call that a back-of-the-envelope calculation, and the assumption is stated on purpose. The point is not the decimal. The point is that the largest known lever on construction productivity is firm size and not the tools.

Source: D'Amico, Glaeser, Gyourko, Kerr and Ponzetto, Why Has Construction Productivity Stagnated?, NBER working paper 33188, November 2024 · NBER Digest, The Stagnation of US Construction Productivity, February 2025

04 Innovation follows scale

Anyone who works in construction knows the complaint that the sector does not innovate. The patent evidence confirms that complaint and adds something to it that is rarely taken along. According to the same study, patent activity in construction stagnated and diverged from that of other sectors, and that held for the sectors that mainly supply builders as well. That divergence is there above all since the nineteen seventies, so from the same point in time as the productivity decline.

The order is the whole point here. The common reading is that construction lags behind because it is conservative, and that more innovation would make the sector more productive. The reading of this study turns that around: as construction firms and construction projects get smaller, innovation falls. Innovation is then not a cause but a consequence of scale, and urging a sector to innovate is then about as effective as urging a small firm to think big.

Innovation is not a cause of scale but a consequence of it. A builder who puts up four homes a year does not write off a system.

The economics behind it is banal and therefore convincing. An investment in a production method, a machine or software is earned back over the number of times you use it. A builder who puts up four homes a year cannot write off the development of a system; a builder who puts up four thousand can. That is not a mentality, that is arithmetic, and it cannot be trained away.

The European figure on this is strikingly precise. In the European strategy for housing construction the Commission cites the investment survey of the European Investment Bank from 2024: only 24% of construction firms reported having introduced a new product, process or

service in 2023, well below the EU average of 32% for all sectors together. Three in four construction firms therefore introduced nothing new in a whole year.

Put that figure next to the supply. There is more construction software, more prefab, more measuring equipment and more digital design than ever. Supply is not the bottleneck. Demand is, and demand is determined by how many projects a buyer has to spread an investment over.

Source: D'Amico, Glaeser, Gyourko, Kerr and Ponzetto, Why Has Construction Productivity Stagnated?, NBER working paper 33188, November 2024 · European Commission, European Strategy for Housing Construction, COM(2025) 991, 16 December 2025, referring to the EIB Investment Survey 2024

05 Europe counts the same problem differently

The line of research above is American. The European figures are different in kind, because Eurostat does not measure homes per worker, but they draw a sector with the same structure. In 2022 there were roughly 960,000 enterprises active in the construction of buildings in the EU, NACE division 41, together accounting for 3.0% of all enterprises in the business economy. Those 960,000 enterprises employed almost 3.5 million people.

Divide those two figures by each other and you get fewer than four people per enterprise on average. That is not an error in the statistics and it is not a temporary situation either: the number of enterprises in that division rose by 4.1% in 2022 compared with the year before. European construction is not a sector with many small firms alongside it. European construction is the small firms.

Productivity fits that picture. The apparent labour productivity of the construction of buildings came out in 2022 at 51,500 euros per person employed, against 62,700 euros on average in the business economy. For construction as a whole it was 48,600 euros. Eurostat itself names two structural causes for it: construction projects take much longer from idea to delivery than the production of goods in most sectors, and they often involve a large number of subcontracting enterprises with diverse specialisations.

That last sentence describes the fragmentation without calling it that. A project with fifteen subcontractors has fifteen coordination costs, fifteen handovers, fifteen liability boundaries and fifteen small firms that each make their own investment decision about the same piece of work. Anyone who wants to book a productivity gain in such a chain has to convince fifteen parties at once, each of whom sees a share of the gain and the whole of the cost.

Cyclically the picture is meanwhile not dramatic. According to ING, construction output in the EU fell by 1.5% in 2024, stood still in 2025 and is expected to grow by 1.5% in 2026. The Commission's confidence indicator for construction stood at minus 3.3 in December 2025, the best reading in more than two years. Those are figures about the cycle. The problem in this report is not one of the cycle.

Source: Eurostat, Businesses in the construction of buildings sector, Statistics Explained, 2022 data · ING Research, Construction Outlook 2026: Growth returns to the European construction sector, January 2026 · European Commission, construction confidence indicator, December 2025

06 What Brussels wrote down in December 2025

On 16 December 2025 the European Commission published the European Strategy for Housing Construction, COM(2025) 991, together with the first European plan for affordable housing. The plan aims at 650,000 additional homes a year on top of the roughly 1.6 million that are added annually now. The strategy next to it is about the sector that has to build them, and it is worth reading because it largely adopts the diagnosis in this report.

The strategy calls the European construction system fragmented, insufficiently digitalised, and limited in its capacity to scale innovation. Against that it puts measures that are not about tools but about market size and about procedures. From December 2025 to October 2026 the Commission is carrying out a study of the permitting procedures for construction projects in all 27 member states. A Construction Services Act is announced for the fourth quarter of 2026.

The most interesting measure is almost an aside. In the course of 2026 the Commission starts a pilot project on prefabricated construction under the Competitiveness Coordination Tool, with the aim of removing regulatory obstacles and creating a genuine pan-European market for the sector, so that it can reach the scale it needs. That is, in policy language, exactly the reasoning of D'Amico and colleagues: do not subsidise the technology but enlarge the market in which technology earns itself back.

On the financing side the European Investment Bank announced an envelope of 400 million euros on the same day, the HousingTechEU initiative, with involvement from InvestEU, for new technologies that can address the high construction and development costs and can speed up the supply of homes. The EIB group is raising its housing finance to a target of 6 billion euros in 2026, against more than 4 billion in 2025.

The digital side runs alongside it. Under the revised construction products regulation an online system is coming that will hold the declarations of performance, declarations of conformity and instructions for use of all harmonised products, with the aim of lowering the administrative burden. The Commission is working on a standardisation request for digital building logbooks and wants eventually to connect those with the product passport for construction products, with digital permitting systems and with demolition audits. That is useful work. It is not the work that turns around the curve from part two.

Measure	Status on 17 July 2026
European Strategy for Housing Construction, COM(2025) 991	Published 16 December 2025
Study of permitting procedures in 27 member states	Runs from December 2025 to October 2026
Pilot project on prefabricated construction under the Competitiveness Coordination Tool	Worked out with the member states in the course of 2026
HousingTechEU, 400 million euros (EIB, with InvestEU)	Announced 16 December 2025
Construction Services Act	Announced for the fourth quarter of 2026
Online system for declarations of performance under the revised construction products regulation	Foreseen, standardisation work ongoing

The European package for construction: what and when

Source: European Commission, European Strategy for Housing Construction, COM(2025) 991, 16 December 2025 · European Commission, European Affordable Housing Plan, 16 December 2025 · European Investment Bank, EIB Group doubles its financing to EUR 6 billion for homes contributing to the European Commission's Affordable Housing Plan, press release 16 December 2025 · Euronews, report of the adoption of the resolution on the European housing crisis by the European Parliament, 24 March 2026

07 What it changes

For anyone who sells technology to construction, the most important sentence in this report is unpleasant: your buyer has fewer than four people on the payroll on average and three in four of your prospects introduced nothing new last year. That is not a sales problem you solve with a better demonstration. It is an arithmetic problem on the buyer's side, and the product that does sell in such a market is the product that earns itself back within one project. Everything that only pays off across twenty projects sells to the twenty firms that have twenty.

That explains a pattern the sector often treats as a mystery. Prefab and industrial construction methods work technically. They ask for a factory, and a factory asks for an order book, and an order book asks for a series of comparable projects. In a market where every municipality sets its own rules about what may be built, that series does not exist. The factory is then not too expensive; it is too empty. The Commission's pilot project on prefab under the Competitiveness Coordination Tool is the first European attempt to tackle that on the demand side instead of the supply side.

The prefab factory is not too expensive. It is too empty, and that is a permitting question, not a construction question.

For construction firms the lever sits in a place that is rarely looked at: the project portfolio, not the toolbox. Repetition is the only variable that consistently correlates with productivity in the research. Two identical projects yield more than two clever projects, and that insight clashes with almost everything the sector regards as craftsmanship.

For administrators and clients the lesson is sharper. Every rule that limits the size of a project has a price that is not on the permit form, and that price is a sector that does not invest. That is not an argument against spatial planning, because those rules serve aims that have nothing to do with productivity. It is an argument for knowing the cost you are buying.

And for everyone who looks at the sector from the outside there is a reassurance that is rarely offered. Construction can indeed become more productive quickly. That is not theory or promise; it is thirty years of American history between 1940 and 1970. What existed then and does not now was not better software. It was room to build big.

Source: D'Amico, Glaeser, Gyourko, Kerr and Ponzetto, Why Has Construction Productivity Stagnated?, NBER working paper 33188, November 2024 · European Commission, European Strategy for Housing Construction, COM(2025) 991, 16 December 2025

08 What does not add up yet

The first objection hits the most cited measure in this report. In Construction Physics in February 2026 Brian Potter showed that homes per worker is partly an artefact. Workers in housebuilding do not only build new houses, they also renovate existing ones, and renovation has grown from

20 to 25% of residential construction spending in 1970 to 40 to 45% now. Part of the measured decline is therefore shifted work and not lost productivity.

The second is that the authors themselves report a counter-result that is rarely cited. When Goolsbee and Syverson correct for the strongly grown floor area of homes and look at square metres per worker, they find on the series from 1990 a non-significant decline for multi-family homes but a rise for single-family homes. On the older series from 1972 the decline does hold. Garcia and Molloy also re-examined the weak productivity growth in construction in 2023 and came to more cautious conclusions. The picture is more solid than the critics would like and less unambiguous than the chart suggests.

The third is that the causal figure contains an assumption the authors name themselves. The 60% rests on the supposition that half of the relationship between establishment size and productivity is causal. That half is not measured; it is chosen. Larger construction firms can also be more productive because productive firms grow, and not because growth makes them productive. For policy the distinction is the whole difference and the research does not settle it.

The fourth is the objection a European reader ought to make first. This evidence is American, and the mechanism is American local zoning: a system of municipal powers that bears little resemblance to Flemish, Dutch or French spatial planning. That the conclusion carries over is an assumption and not a finding. What does carry over is the structural observation: European construction counts roughly 960,000 enterprises in one division, with fewer than four people on average. The size distribution is the same; whether the cause is the same has not been demonstrated.

And the fifth is the most honest. If the diagnosis holds, then the conclusion for everyone who builds build tech is not that their work is pointless, but that it only pays off once someone else first does something they have no influence over. That is an uncomfortable place to build a business plan on, and it is the reason why a pilot project on regulatory obstacles to prefab, which impresses at no trade fair stand, can mean more for this sector than the next piece of equipment.

Source: Brian Potter, Trends in US Construction Productivity, Construction Physics, February 2026 · Goolsbee and Syverson, The Strange and Awful Path of Productivity in the U.S. Construction Sector, January 2023 · Daniel Garcia and Raven Molloy, Reexamining Lackluster Productivity Growth in Construction, working paper, 2023 · Eurostat, Businesses in the construction of buildings sector, 2022 data · European Commission, European Strategy for Housing Construction, COM(2025) 991, 16 December 2025



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SOURCES

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