

THE ECONOMIC BENEFITS OF PERMITTING REFORM

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EXECUTIVE SUMMARY

The Council of Economic Advisers (CEA) has estimated the economic benefits of permitting reform. The National Environmental Policy Act (NEPA) acts as an umbrella for environmental review, requiring agencies to evaluate environmental impacts before projects can proceed. Impacted projects include both direct federal actions and private projects requiring federal permits. An environmental impact statement (EIS) typically catalogs the other federal permits that must be obtained – under laws such as the Clean Water Act, Endangered Species Act, and National Historic Preservation Act – for the project to proceed. EISs published in recent years have averaged roughly 1,700 pages including appendixes, and agencies took on average 4.2 years to complete them. Long implementation delays discourage investment because they force investors to wait longer for returns to be realized, resulting in insufficient infrastructure investment and a lower quantity of capital per worker, which leads to higher prices and lower output.

We develop a model to analyze reforms which limit how long projects may be delayed. The Bipartisan American Affordability and Jobs Act (BAAJA) would institute enforceable NEPA review deadlines. In particular, agencies would be required to complete EISs within two years.

We find that reducing review times down to the levels required by the BAAJA would:

- Increase long-run GDP by between 0.28 percent and 0.56 percent (i.e., \$82 billion to \$164 billion in additional output each year).
- Increase annual tax revenue by \$14 billion to \$28 billion.
- Increase real wages by \$306 to \$637 per year for the average household.
- Reduce electric bills by \$178 to \$251 per year for the average household.
- Reduce other expenses by \$125 to \$176 per year for the average household.

Reducing completion time even more aggressively – all the way down to 1 year – would:

- Increase long-run GDP by between 0.41 percent and 0.83 percent (i.e., \$120 billion to \$243 billion in additional output per year).
- Increase annual tax revenue by \$20 to \$41 billion.
- Increase real wages by \$445 to \$922 per year for the average household.
- Reduce electric bills by \$259 to \$366 per year for the average household.
- Reduce other expenses by \$184 to \$257 per year for the average household.



Our findings are likely conservative for two reasons. First, we limit our analysis to Environmental Impact Statements (EIS) and do not account for Environmental Assessments (EA). While EAs are less onerous, they are significantly more numerous and similarly add to delays in realized investment. Second, NEPA allows for litigation delays, which introduces additional uncertainty to the investment decision. In standard models of investment, additional uncertainty leads to lower investment. Our analysis does not quantify the effects of this potential reduction in uncertainty nor the reduction in the financial costs of litigation.

1. BACKGROUND

The National Environmental Policy Act of 1969 (NEPA) requires federal agencies to assess the environmental consequences of any major federal action significantly affecting the human environment. NEPA applies only when there is a federal nexus, meaning federal funding, a federal permit, or an action on federal land. When it does apply, compliance proceeds through one of three tiers. The most rigorous is the environmental impact statement (EIS), the full-scope document required by statute for major federal actions (42 U.S.C. § 4332(2)(C)). The intermediate tier is the environmental assessment (EA), a shorter analysis used to determine whether an EIS is needed; an EA that concludes the action will not significantly affect the environment closes with a finding of no significant impact, after which the action may proceed without an EIS (42 U.S.C. §§ 4336(b)(2), 4336e(7)). Categorical exclusions (CEs) cover routine, low-impact actions that an agency has determined, by category, do not require further analysis (42 U.S.C. §§ 4336(a)(2), 4336e(1)). EAs are roughly 65 times more numerous than EISs, and CEs more numerous still (Liscow 2025).

Each tier carries real costs of time and money, and the burden has grown over the past several decades. Liscow (2025) documents the trend: EISs published in the late 1970s averaged about 400 pages, today they average roughly 1,700 pages including appendixes; agencies took on average 4.2 years to complete the environmental impact statements published in 2022, about a year longer than in the late 1990s. Much of that delay is driven not by the underlying environmental analysis but by defensive documentation against the threat of litigation: agencies win roughly 80 percent of NEPA appeals (Breakthrough Institute 2024), yet even unsuccessful lawsuits add a median of 18 months to a project's timeline, and successful ones add 2.5 years. On top of long delays, major projects are typically much more expensive in the United States than they are in other countries. The United States spends roughly \$560 million per kilometer on urban transit projects (in 2021 dollars), about two-and-a-half times the OECD average of \$218 million (Liscow 2024). The burden is not confined to large EIS-track projects: Fleischman et al. (2020) find that even Forest Service categorical exclusions take a median of 105 days to clear, and 2007 congressional testimony by the Forest Service put the average cost its CEs at roughly \$50,000 – about \$75,000 in 2024 dollars (U.S. House of Representatives 2007). Agencies do not systematically track the



cost of NEPA compliance (GAO 2014). Moreover, the costs visible in completed projects understate the total burden, since some projects are abandoned mid-review or never attempted at all once the expected regulatory cost is internalized.

These costs and delays are not spread evenly across the economy. As we show later in the paper, they are concentrated in a handful of capital-intensive, federally-touched sectors (energy production and transmission, mining, transportation, and federal land management) that account for the bulk of NEPA-reviewed investment. Sizing the aggregate effect therefore requires both a model of how a marginal reduction in review delay translates into output, and a measure of how exposure to that delay varies across sectors. The remainder of this paper executes that by combining a theoretical framework with data on cross-sectoral environmental impact statements.

2. METHODOLOGY

We follow a simplified variant of the Congressional Budget Office’s (2026) approach to modeling permitting reform. Major infrastructure projects require federal environmental review under NEPA, which leads to potentially long delays between when capital is committed to a project and when its returns are realized. We model this approval delay as a time-to-build friction, where investment decided today becomes productive capital only after the review period ends. The delay makes investment more expensive, which reduces how much firms choose to invest in the long run. As such, delay operates like a hidden tax on investment. A full description of the model and associated derivations is provided in the appendix; this section explains the intuition behind the model and discusses the key results.

We assume that output in sector i , denoted by Y_i , is produced by elastically supplied capital K_i and inelastically supplied labor N_i according to the following Cobb-Douglas relationship:

$$Y_i = K_i^\alpha N_i^{1-\alpha},$$

where α captures capital’s role in production. We assume that one unit of labor is inelastically supplied to all sectors; this allows us to focus exclusively on the investment decision and approximate the effect of any reform on wages. In the appendix, we show that, for a reform ΔL which reduces delays by L years, the resulting percent change in long-run sectoral output is:

$$\Delta \log Y_i^* = \frac{\alpha}{1 - \alpha} \times \rho \times |\Delta L|$$



where ρ captures the discount rate.¹ The discount rate enters because delay-related costs result in foregone returns. The capital share α matters because in sectors with more capital-intensive production, additional capital has a more pronounced effect on economic output and diminishing returns to additional investment set in more slowly. For simplicity, we assume α is identical across sectors.

We aggregate upward the sectoral output effect to a GDP effect using variation in exposure to NEPA delays. We capture how exposed sector i is by the share of its eligible investment subject to delay via the parameter ϕ_i . From Hulten's (1978) Theorem, the aggregate effect of a reduction in delays of L years on output is then captured by multiplying each sector's exposure to NEPA by its Domar weight s_i and summing:

$$\Delta \log Y = \frac{\alpha}{1 - \alpha} \times \rho \times |\Delta L| \times \Phi, \text{ where } \Phi = \sum_i s_i \times \phi_i$$

Domar weights capture the input-output linkages that make, for example, the energy sector more important than its value-added alone would suggest. Its technical definition is the ratio of sectoral gross output to gross domestic product.

Finally, we map a nonlinear transition path from initial to final steady state using a form of quadratic capital adjustment costs calibrated from Groth and Khan (2010). This is complicated by the fact that time-to-build is itself an adjustment cost, which makes calibration somewhat challenging since adjustment costs endogenously decline as a result of reform. With inelastic labor supply, the percent change in real wages is exactly the same as for output.

2.1 Unmodeled Effects of NEPA Reform

We abstract from modeling several key elements of NEPA. There are three particularly salient features. First, we do not account for uncertainty. NEPA introduces additional uncertainty into the investment process, which reduces the incentive for firms to invest in the first place when investment is irreversible (Dixit and Pindyck 1994). Second, the government's own infrastructure investment is subject to NEPA delays. We implicitly assume that government investment choices are made within the same profit-maximizing framework. An alternative approach would be to assume the same level of total government expenditures, but accelerate the pace of project completions. Ultimately, this assumption will not matter for the quantitative results of this paper, which will be a rough approximation. Third, we also do not account for general equilibrium effects through capital or labor markets. If, for example, NEPA reform disproportionately raises the

¹We abstract from the fixed cost of expedited permitting. Under perfect competition, firms earn zero profits, so such costs cannot be financed from operating surplus. Any fees are transfers—from taxpayers or fixed factor owners—that do not affect the gross output gains.



productivity of utilities, they may bid up wages and attract labor away from other sectors. The resulting increase in wages and reallocation of labor may dampen the aggregate effects of reform. Since our affected share of capital, while economically significant, is small relative to factor markets, the partial equilibrium approximation via Hulten's Theorem is valid.

3. CALIBRATION AND MEASUREMENT

We parameterize the model with six parameters: the capital share (α), the discount rate (ρ), the adjustment cost parameter, depreciation rate, the share of the economy exposed to NEPA reform, and each sector's Domar weight. Using Fernald (2014), we set $\alpha = 0.4$. We set the discount rate to $\rho = 0.08$ following Barro and Furman (2018), and the quadratic adjustment cost parameter to 1.5 using Groth and Khan (2010). We apply a depreciation rate of $\delta = 3\%$, consistent with the depreciation of structures in the national accounts. The Domar weights come from dividing gross output in each sector by GDP in 2024. Measurement of affected capital is more complex and we describe it below. We solve the model non-linearly using relaxation methods.

3.1 Measurement of Affected Capital Investment

Our key source of uncertainty is the share of the economy exposed to NEPA. There is little public information on this share, particularly through the EIS process. The few estimates that are publicly available either measure a single sector or measure NEPA litigation rather than NEPA exposure, and none combine cross-sector coverage with project-level capital intensity. As a result, we construct our own measure of exposed capital by industry, combining three data sources and focusing primarily on Environmental Impact Statements.

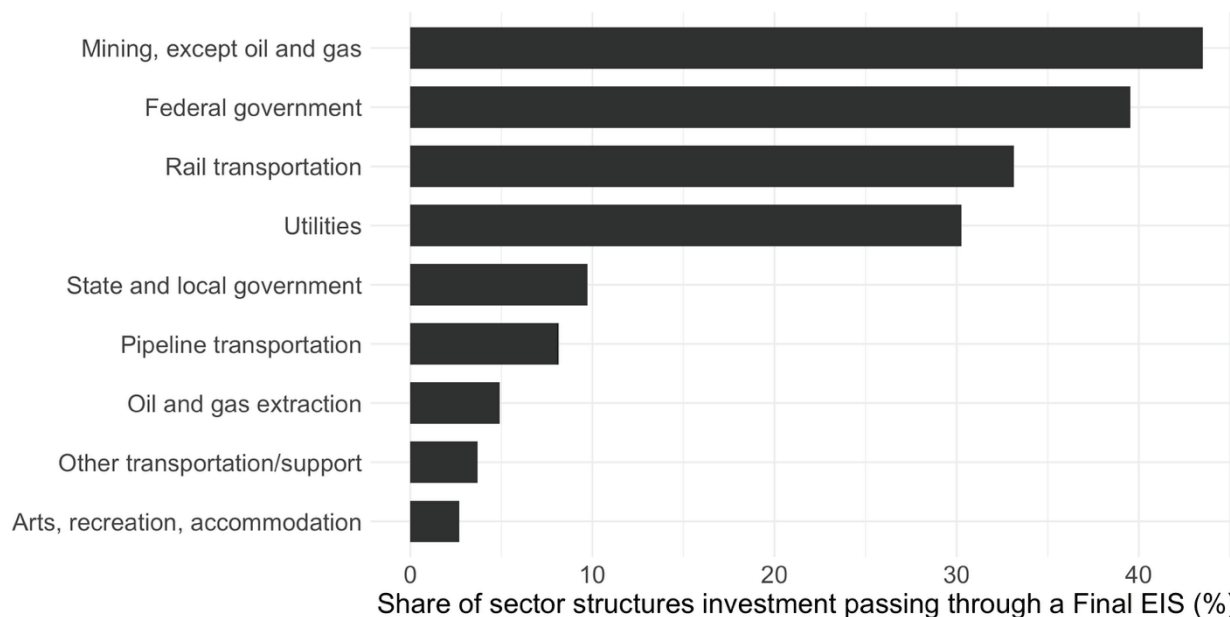
First, we pull every Final Environmental Impact Statement published in the Federal Register from 2015 through 2024. We classify each record into one of three groups: actions that represent new capital formation, actions that do not create new capital (license renewals, ongoing operations, and programmatic management plans), and ambiguous records that we flag for manual review. Our exposure measure uses only the first group. We assign each such EIS a NAICS industry code and a funding-source tag (private, federal, state-local, tribal, or mixed). Second, for each of those projects, we hand-extract the total capital cost from the EIS itself, the project sponsor's public filings, or related public records, with the source documented in a per-project provenance file. Third, we link the resulting industry-year exposed-capital totals to BEA fixed asset data and divide by sectoral structures investment to obtain the per-sector exposure rate, ϕ_i . The resulting per-sector exposure rates are presented in Figure 1 below. Sectors not shown have no measured exposure to NEPA.

Exposure is heavily concentrated. Mining shows the highest rate at 42 percent of sectoral structures investment, followed by the federal government near 40 percent, rail at 33 percent, and utilities at



30 percent. Most sectors outside infrastructure, energy, and federal-land-management activities show low or zero measured exposure. That, of course, does not mean the sectors are unexposed. It simply means that our approach fails to pick up how they are exposed.

Figure 1: EIS Exposure Rate by Sector



To produce a single aggregate-economy figure, we Domar-weight the sectoral exposure rates. The Domar weight on sector i is its share of gross output in GDP, and the aggregate exposure measure is $\Phi = \sum_i s_i \times \phi_i$ (Hulten 1978). Our panel covers 2020 through 2024, our pre-reform baseline, and includes federal and state-local government sectors alongside the private sectors. Φ ranges from 2.4 percent to 5.0 percent depending on the denominator choice for ϕ_i . Our lower bound uses structures plus equipment, while the upper bound results from only using flows of investment in structures. We take the midpoint, 3.7 percent, as our central estimate.

4. ESTIMATED GDP, PRODUCTIVITY, AND WAGE GAINS

We compute the aggregate effects of NEPA reform under three scenarios, reflecting our lower, central, and upper estimates of the share of the economy exposed. Rather than commit to a particular reform size, we report results per year of reduction in average review delay. This yields semi-elasticities of capital, output, and wages with respect to delay. As such, readers can scale to any reform of interest by multiplying the reported gains by the desired ΔL in years. For the transition dynamics, we anchor the baseline review delay at 4.2 years, the average completion time for environmental impact statements published in 2022 (Liscow 2025).



Table 1 reports the steady-state aggregate gains from a one-year reduction in NEPA delays. Output gains range from 0.13 to 0.26 percent of GDP, or \$37 billion to \$77 billion in 2024 dollars per year of delay reduction. The reform also raises the steady-state capital stock by 0.32 to 0.66 percent, which translates to a level shift of \$133 billion to \$215 billion in the quantity of long-run capital. Because we assume inelastic labor supply, wages rise by the same percentage as output, which gives an annual wage gain of \$139 to \$288 per household at the 2024 mean household income of \$109,160.

Table 1: Long-Run Aggregate Gains per Year of NEPA Delay Reduction

Scenario	Steady-State Gain (%)		Steady-State Level Gains		
	Capital	GDP & Wages	Capital (\$B)	GDP (\$B)	Wages (\$)
Lower	0.32	0.13	133	37	139
Middle	0.49	0.20	182	57	213
Upper	0.66	0.26	215	77	288

Source: CEA calculations. GDP gain in billions of 2024 dollars, scaled by US 2024 nominal GDP of \$29.3T. Wage gain in 2024 dollars per household, scaled by mean household income of \$109,160. Percent gains for GDP, wages, and productivity are identical under inelastic labor supply. The capital level gain is scaled by the 2024 net stock of private and government nonresidential fixed assets from the Bureau of Economic Analysis. The lower bound uses both equipment and structures to scale, while the upper only uses structures. All values scale linearly with the reform delta ΔL .

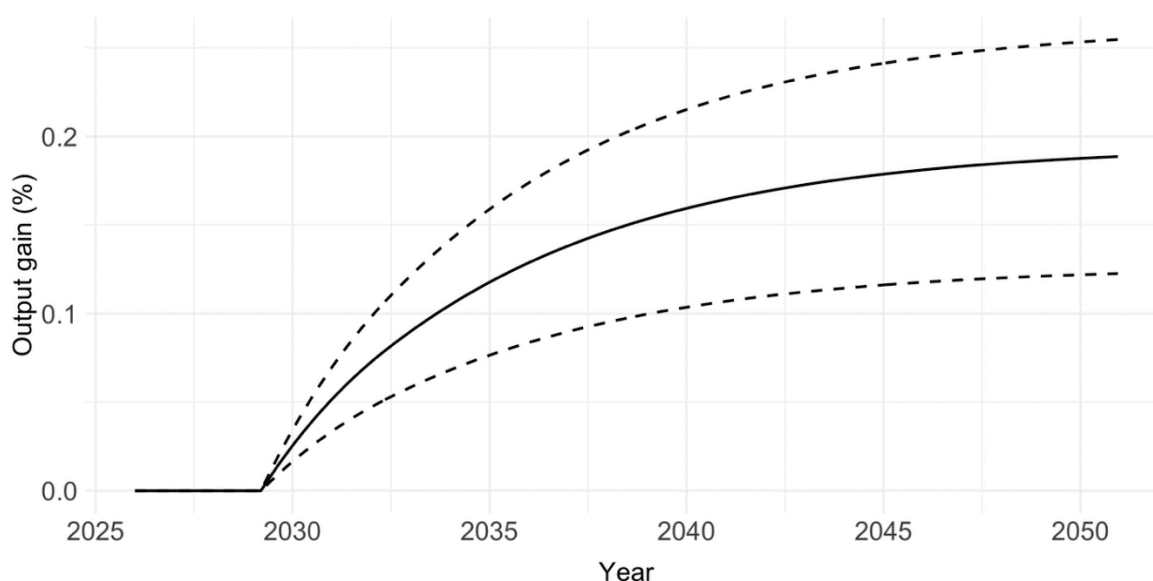
Figure 2 plots the transition path of output gains. Three features stand out. First, the gains do not begin to accumulate immediately. The model carries a roughly three-year dead zone at the start of the reform during which output is essentially unchanged. This is the time-to-build mechanism at work: investment decisions made at the moment of reform still need to navigate the new, shorter 3.2-year review before becoming productive capital. Capital placed in review before the reform continues to arrive at the old, pre-reform rate during this window, which is just enough to cover depreciation. After year three, the first wave of new post-reform investment matures into productive capital, and output begins to rise. Second, the convergence is slow. The half-life of the transition is roughly seven years, and the time to ninety percent of the long-run gain is about eighteen years. By the mid-2030s, output is at roughly half of its eventual gain. Third, the spread between the upper and lower bounds widens over time, which reflects that uncertainty about NEPA exposure matters more for long-run than short-run effects. Even the lower bound is sizable for a reform that costs the federal government nothing.



4.1 Assessing the Plausibility of Our Assumptions

Our estimates are conservative on several dimensions. The most important is that our exposure measure counts only projects that pass through a full environmental impact statement. Categorical exclusions and environmental assessments, which together are at least an order of magnitude more numerous than EISs (Liscow 2025), are not in our numerator at all, even though they consume time and money and their timelines could also be targeted by potential reforms.

Figure 2: Transition Path from Reducing Delays by One Year



We also assign zero exposure to all sectors not in our crosswalk, effectively ignoring NEPA exposure in manufacturing, real estate, information, and services. These sectors face direct review less frequently than the heavy-infrastructure sectors we cover, but they are not exempt. A new data center, semiconductor fab, or logistics facility may still require federal permits. Moreover, the supply chains on which these sectors rely (electric utilities most prominently) are themselves significantly hindered by NEPA. Given that the omitted sectors account for roughly three-quarters of the economy in Domar-weighted terms, even modest exposure shares in those sectors would add meaningfully to the aggregate effect.

Several other omitted channels would also push the actual gains higher. First, uncertainty about whether and when approval will arrive discourages investment beyond the direct delay cost, a standard result in the investment-under-uncertainty literature (Dixit and Pindyck 1994; Bernanke 1983). Our model captures the delay but not this option-value channel. Second, our exposure measure captures only projects whose sponsors actually filed for an EIS; projects deterred from



being proposed at all because of the expected regulatory burden are invisible to us, even though they represent real foregone capital formation.

On balance, we view the central estimate as a conservative baseline. Each of the channels we omit would push the true reform effect higher.

5. IMPACTS ON PRICES

As noted above, with inelastic labor supply, the percent change in real wages is exactly the same as for output. However, our model does not allow us to disentangle how much of the change in real wages is due to a change in the price level versus a change in nominal wages. Consequently, for this purpose, we rely on estimates from a McKinsey and Company analysis by Sternfels, Kumar, and Boland (2025).

Sternfels, Kumar, and Boland have estimates of the amount of electricity generation capacity currently held up by the NEPA review process. Coupling these with price elasticities, we are able to make a statement about the impact on electricity prices of reducing the fraction of electricity generation capacity that is held up in NEPA review. Sternfels, Kumar, and Boland estimate 410 to 580 TWh of electricity generation is held up in the NEPA review process. With an average NEPA review process length of 4.2 years, assuming these projects originally entered the review process at approximately a uniform pace, this implies that cutting one year from the review process would mean $1/4.2 = 23.8$ percent of that 410 to 580 TWh would already be online. Total U.S. electricity consumption in 2025 was 4195 TWh, so this represents a 2.3 to 3.3 percent increase in electricity generation.

The long-run price elasticity of demand is estimated region by region by Bernstein and Griffin (2006), yielding an average of -0.28 across regions.² The long-run price elasticity of supply is slightly more complex, but it can be proxied by the supply elasticity of the fuel that most often sets the market-clearing price. Currently, this fuel is natural gas. Additionally, natural gas plants tend to have spare capacity, so a rising demand would mean higher utilization of those plants rather than a shift to a more costly fuel source. The long-run price elasticity of supply for natural gas is estimated by Prest (2026) as 0.24.³ Applying these elasticities to the increase in electricity generation computed in the preceding paragraph yields an \$81 to \$114 per year reduction in electric bills resulting from a one-year reduction in NEPA review delays. These impacts are 2.2 times as large if delays are reduced to the two-year EIS timeline specified in BAAJA. And the

² This is quite consistent with other estimates, such as that of Deryugina et al. (2020), who estimate -0.27.

³ This is in the middle of the range of other estimates, such as Arora (2014), whose estimates range from 0.10 to 0.42.



impacts would be 3.2 times as large if delays are reduced by 3.2 years – all the way down to a one-year-long average review process.

There is another channel through which prices in the broader economy may be affected by NEPA review delays. Sternfels, Kumar, and Boland (2025) also estimate the annual costs – in the form of unrealized returns – that are imposed on businesses by NEPA review delays. These are estimated to be between \$100 billion and \$140 billion per year. Assuming these projects originally entered the review process at approximately a uniform pace, this implies that cutting one year from the review process would mean $1/4.2 = 23.8$ percent of that \$100 billion to \$140 billion cost would not be borne. GDP in 2026Q2 was \$32.6 trillion, so under an assumption of full passthrough of costs into prices, this implies a 0.07 to 0.10 percent decrease in the price level. Average spending per consumer unit (roughly equivalent to a household) in 2024 was \$78,535, so this implies a \$57 to \$80 decrease in expenses for the average household per year of reduction in delays.

6. CONCLUSION

This report assesses the economic impact of reforming the NEPA permitting process. Our approach to measuring the effects on GDP combines two pieces: a novel per-sector measure of how much capital investment in each industry passes through NEPA review, and a time-to-build model with quadratic adjustment costs in which a shorter review delay reduces the effective cost of capital and raises the steady-state capital stock. In order to make statements about prices, we rely on McKinsey and Company estimates of the amount of electricity generation capacity currently held up by the NEPA review process and the annual costs imposed on businesses by NEPA review delays.

Aggregating the per-sector exposure measure using Domar weights gives a single economy-wide exposure share Φ with a central estimate of 3.7 percent and a band of 2.4 to 5.0 percent. Applied to the time-to-build model, this implies a long-run gain of 0.20 percent of GDP per year of review-time reduction at the central estimate, with bounds of 0.13 to 0.26 percent. Each year of reduction in average review time produces about \$57 billion in additional GDP, a level increase of \$182 billion in the capital stock, and about \$213 in annual wages per household. Electric bills for the average household decline by \$98 per year, and other expenses decline by \$69 per year. The reform's effects build slowly. Investment placed at the moment of reform still needs to navigate the new, shorter review before becoming productive capital, producing a roughly three-year period during which output is essentially unchanged. After that, convergence to the long-run steady state proceeds with a half-life of about seven years; ninety percent of the eventual gain is realized by roughly year 18.



MODEL APPENDIX

Consider a representative firm in a given sector which produces output according to

$$Y(t) = AK(t)^\alpha N^{1-\alpha}, \quad 0 < \alpha < 1,$$

Where $A > 0$ denotes productivity, $K(t)$ is the capital stock, and N is a unit of inelastically supplied labor. Note that we are suppressing sectoral subscripts. Capital evolves according to

$$\dot{K}(t) = I(t - L) - \delta K(t)$$

where $I(t)$ is gross investment, $\delta > 0$ is the depreciation rate, and $L \geq 0$ corresponds to the time delay between making an investment at time t and when it is installed at $t + L$. The interval $[t, t + L]$ captures the period during which a permit application has been filed but no operational capital exists; we abstract from physical construction time, which is approximately constant across reform scenarios and drops out of the comparative statics. The model also abstracts from the firm's option to delay the investment decision itself until approval is more certain, and from the disincentive effect that approval uncertainty creates beyond the direct delay cost.

We assume Hayashi-style capital adjustment costs:

$$\Psi(t) = \frac{\psi}{2} \left(\frac{I(t)}{K(t)} - \delta \right)^2 K(t)$$

The firm chooses a path of investment $\{I(t)\}_{t=0}^{\infty}$ to maximize the present value of its profits

$$\max_{I(t)} \int_0^{\infty} e^{-\rho t} (AK(t)^\alpha N^{1-\alpha} - I(t) - w(t)N - \Psi(t)) dt$$

subject to the law of motion for capital, a fixed supply of labor $N = 1$, and initial condition $K(0) = K_0 \geq 0$. ρ is the discount rate. The present-value Hamiltonian is

$$H(t) = e^{-\rho t} (AK(t)^\alpha N^{1-\alpha} - I(t) - w(t)N - \Psi(t)) + \mu(t)[I(t - L) - \delta K(t)]$$

Letting $q(t) \equiv \mu(t)e^{\rho t}$, the system is summarized by three equations:

$$q(t + L)e^{-\rho L} = 1 + \psi \times \left(\frac{I(t)}{K(t)} - \delta \right)$$

$$\dot{K}(t) = I(t - L) - \delta K(t)$$



$$\dot{q}(t) = (\rho + \delta)q(t) - \alpha AK(t)^{\alpha-1} - \left(\frac{\psi}{2}\right) \times \left(\frac{I(t)}{K(t)} - \delta\right) \times \left(\frac{I(t)}{K(t)} + \delta\right)$$

The first condition states that the marginal cost of investment equals the discounted shadow value when the capital arrives. The law of motion reflects the assumption that investment affects the effective capital stock only after the delay, while existing capital depreciates at rate δ . The costate equation describes how the shadow value of capital evolves. Together, these conditions characterize optimal investment with time to build.

In steady state, $\dot{K} = 0$ and $\dot{q} = 0$ imply

$$K^* = \left(\frac{\alpha A}{(\rho + \delta)e^{\rho L}}\right)^{\frac{1}{1-\alpha}}$$

Now, suppose a reform reduces time to build by ΔL years. In that case, the semi-elasticity of the capital stock with respect to construction delays is

$$\Delta \log K^* = \frac{\rho |\Delta L|}{1 - \alpha}$$

This implies that, in steady state, a reform reducing delay by ΔL years increases output by

$$\Delta \log Y^* = \alpha \times \Delta \log K^*.$$

Since labor is perfectly inelastically supplied the percent change in productivity—measured in output per worker—is the same as the percent change in output. Moreover, Cobb-Douglas production and competitive factor markets imply that the percent change in real wages is the same as the percent change in output and, under an assumption of no response by the monetary authority, the percent change in the price level is of the same magnitude and the opposite sign.



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