Inflation, Taxation and Corporate Investment in the U.S. during the Great Inflation

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U.S. corporate taxation is not neutral to inflation. Two of its features – historical cost depreciation and FIFO inventory accounting – are expected to lower real after-tax corporate cash flows and, thereby, make investment less attractive when expected inflation is elevated. Using Compustat data for 1965-1980 and a difference-in-differences research design, I do not find evidence in support of this hypothesis. I discuss possible explanations for this non-result. In addition, I find a robust effect of statutory tax changes on corporate investment during the Great Inflation. The effect is economically meaningful and consistent with the prior literature: a tax reform that increases firm's cost of capital by 10% lowers investment of affected firms by 2 percentage points of total assets relative to firms not affected by the reform.

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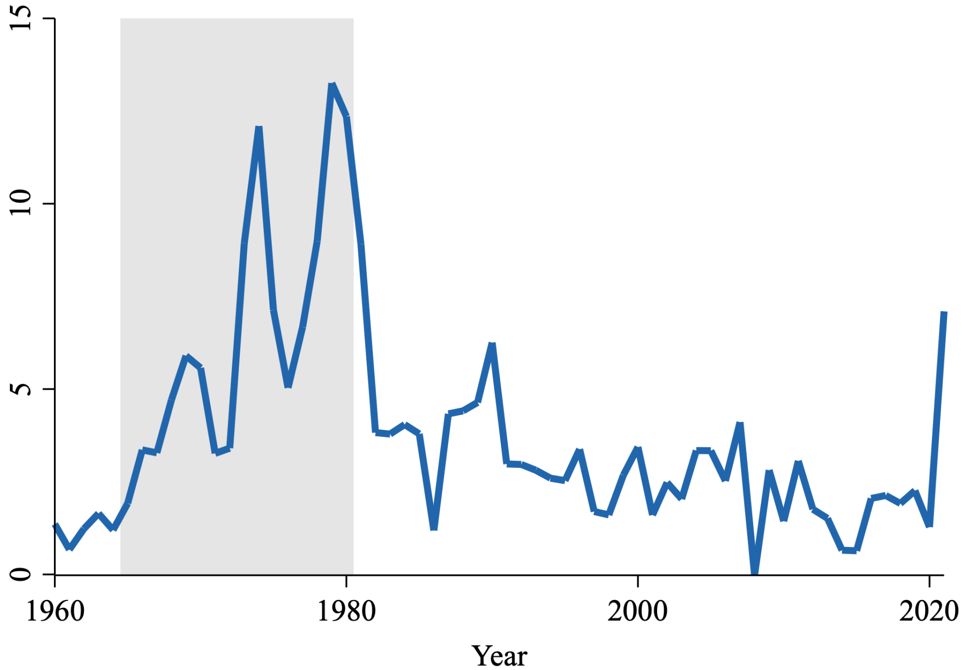
The precipitous rise of inflation across the developed world since the middle of 2021 has reignited interest amongst economists in the ways inflation affects household and business decisions. This interest was last high during the previous period of high inflation in the U.S. – the Great Inflation of the 1970s (Figure 1). One particular channel through which inflation can alter business decisions that was emphasized back then is non-neutralities of the U.S. corporate tax system to inflation (Feldstein and Summers 1979; Feldstein 1980; Summers 1981a; Gonedes 1981).

Figure 1: CPI inflation in the U.S., 1965-2021

This figure plots percentage change in Consumer Price Index in the U.S. from 1960 to 2021 at the annual frequency. The shaded area denotes the period studied in this paper – 1965-1980.



Historically, as well as today, the U.S. tax system is not indexed with respect to inflation. That is, corporate tax liabilities are determined based on nominal values, rather than real values. Because of this feature of the U.S. tax code, inflation changes *real* cash flows of corporations and their *real* cost of capital, even holding all other real economic variables constant. There are three ways in which non-indexation of the corporate tax system affects corporate cash flows: (a) historical cost depreciation, (b) FIFO inventory accounting, (c) tax deductibility of nominal interest payments. In this paper, I focus on the first two.[1]

First, firms are allowed to depreciate fixed assets only on the basis of acquisition (i.e., historical) cost. Hence, the value of future depreciation allowances and thus future depreciation tax deductions is eroded when expected inflation is high. This makes firms' user cost of capital higher; therefore, high inflation is expected to lower corporate investment.

Second, if a firm uses "first in, first out" (FIFO) inventory accounting to determine its cost of goods sold, it typically has taxable nominal profits on inventory stock when inflation is elevated. However, as long as the firm is a going concern, these inventory profits do not correspond to actual cash flows. Thus, taxation of the FIFO inventory profits lowers firms' real cash flows. Assuming that maintaining certain amount of inventory is necessary for a firm of a given scale, then FIFO tax treatment makes scaling up – and the corresponding investment – less attractive when expected inflation is high.

This paper studies the effect of the interaction of these two tax features and inflation on corporate investment in the U.S. during the Great Inflation. My empirical research strategy exploits different exposures of different industries to inflation through the two tax non-neutralities in a continuous-treatment difference-in-differences framework. Specifically, I compare firms in industries with high vs low exposure to inflation through tax non-neutralities in years when expected inflation was high (1974-1975 and late 1970s) vs years when it was low. I use differences in depreciation rules prescribed by the Internal Revenue Service for structures vs equipment, and for equipment in different industries, combined with different composition of investment between equipment and structures across industries, to construct cross-sectional variation in exposure to inflation through historical cost depreciation. This strategy also produces a measure of differential cross-sectional exposure to the corporate tax changes enacted in 1965-1980, allowing me to estimate elasticity of investment to corporate taxes. I use differences in inventory-capital ratios across sectors to measure exposure to inflation through FIFO accounting.

[1]The reason is that the way tax deductibility affects firms' cash flows and their cost of capital depends on how interest rates change with inflation (see Appendix A2, Cohen et al. (1999)). This is a complex issue that has not been settled in the literature (see, *inter alia*, Summers 1982; Evans and Lewis 1995), and thus requires a more careful treatment in a separate study.

My first empirical finding is a non-result. I do not find a statistically significant relationship between the part of the user cost of capital due to the interaction of inflation and tax non-neutralities and corporate investment. This non-result holds up to a number of different specifications and samples. The lack of the statistically significant relationship between inflation cost of capital terms and investment can be due to firms using high effective discount rates as emphasized by theories of investment with financial constraints, short-termism, or non-convex adjustment costs. It can also be a result of a bias in the research design or lack of statistical power. I present some suggestive evidence against the bias explanation, but cannot rule it out completely. Additional research using detailed administrative data as in Zwick and Mahon (2017) would help to dissect this issue further.

I then explore the relationship between corporate investment and statutory corporate tax changes – changes to the tax rates, investment tax credit (ITC), and depreciation schedules holding expected inflation constant. I find a statistically significant elasticity of investment to the tax term of the user cost of capital of about -0.2, which is consistent with the prior literature (Hassett and Hubbard 2002). Assuming my identification strategy is valid, this effect is causal. The effect is also economically meaningful. For example, the 1975 increase in the ITC from 7% to 10% increased investment-assets ratio by about 0.2 p.p. more for firms in highly exposed sectors such as rubber manufacturing vs sectors that were not as exposed such as services. Back-of-the-envelope calculations using this investment-tax elasticity show that the tax changes in the 1970s resulted in aggregate capital stock about 15% higher that it would have been otherwise.

This paper contributes to several strands of literature. It revisits the old debates about whether tax non-neutralities of corporate taxation have implications for business decisions (Feldstein and Summers 1979; Feldstein 1980; Summers 1981a; Gonedes 1981; Gordon 1983), which itself are part of the broader literature on the real effects of inflation (Modigliani and Cohn (1979), Fama (1981); the more recent contributions include Nakamura, Steinsson, Sun, and Villar (2018); Alvarez, Beraja, Gonzalez-Rozada, and Neumeyer (2019); Coibion, Gorodnichenko, and Ropele (2020)). I also contribute to the extensive literature on how taxes affect investment (Hall and Jorgenson 1967; Summers 1981b; Cummins, Hassett, and

Hubbard 1994; Desai and Goolsbee 2004; Zwick and Mahon 2017). This paper is closest to Cohen, Hassett, and Hubbard (1999) in spirit and to Zwick and Mahon (2017) methodologically. Cohen et al. (1999) study how tax non-neutralities of corporate taxation affect corporate investment in a simple cost-of-capital framework using simulations. This paper takes this framework to data and uses modern econometric machinery to evaluate if the interaction of tax non-neutralities and inflation affects investment.

This paper is organized as follows. Section 1 details how historical cost depreciation and FIFO inventory accounting combine with inflation to depress real corporate cash flows. Section 2 presents a simple theoretical framework of corporate investment which incorporates tax non-neutralities to inflation. Section 3 details my empirical strategy. Section 4 presents the results and **??** explores their aggregate implications. Section 6 concludes.

1. Inflation, taxation and corporate cash flows

A. Historical cost depreciation.

The U.S. tax code mandates that businesses depreciate capital expenditures based on historical cost. For example, consider a firm that bought a truck in 2021 for \$100,000. The tax code tells the firm to depreciate this truck over 5 years using 200% declining balance method. Assume that the half-year convention applies (i.e., depreciation is computed as if the truck was placed in service exactly in the middle of the year 2021). Then the firm can depreciate \$20,000 ($20\% \times \$100,000$) in 2021, \$32,000 in 2022, \$19,200 in 2023, \$11,520 in 2024 and 2025, and the remaining \$5,760 in 2026. Each year, the firm can subtract the applicable depreciation allowance from its pretax earnings, thus generating a tax shield = Corporate tax rate × Depreciation allowance.

These payments are fixed regardless of how large inflation will be in 2022-2026. Consequently, if inflation is high, the present value of these depreciation tax shields is lower than if inflation is low. Formally, let $D(s)$, $s = 0, ..., T$ be the depreciation schedule per \$1 of investment ($D = \{0.2, 0.32, 0.192, 0.1152, 0.1152, 0.0576\}$ in the example above), let ρ be the applicable real discount rate, and let π^e denote expected inflation. Then the present value of depreciation allowances is:

$$z = \sum_{s=0}^{T} \frac{1}{((1+\rho)(1+\pi))^s} D(s). \tag{1.1}$$

Clearly, $\partial z/\partial \pi^e < 0$ – the present value of depreciation allowances declines with expected inflation.

B. FIFO inventory accounting.

Under the current U.S. tax law, the firms can compute cost of goods sold (COGS) using on of the following methods: specific identification, “first in, first out” (FIFO), or “last in, first out” (LIFO). Specific identification method is applied if the firm can identify specific items being sold (e.g., a car dealer knows exactly which cars were sold this period, as each car has a unique identifier). Then COGS is just a sum of all items sold during a reporting period. When specific identification is not possible (for example, when the items in COGS are fungible, like steel or grain), firms can use FIFO or LIFO methods. FIFO means that the firm computes COGS as if the goods it acquired first are sold first, while LIFO means that the firm computes COGS as if the goods acquired last are sold first.

If there is no inflation and relative prices do not change, FIFO and LIFO produce exactly the same COGS. However, when the prices of the goods that go into the firm’s COGS rise a lot – like in times of high inflation – the COGS computed under LIFO is higher than the FIFO COGS. Thus, when inflation is high, using FIFO leads to higher accounting profits relative to LIFO. However, as long as the firm is a going concern, it needs to replace the inventory it uses or sells. The firm buys this inventory at the current, higher prices; this implies that under FIFO accounting, high inflation generates additional profits which do not correspond to additional cash flows. Given that the additional profits are taxed, FIFO accounting and inflation lead to *lower* real cash flows.

To clarify this point, consider the following example. Assume that inflation is π each year. Assume that a firm is a simple intermediary – it buys inventory at the end of one year and sells it at some markup at the end of the next year. The firm repeats this cycle each year. The firm uses FIFO and is taxed at the rate t_c. Let $Sales$ be real sales, and Inv be real inventory. Then nominal free cash flow is:

$$\begin{aligned} FCF &= (1 - t_c)\text{Pretax Profit} - \Delta NWC \\ &= (1 - t_c)[(1 + \pi)Sales - Inv] - \pi Inv \\ &= (1 - t_c)(1 + \pi)(Sales - Inv) - t_c \pi Inv. \end{aligned} \tag{1.2}$$

Real FCF is given by:

$$Real\ FCF = (1 - t_c)(Sales - Inv) - \frac{t_c \pi Inv}{1 + \pi}, \tag{1.3}$$

which is lower than real cash flow if inflation is zero – $(1 - t_c)(Sales - Inv)$. Real cash flow is also equal to $(1 - t_c)(Sales - Inv)$ if the firm uses LIFO accounting.

This example can be extended to the case where inventory turnover is different from 1. Note that the dollar shock to firms' cash flows induced by FIFO accounting is proportional to firms' inventory, not its cost of goods sold (in the example above, there is no difference between these two notions). This shock is equal to $t_c \pi \times$ Inventory.

The discussion above raises the question of why firms do not just use LIFO. The IRS does not allow firms to use LIFO for tax purposes unless they also use it for financial reporting. Thus, choosing LIFO is good because it generates tax savings, but comes at a cost of lower accounting profits reported to managers and investors. The literature has suggested that firms' managers choose FIFO because they believe that the market irrationally prices accounting profits, or because managers' compensation is tied to accounting profits (Morse and Richardson 1983; Dopuch and Pincus 1988).

2. Conceptual framework

Let us consider a simple theory of corporate investment without adjustment costs and with no financial frictions due to Hall and Jorgenson (1967) and Jorgenson (1967), amending it to incorporate inflation and the two U.S. tax code features studied in this paper.

A competitive price-taking firm is endowed with production function $z_t F(K_t)$ where z_t is productivity and K_t is firm's capital stock at time t. Let the output be the numeraire and let its price at time t be p_t. Let the price of capital goods be $\tilde{q}_t$ such that $\tilde{q}_t = p_t q_t$ where q_t is the relative price of capital goods at time t. The firm also has to maintain $\tilde{\gamma}$ units of inventory per unit of its net (i.e. undepreciated) capital stock. The price of inventory goods at time t is $\tilde{m}_t = m_t p_t$. For simplicity, assume perfect foresight and assume that $p_t = \exp(\pi t)$ where π is some constant inflation rate. The firm faces corporate tax rate t_c levied on its accounting profits, as well as the investment tax credit of k and depreciation schedule $D(s)$ where s is time elapsed since the acquisition of the capital good being depreciated. Economically, capital depreciates exponentially at the rate δ. The real discount rate is ρ. The firm solves:

$$\begin{aligned}\max_{K_t, t \in (K_0, \infty)} \int_0^\infty & \exp(-(\rho+\pi)t)\big[(1-t_c)p_t F(K_t) - (1-k)\tilde{q}_t I_t \\ & + t_c \int_0^t \tilde{q}_l I_l D(t-l)dl - t_c \pi \tilde{m}_t \tilde{\gamma} K_t\big]dt, \\ & \text{s.t. } I_t = \dot{K}_t + \delta K_t, \\ & K_0 \text{ given,}\end{aligned}$$

where $-t_c \pi \tilde{m}_t \tilde{\gamma} K_t$ term is the per-period flow cost of maintaining inventory needed for the current level of net capital. It comes from the discussion in Section 1 and represents a stylized way of modeling the impact of FIFO inventory accounting on corporate investment decisions.

Let the present value of depreciation allowances be $z = \int_0^\infty \exp(-(\rho+\pi^e)s)D(s)ds$, where π^e denotes *expected* inflation to emphasize that it is the expected future inflation that matters for the cost of capital. Given my assumption of perfect foresight and stable inflation, $\pi_t^e = \pi$ for all t. The firm's first-order conditions yield:

$$z_t F'(K_t) = q_t \left(\rho + \delta - \frac{\dot{q}_t}{q_t}\right)\frac{1-k-t_c z}{1-t_c} + \frac{t_c \pi^e \tilde{\gamma} m_t}{1-t_c}. \tag{2.1}$$

The term on the right-hand side is the user cost of capital, c_t. Under the standard assumptions on $F(\dot{})$ – in particular that $F'(\dot{}) > 0$ and $F''(\dot{}) < 0$ – the higher is the user cost of capital, the lower is the demand for capital, *ceteris paribus*. Finally, following the literature, assume that the relative prices are constant and normalize the user cost of capital by q_t to get:

$$c = (\rho + \delta)\frac{1 - k - t_c z}{1 - t_c} + \frac{t_c \pi^e \gamma}{1 - t_c}, \tag{2.2}$$

where $\gamma = \tilde{\gamma} m/q$ is the value of inventory the firm has to maintain per dollar of its net capital.

Ignoring the effects of expected inflation on the real discount rate ρ, inflation affects the user cost of capital through the two channels discussed in Section 1. First, higher expected inflation lowers the present value of tax depreciation allowances z and thus increases the tax term of the user cost of capital $(1 - k - t_c z)/(1 - t_c)$ and hence increases c. Second, higher expected inflation raises the cost of maintaining FIFO inventory $t_c \pi^e \gamma$ and thereby increases c. Thus, the interaction of inflation and the two non-neutralities of U.S. corporate taxation – historical cost depreciation and FIFO inventory accounting – leads to higher user cost of capital, which, in turn, depresses corporate investment.

3. Data and empirical strategy

I take this model to data by exploiting differences in tax depreciation schedules and investment tax credit treatment of capital spending on equipment and on structures in the U.S. tax code, as well as sectoral differences in investment composition and inventory-capital ratios.

A. Measurement: Tax term

The U.S. tax code in the 1970s prescribed different tax depreciation schedules for various types of equipment and for industrial structures. I record these rules by hand from the IRS Bulletin 1962-2 and the IRS Bulletin 1971-28. Firms could depreciate equipment using the accelerated double-declining depreciation method with recovery periods ranging from 6 to 18 years. The recovery periods were industry-specific at, roughly, 2-digit SIC level. Structures were to be depreciated using the straight-line method over much longer periods – ranging from 40 to 60 years. Recovery periods for structures were not sector-specific; they differed by building type. I use the recovery period of 45 years for all manufacturing subsectors and for transportation, as it is the period prescribed for factories and garages, and the period of 50 years for retail trade (the period for stores) and 60 years for wholesale trade (the period for warehouses). These recovery periods are summarized in Table A.2. See Brazell et al. (1989) for an in-depth discussion of the history of tax depreciation policy in the U.S.

I use these tax rules to determine depreciation schedules for equipment and for structures – $D(s),\ s = 0, ..., T$ in the notation of the model in Section 2. I assume real discount rate of 4%, which is consistent with discount rates used in Cohen et al. (1999) and Zwick and Mahon (2017). To compute the present value of tax depreciation allowances z I need expected inflation. Unfortunately, data on inflation expectations during the Great Inflation period is limited. I observe 1-year-ahead inflation forecasts from The Livingston Survey[2] and impute longer-term expected inflation by assuming that inflation expectations have an AR(1) structure with a long-term anchor of 2% and persistence of 0.9. That is, for a given 1-year expected inflation $\pi^e_{1,t}$ from The Livingston Survey of year t, 1-year expected inflation k-years-ahead is given by:

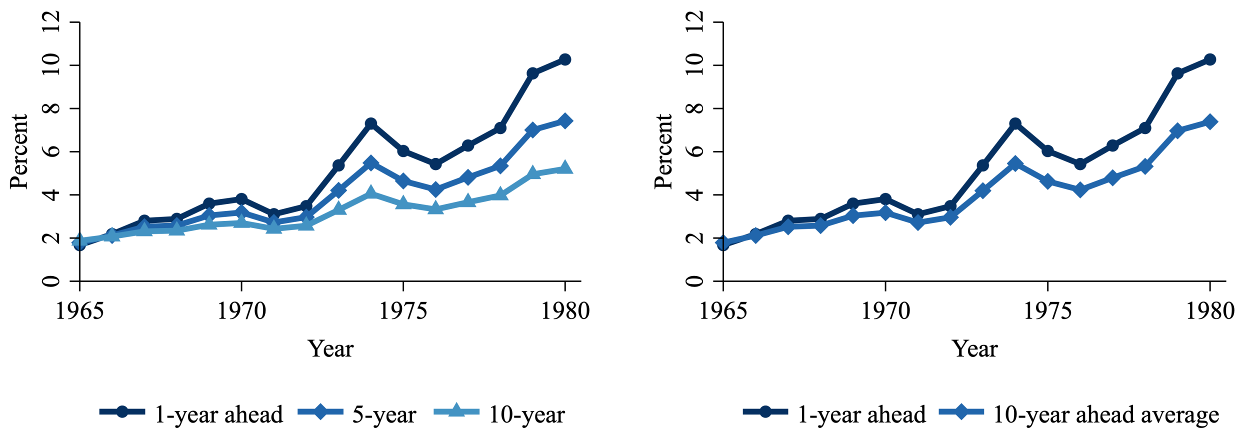
$$\pi^e_{k,t} = 2\% + \rho^{k-1}(\pi^e_{1,t} - 2\%). \tag{3.1}$$

I choose the relatively high persistence parameter $\rho = 0.9$ in light of the lack of credibility of the U.S. monetary policy in the 1970s (Goodfriend and King 2005) and the recent experimental evidence on expectation formation which shows substantial over-reaction of expectations to the most recent observations (Afrouzi et al. 2022). The 1979-1980 data on long-term inflation forecasts from Blue Chip Economic Indicators also supports the choice of $\rho = 0.9$. Figure 2 shows the result of this exercise.

[2]The Livingston Survey is maintained by the Philadelphia Fed and is available at: https://www.philadelphiafed.org/surveys-and-data/real-time-data-research/livingston-survey.

Figure 2: Expected inflation

This figure plots 1-year-ahead inflation forecasts from The Livingston Survey. 1-year inflation expectations at further horizons are computed as in Equation 3.1. The left panel plots the 1-year-ahead expected inflation, 5-year-ahead expected inflation (i.e. from $t+4$ to $t+5$), and 10-year-ahead expected inflation (from $t+9$ to $t+10$). The right panel plots the 1-year-ahead expected inflation and average expected inflation over next 10 years, i.e. $1/10\sum_{k=1}^{10}\pi^e_{k,t}$.



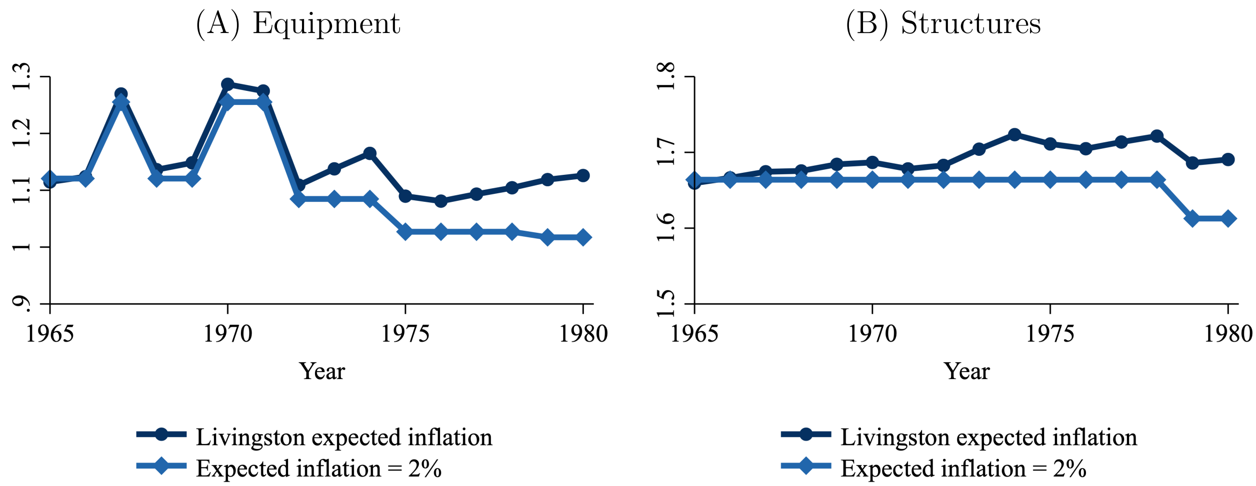
This allows me to compute z. Then, I use top statutory corporate tax rates for t_c, and statutory investment tax credit rates for k and compute the tax term of the user cost of capital for each industry-year, and separately for equipment and structures:

$$\begin{aligned}\text{Tax term}_{j,t}^{equip} &= \frac{1-k_t^{equip}-t_{c,t}z_t^{equip}}{1-t_{c,t}},\\ \text{Tax term}_{j,t}^{struct} &= \frac{1-k_t^{struct}-t_{c,t}z_t^{struct}}{1-t_{c,t}},\end{aligned} \tag{3.2}$$

where j indexes industries and t indexes years. Figure 3 plots the dynamics of the tax term for the machinery sector (SIC code 35). Note that the dynamics of the tax term for structures is determined only by inflation and the change in the top corporate tax rate in 1979. The behavior of the tax term for equipment is also impacted by these two factors, but it also changes a lot as the ITC changes – from 7% in 1965 to 0% in 1967, 1970 and 1971 when it was suspended, and to 10% in 1975-1980 (Cummins et al. 1994; Kern 2000).

Figure 3: Cost-of-capital tax term for equipment vs structures

This figure plots Tax term$_t$ and No-inflation tax term$_t$ for the machinery manufacturing sector (SIC code 35). Tax term$_t$ and No-inflation tax term$_t$ are computed as in Equation 3.2 and Equation 3.3 respectively. Panel A plots the tax term for equipment; Panel B – for structures.



To explore the effects of tax changes and inflation separately, I define the tax terms assuming constant expected inflation of 2% instead of $\pi^e_{k,t}$ imputed from The Livingston Survey. Specifically:

$$\text{No-inflation tax term}^{\omega}_{j,t} = \frac{1 - k^{\omega}_t - t_{c,t}\tilde{z}^{\omega}_t}{1 - t_{c,t}}, \quad \omega \in \{equip, struct\},$$

where $\tilde{z}$ is computed with $\pi^e = 2\%$ in the discount factor $(1+\rho)(1+\pi^e)$ (recall Equation 1.1). The no-inflation tax terms incorporate only those movements in the user cost of capital that come from statutory changes in corporate taxation and are plotted in light blue in Figure 3. I also define the inflation tax terms – the part that is driven only by movements in expected inflation:

$$\text{Inflation tax term}^{\omega}_{j,t} = \text{Tax term}^{\omega}_{j,t} - \text{No-inflation tax term}^{\omega}_{j,t}, \quad \omega \in \{equip, struct\}. \quad (3.3)$$

I aggregate these tax terms to the industry-year level using the composition of sectoral investment from the Bureau of Economic Analysis' Fixed Assets Accounts. I calculate share of equipment investment in total equipment and structures investment at the industry-year level, and then average the shares over 1960-1980[3]. I then compute:

$$\text{Tax term}_{j,t} = s_j^{equip} \times \text{Tax term}_{j,t}^{equip} + (1 - s_j^{equip}) \times \text{Tax term}_{j,t}^{struct}, \tag{3.4}$$

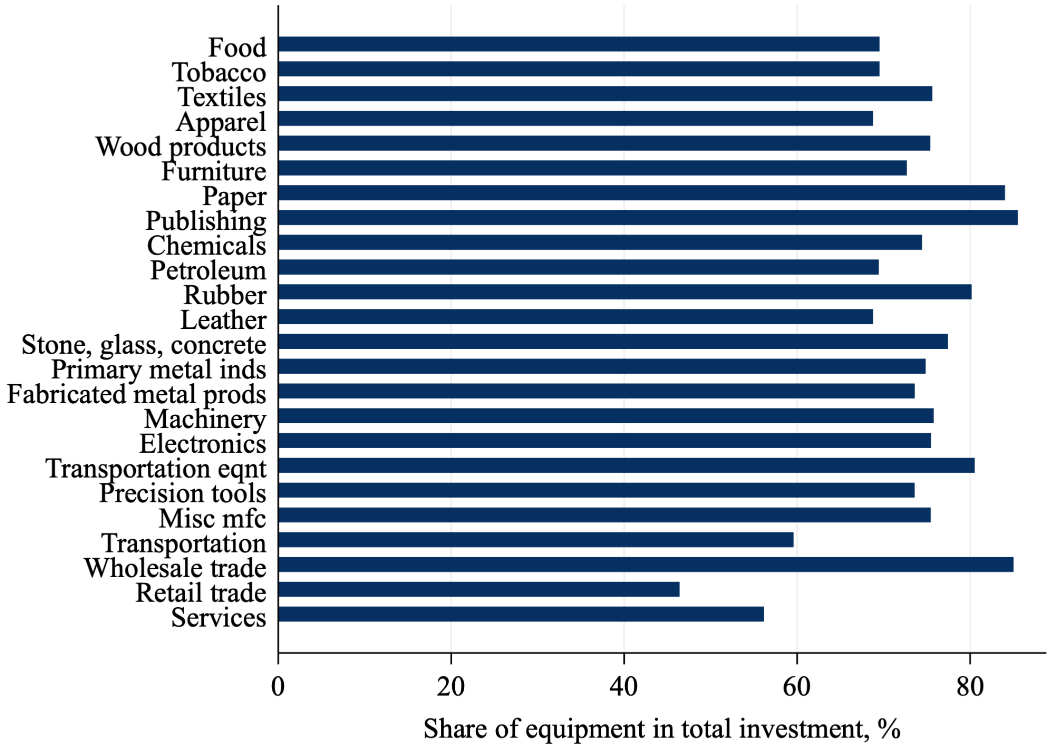
and similarly for No-inflation tax $\text{term}_{j,t}$ and Inflation tax $\text{term}_{j,t}$. s_j^{equip} is the equipment investment share for industry j. Figure 4 shows how the equipment investment share varied across industries. Figure A.1 and Figure A.2 plot the resulting Tax $\text{term}_{j,t}$, No-inflation tax $\text{term}_{j,t}$ and Inflation tax $\text{term}_{j,t}$.

Note that within-year variation in the inflation tax term comes from different sensitivity of z to inflation in different industries. This sensitivity varies based on whether asset is depreciated using the double-declining method or the straight-line method, and depending on the length of the asset's prescribed recovery period. However, the relationship between recovery period and the sensitivity to inflation is non-linear (Auerbach 1979). Figure A.4 plots the negative change in z from going from 1-year expected inflation of 2% to 1-year expected inflation of 10% with inflation expectations at longer horizons determined as in Equation 3.1. In particular, at $\rho = 0.04$, the drop in z is smaller for structures (recovery lives ≥ 45 years and straight-line depreciation) then for equipment (recovery lives of 8-16 years and double-declining depreciation method). Thus, industries with higher equipment investment share have higher sensitivity of the tax term to inflation. The industries with longest prescribed recovery lives for equipment (e.g. primary metals) have the highest sensitivity of the tax term to inflation.

[3] The reader may wonder why I am not using pre-sample values only, e.g., 1960-1965 average. My choice is driven by the limitations of the BEA data. Investment composition data are given in billions of dollars to the nearest 0.1 increment. This leads to some sectors having 100% investment shares in the early 1960s and before, even though it is clear that this is due to rounding.

Figure 4: Share of equipment investment in total capital spending by sector

This figure plots the share of equipment investment in total equipment and structures investment by select sectors. The shares are estimated from the BEA's Fixed Assets Accounts data as the average industry-level share over 1960-1980.



B. Measurement: Inventory term

I compute industry-level inventory-capital ratio γ_j based on Compustat Annual data. First, I estimate replacement-cost capital stock. This is important since high inflation in the 1970s means that PPE on corporate balance sheets is substantially understated relative to its market value (by about 30-35% on average in the latter part of the 1970s). Appendix A1 describes the procedure.

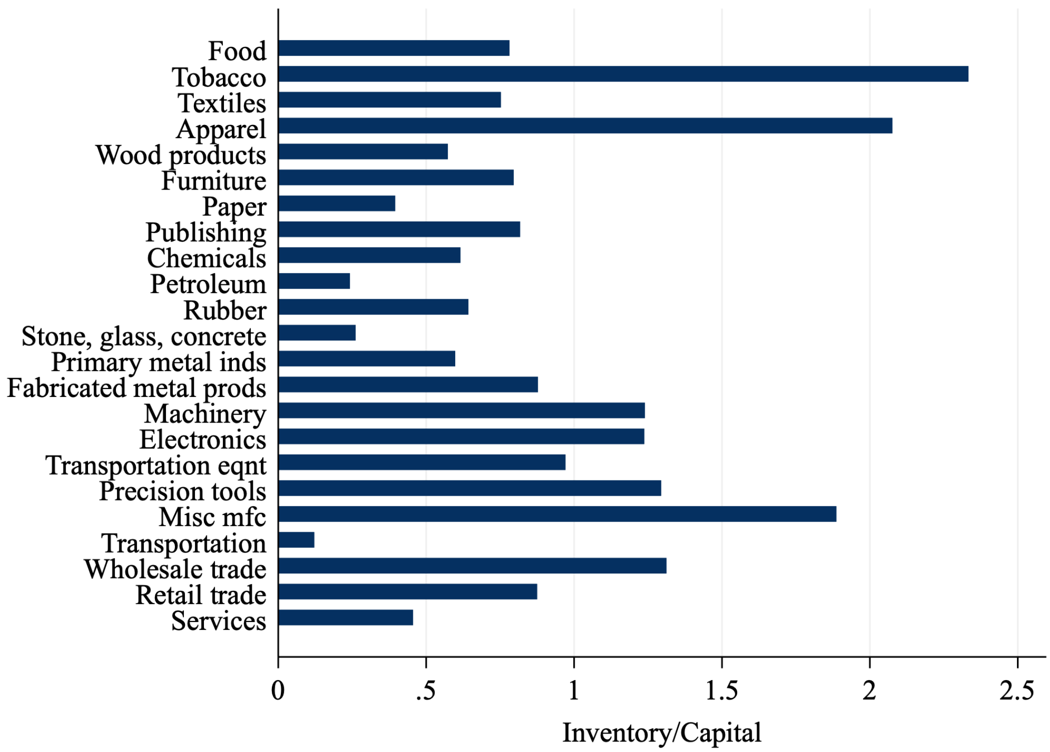
I calculate inventory-to-replacement-cost-PPE ratio at the firm-year level and then average the ratio over all firms in sector j over 1965-1980 to get γ_j. I use average expected inflation at the 10-year horizon for π_t^e (see Figure 2, Panel B), top statutory tax rates, and compute:

$$\text{Inventory term}_{j,t} = \frac{t_{c,t}\pi^e_{10,t}\gamma_j}{1-t_{c,t}}. \tag{3.5}$$

Figure 5 plots industry-level inventory-capital ratios γ_j; Figure A.3 plots the resulting Inventory $\text{term}_{j,t}$.

Figure 5: Inventory-capital ratio by sector

This figure plots the average ratio of book inventory to replacement-cost property, plant and equipment (PPE) by select sectors. The ratio is estimated on Compustat data for 1965-1980; see the main text for details.



Finally, Inventory $\text{term}_{j,t}$ should matter only for firms using FIFO. I define a binary indicator $\text{FIFO}_{i,t}$ as equal 0 if firm i uses LIFO for financial accounting in year t (Compustat variable INVVAL = 2), and equal to 1 otherwise. This definition is based on the idea that the only reason for firms to use LIFO is tax savings. Given that the IRS does not allow firms to use LIFO for tax purposes unless they also use it for financial reporting purposes, all firms that use LIFO for financial reporting – and only those firms – must use LIFO for tax reporting (Davis 1982).

C. Empirical strategy

Equipped with the two cost-of-capital terms which are affected by the interaction of inflation and corporate tax non-neutralities – Tax term$_{j,t}$ and Inventory term$_{i,t}$ – I investigate whether they affect corporate investment. I run the following regression:

$$\begin{aligned}\frac{I_{i,t}}{A_{i,t-1}} = \alpha_i + \alpha_t + \beta_1 \text{No-inflation tax term}_{j,t} + \beta_2 \text{Inflation tax term}_{j,t} \\ + \beta_3 \text{Inventory term}_{j,t} + \beta_4 \text{Inventory term}_{j,t} \times \text{FIFO}_{i,t} + \beta_5 \text{FIFO}_{i,t} \\ + \gamma_1 Q_{i,t-1} + \gamma_2 \frac{CF_{i,t}}{A_{i,t-1}} + \Gamma X_{i,t-1} + \varepsilon_{i,t},\end{aligned} \tag{3.6}$$

where $I_{i,t}/A_{i,t-1}$ is firm i's capital expenditures in year t scaled by total book assets $A_{i,t-1}$, α_i and α_t are firm and year fixed effects respectively, $Q_{i,t-1}$ is Tobin's Q, $CF_{i,t}/A_{i,t-1}$ is firm i's operating cash flow in year t scaled by lagged total assets, and X_{it} is the vector of additional controls.

The parameters of interest are β_1, β_2 and β_4. Based on the discussion in Section 2, I expect $\beta_1 < 0$, $\beta_2 < 0$, and $\beta_4 < 0$. My **identifying assumption** is that other factors that determine capital investment and that are not adequately controlled for by Tobin's Q, cash flows and fixed effects are not correlated with (a) investment composition at the industry level and industry-specific recovery lives, and (b) industry inventory-capital ratios.

One threat to this identification strategy is that investment is driven by future demand, which may be relatively stronger for industries that invest relatively more in equipment when the tax term for equipment goes down (e.g., 1975). If this were true, β_1 would be biased downwards and I would find an effect even if there is none. However, it is difficult to come up with a story justifying this kind of correlation.

Similarly, when expected inflation correlates with expected demand (positively or negatively), and sectoral sensitivity of the inflation tax term to inflation is systematically different between more and less pro-cyclical industries, this can introduce bias in β_2. It is *ex ante* unclear in which direction this bias would go. It depends, among other things, on whether inflation is demand- or supply-driven; the Great Inflation period had elements of both in different years. I will return to this point in Section 4.

Another threat is that expected future demand or other factors affecting investment are systematically different in sectors with high inventory-capital ratios relative to other sectors when expected inflation is elevated. In particular, that means firms in industries like food, textiles, furniture and retail expecting better (worse) conditions relative to wholesale trade, apparel and miscellaneous manufacturing. In this case, β_3 would be biased downwards (upwards). It is not clear what story would justify this, especially after controlling for established proxies for investment opportunities – Tobin's Q and cash flows. More importantly, these channels have to affect FIFO and LIFO firms differently to generate bias in β_4.

D. Data

I estimate Equation 3.6 on Compustat Annual data for the Great Inflation period of 1965-1980. I keep firms incorporated and headquartered in the USA, with the U.S. dollar as the native currency. Following Chaney, Sraer, and Thesmar (2012) I drop firms operating in finance, insurance and real estate sector (SIC codes 60-67), those operating in construction and mining (SIC codes 10-14 and 15-17), and the firms in public administration (SIC codes 91-99). All firm-level variables are winsorized at 1% level. Table A.1 details the definitions and sources for the variables used in the analysis; Table 1 collects summary statistics.

Table 1: Summary statistics

This table presents summary statistics for the sample used in the analysis. See the main text for details on the sample construction; see Table A.1 for variable definitions.

	Mean	SD	p10	p25	p50	p75	p90	N
Assets	437	2172	10	23	63	222	880	33,729
Debt / Assets	0.268	0.170	0.036	0.141	0.258	0.379	0.492	33,729
ST debt / Assets	0.064	0.080	0.002	0.012	0.036	0.085	0.161	33,729
LT debt / Assets	0.203	0.149	0.008	0.085	0.188	0.296	0.412	33,729
ROA	0.053	0.073	0.002	0.032	0.056	0.086	0.121	33,729
CAPEX / Assets	0.087	0.081	0.019	0.036	0.064	0.110	0.177	33,729
Tobin's Q	1.111	1.018	0.465	0.600	0.799	1.206	2.012	33,729
Cash flow / Assets	0.103	0.077	0.032	0.066	0.100	0.140	0.190	33,729
Tax term	1.267	0.075	1.175	1.206	1.265	1.317	1.379	33,729
No-inflation tax term	1.205	0.085	1.106	1.133	1.200	1.269	1.311	33,729
Inflation tax term	0.062	0.031	0.020	0.031	0.064	0.085	0.109	33,729
Inventory term	0.034	0.022	0.007	0.018	0.031	0.048	0.062	33,729
FIFO	0.830	0.376	0	1	1	1	1	33,729

4. Main results

A. Main (non-)result

Table 2 shows the results of estimating Equation 3.6. Standard errors are clustered by industry, since treatment is assigned at this level (Abadie et al. 2022). Column (1) shows a statistically significant and sizeable correlation between Tax term$_{j,t}$ on investment. The estimated effects of the inventory terms – in particular, β_4 – are not statistically different from 0. Thus, I fail to find the effect of FIFO inventory accounting on investment operating through the user cost of capital.

Column (2) splits the tax term into the inflation and no-inflation tax terms. It shows that it is No-inflation tax term$_{j,t}$ that drives the effect of Tax term$_{j,t}$ in Column (1). I estimate $\hat{\beta}_1 = -0.188$ which is very similar to the coefficient on the tax term in Column (1) and is statistically significant at 1% level. $\hat{\beta}_2$ is not statistically significant and has the wrong sign. Column (3) repeats the analysis including all treatment terms into one regression and finds essentially identical results.

Table 2: Inflation, cost of capital and corporate investment

This table shows the results of estimating Equation 3.6. All specifications control for Tobin's Q and operating cash flows. Additional controls for profitability, size and leverage are not included. Standard errors, clustered at the industry level, are reported in parentheses. *, **, *** indicate significance at the 0.1, 0.05, and 0.01 levels, respectively.

	Dependent variable: $I_{i,t}/A_{i,t-1}$		
	(1)	(2)	(3)
Tax term$_{j,t}$	-0.178***		
	(0.037)		
Inventory term$_{j,t}$	-0.002		0.018
	(0.132)		(0.137)
Inventory term$_{j,t}$ × FIFO$_{i,t}$	-0.047		-0.049
	(0.090)		(0.090)
No-inflation tax term$_{j,t}$		-0.188***	-0.173***
		(0.043)	(0.043)
Inflation tax term$_{j,t}$		0.066	0.043
		(0.314)	(0.343)
$Q_{i,t-1}$	0.012***	0.012***	0.012***
	(0.002)	(0.002)	(0.002)
$CF_{i,t}/A_{i,t-1}$	0.256***	0.256***	0.255***
	(0.019)	(0.019)	(0.019)
Firm FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Controls	No	No	No
R^2	0.563	0.562	0.563
Within R^2	0.091	0.090	0.091
N	33,729	33,729	33,729

B. Discussion

In this section I discuss possible explanations for the non-result. One reason I fail to find the expected results for the inflation tax term and for the FIFO inventory term may be that I use the wrong data. Specifically, Compustat reports information from consolidated financial statements which include foreign operations; these operations may be unaffected by U.S. tax and inflation considerations. However, Table A.3 confirms that the results reported in Table 2 are similar for the firms that operate only domestically[4].

Another explanation for why I do not find the expected negative effect of Inflation tax term$_{j,t}$ is that the term is mismeasured. The sensitivity of Inflation tax term$_{j,t}$ to inflation depends on the real discount rate applied in calculations of z. I re-run the specification in Column (2) of Table 2 for tax terms constructed using $\rho = 2\%$ and $\rho = 6\%$ instead of the baseline $\rho = 4\%$. The results are reported in Table A.4. The estimates are similar; under $\rho = 2\%$ the estimated $\hat{\beta}_2$ is negative, in line with the theoretical predictions of Section 2, but it is still very noisy and thus not statistically significant.

Next, the lack of robust correlation between the inflation tax term and investment can be due to insufficient variation in Inflation tax term year-over-year and across industries. Over the entire Great Inflation episode, expected inflation rose from about 2% to 10%. As discussed in Section 3, industry exposure to inflation through historical cost depreciation is determined by $\Delta z/\Delta\pi^e$. This sensitivity is low for services at about 0.02, and is high for primary metals industry (SIC code 33) at 0.0227. Then the associated change in Inflation tax term is approximately 0.02 larger for the "treated" industry (primary metals) relative to "control" industry (services).[5] Similarly, Inventory term for FIFO firms in industries with high inventory-capital ratio (e.g., publishing) rose by about 0.03 relative to industries with low inventory-capital ratio (e.g., services). This is comparable in magnitude to the big statutory tax changes enacted in the 1970s. For example, the investment tax credit increase

[4] I identify domestic firms as those with foreign tax liabilities (Compustat item TXFO) equal to 0 for all years they are present in the sample.

[5] Change in inflation tax term over time holding tax parameters constant is equal to $\tau_c \Delta z/(1-\tau_c)$, where $\Delta z \approx \Delta z/\Delta\pi^e \times \Delta\pi^e$. Consider $\Delta\pi^e = 8$ percentage points. For primary metals, the change in Inflation tax term is $0.48 \times 0.0227 \times 8/(1-0.48) = 0.168$; for services, it is $0.48 \times 0.02 \times 8/(1-0.48) = 0.148$. The difference is 0.02.

in 1975 from 7% to 10% corresponds to a decrease in the No-inflation tax term of about 2% for "treated" relative to "control" industries (this is discussed further in Section 5). Given that I do find a statistically significant effect of the statutory tax changes on investment, the magnitude of the variation in the inflation-related tax terms seems to be enough to generate a response in corporate investment if the mechanism considered in this paper is true.

The non-result could be explained by large measurement errors which would attenuate estimates toward 0 and make them imprecise. One possible mismeasurement comes from wrong discount rates – I use constant real discount rate, while in reality discount rates likely vary both across firms and over time (Poterba and Summers 1995; Graham 2022; Gormsen and Huber 2022). In addition, inflation expectations – especially at the longer horizons, which are crucial in my analysis – can be mismeasured, as they likely do not conform to the crude AR(1) structure imposed in this paper and are also likely to vary by firm (Candia, Coibion, and Gorodnichenko 2023). In this case, the relatively modest variation in expected inflation year-over-year during the Great Inflation episode in the U.S. – at most 2-3 percentage points – means that yearly changes in the user cost of capital terms can be drowned out by the measurement error. On the other hand, large tax reforms lead to large and abrupt changes in the cost of capital and, therefore, to large and abrupt changes in corporate investment, which then can be identified in the data (Cummins, Hassett, and Hubbard 1994; Goolsbee 2000).

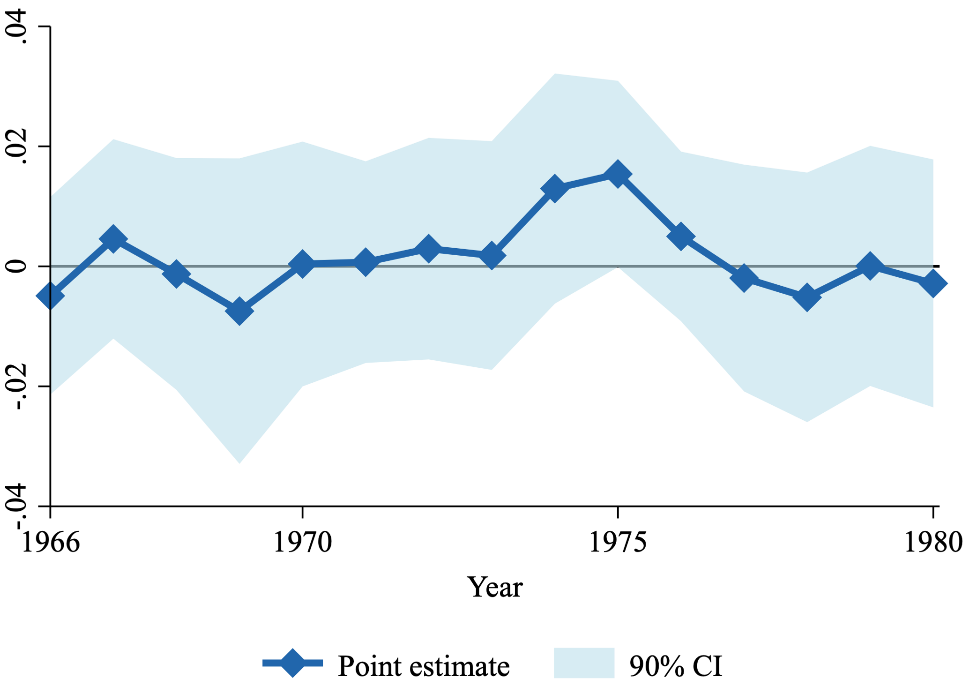
Finally, the unexpected – albeit not statistically significant – $\hat{\beta}_2 > 0$ result may be due to bias. Figure 6 plots the difference in investment between firms in industries with high vs low sensitivity of z to inflation (top 3 deciles vs bottom 3 deciles). The investment rates of firms in these two groups are not different except during the burst of inflation in 1973-1975. Historical records indicate that industries with the highest sensitivity of the depreciation allowances to inflation (primary metals, food, petroleum refining, paper production, concrete production) experienced strong shortages in 1974-1975. It is likely that the elevated investment in these industries is explained, at least in part, by their drive to increase supply to meet the strong demand (Brock and Wilsby 1974; Droitsch 1974). I redo the analysis in Figure 6 controlling for lagged Tobin's Q, firm's operating cash flow, statutory tax changes and firm and year fixed effects. Figure A.6 reports the result. The magnitude of the 1974-75 investment boom for the "treated" firms relative to the "control" firms is substantially reduced; but it does not disappear. It is likely that Tobin's Q and operating cash flows do not fully control for the excess demand experienced by the "treated" industries and thus do not fully solve the possible bias issue.

Figure 6: Investment rate of industries with high vs slow sensitivity of COC to inflation

This figure plots estimated $\alpha_{3,l}$, $l = 1966, ..., 1980$ from the following regression:

$$I_{i,t}/A_{i,t-1} = \sum_{l=1966}^{1980} \mathbb{1}\{l = t\} \times \left[\alpha_{1,l} + \alpha_{2,l}\mathbb{1}\{\text{mid } \Delta z/\Delta\pi^e\} + \alpha_{3,l}\mathbb{1}\{\text{high } \Delta z/\Delta\pi^e\}\right] + \varepsilon_{i,t}$$

where $\mathbb{1}\{\text{mid } \Delta z/\Delta\pi^e\}$ is equal to 1 for industries in the 4th to 7th deciles by sensitivity of z to expected inflation, $\mathbb{1}\{\text{high } \Delta z/\Delta\pi^e\}$ is equal to 1 for industries in the top 3 deciles. The point estimates represent the difference in average investment rate between firms in high- vs low-sensitivity industries. 90% confidence interval is based on standard errors clustered at the industry level.



5. Elasticity of investment to tax changes

A. Results

While I am not able to find evidence of corporate investment responding to the changes in the user cost of capital induced by non-neutralities of U.S. corporate taxation with respect to inflation, Table 2 suggests that statutory tax changes in the 1970s did generate an investment response. This subsection investigates this result further. I omit the inflation-related tax terms and run:

$$\frac{I_{i,t}}{A_{i,t-1}} = \alpha_i + \alpha_t + \beta_1 \text{No-inflation tax term}_{j,t} + \gamma_1 Q_{i,t-1} + \gamma_2 \frac{CF_{i,t}}{A_{i,t-1}} + \Gamma X_{i,t-1} + \varepsilon_{i,t}. \quad (5.1)$$

β_1 is the parameter of interest and is expected to be negative. Table 3 reports the results.

Table 3: Tax changes, cost of capital and corporate investment

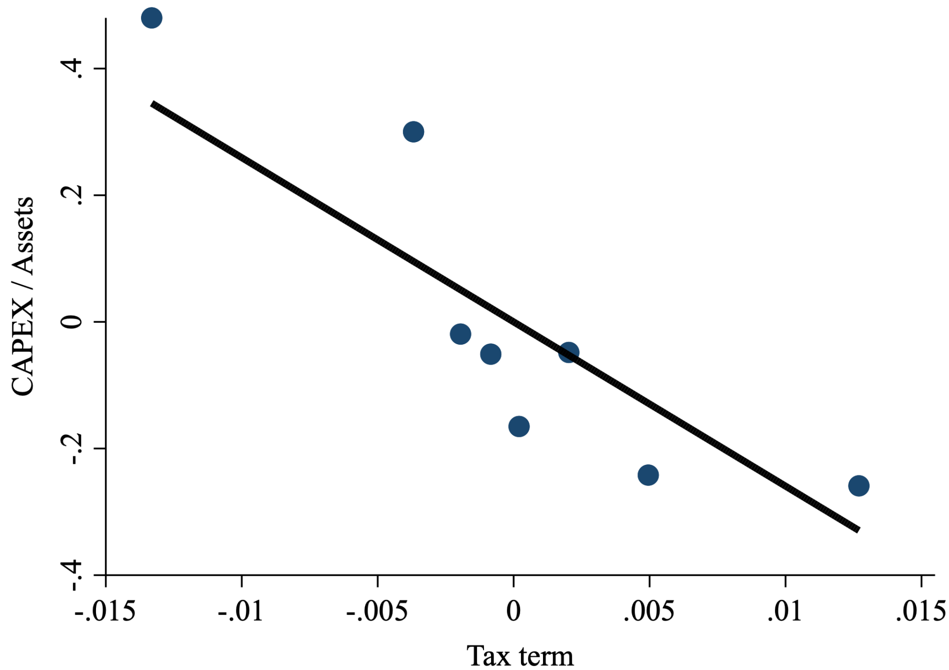
This table shows the results of estimating Equation 5.1. Controls include lagged ROA, lagged book leverage, and lagged natural logarithm of book assets. Standard errors, clustered at the industry level, are reported in parentheses. *, **, *** indicate significance at the 0.1, 0.05, and 0.01 levels, respectively.

	Dependent variable: $I_{i,t}/A_{i,t-1}$			
	(1)	(2)	(3)	(4)
No-inflation tax term$_{j,t}$	-0.259***	-0.193***	-0.191***	
	(0.041)	(0.037)	(0.057)	
$Q_{i,t-1}$		0.012***	0.009***	0.012***
		(0.002)	(0.002)	(0.002)
$CF_{i,t}/A_{i,t-1}$		0.256***	0.189***	0.256***
		(0.019)	(0.015)	(0.019)
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Controls	No	No	Yes	No
R^2	0.520	0.562	0.578	0.562
Within R^2	0.001	0.090	0.123	0.089
N	33,729	33,729	33,729	33,729

For reference and comparison with prior work, Column (4) shows the classic investment regression of Fazzari, Hubbard, and Petersen (1988) and Kaplan and Zingales (1997). The correlations between Tobin's Q and investment, and between cash flows and investment are statistically significant; the magnitudes are very similar to those reported by Rauh (2006). Column (1) reports the results for the no-inflation tax term, controlling only for firm and year fixed effects; Column (2) controls also for Tobin's Q and operating cash flows, and Column (3) also controls for lagged profitability, leverage, and size. Let us focus on Column (2) as the baseline. The tax elasticity of investment I find is economically meaningful: 1 standard deviation increase in the no-inflation tax term (0.085) predicts lower investment of about 0.2 standard deviations.

Figure 7: Binscatter of tax term against investment

This figure plots the binscatter of corporate investment against the no-inflation tax term. I residualize $I_{i,t}/A_{i,t-1}$ and No-inflation tax term$_{j,t}$ with respect to firm and year fixed effects, and then plot the residuals of investment against the residuals of the tax term.



Assuming my identification strategy is valid, this effect is causal. Magnitude of the effect is consistent with the prior literature: estimates of the elasticity of investment to user cost of capital generally lie between -0.35 and -0.15 (Hassett and Hubbard 2002)[6] Zwick and Mahon (2017) finds a much larger elasticity of -0.5, but that is driven by the inclusion in their sample of many smaller firms that are not available in Compustat. When Zwick and Mahon (2017) re-run their analysis on the top decile of firms in their sample – which are comparable to the Compustat firms – they find a coefficient very similar to mine.

Figure 7 shows the binscatter of investment against the no-inflation tax term of the user cost of capital. I residualize $I_{i,t}/A_{i,t-1}$ and No-inflation tax term$_{j,t}$ with respect to firm and

[6] Hassett and Hubbard (2002) summarize multiple empirical studies of corporate investment elasticity to user cost of capital and report the plausible range as -1 to -0.5. This range is based on studies where investment is scaled by lagged capital stock. I arrive at -0.35 to -0.15 range by multiplying Hassett and Hubbard (2002)'s range by the average capital-to-assets ratio in my sample which is about 1/3.

year fixed effects, and then plot the residuals of $I_{i,t}/A_{i,t-1}$ against the residuals of Tax term$_{j,t}$. The relationship between investment and the tax term looks monotonic and is not driven by outliers.

Table 4: Tax changes, cost of capital and corporate investment

This table shows the results of estimating Equation 5.1 where No-inflation tax term$_{j,t}$ is split into the investment tax credit part $k_{j,t}/(1-t_{c,t})$ and the PV of depreciation tax shield part $t_{c,t}z_{j,t}/(1-t_{c,t})$. Controls include lagged ROA, lagged book leverage, and lagged natural logarithm of book assets. Standard errors, clustered at the industry level, are reported in parentheses. *, **, *** indicate significance at the 0.1, 0.05, and 0.01 levels, respectively.

	Dependent variable: $I_{i,t}/A_{i,t-1}$			
	(1)	(2)	(3)	(4)
$\frac{t_{c,t}z_{j,t}}{1-t_{c,t}}$	0.448	0.247	0.408	
	(0.430)	(0.326)	(0.271)	
$\frac{k_{j,t}}{1-t_{c,t}}$	0.224***	0.182***	0.150***	
	(0.064)	(0.048)	(0.048)	
$Q_{i,t-1}$		0.012***	0.009***	0.012***
		(0.002)	(0.002)	(0.002)
$CF_{i,t}/A_{i,t-1}$		0.256***	0.188***	0.256***
		(0.019)	(0.014)	(0.019)
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Controls	No	No	Yes	No
R^2	0.520	0.562	0.578	0.562
Within R^2	0.001	0.090	0.123	0.089
N	33,729	33,729	33,729	33,729

I also split the no-inflation tax term into the investment tax credit part $k_{j,t}/(1-t_{c,t})$ and the PV of depreciation tax shield part $t_{c,t}z_{j,t}/(1-t_{c,t})$ and re-run Equation 5.1 with these two terms. Table 4 reports the results. Only the ITC is statistically significant, with the coefficient on it very similar to $\hat{\beta}_1$ in Table 3. This can be due to firms valuing immediate tax benefits more which is consistent with the findings in Zwick and Mahon (2017) and with theories emphasizing high effective discount rates – theories of investment with financing constraints (e.g., Stein (2003), Hubbard (1998) and references therein), theories of short-termism (Stein 1989), and theories with non-convex adjustment costs (Caballero and Engel 1999).

B. Robustness

In this subsection I explore how sensitive my results in the previous subsection are to a number of alternative econometric specifications and samples.

First, I run the regression in Equation 5.1 on a sample of domestic firms only, where the domestic status is defined as in footnote 4. Table A.6 reports the results. The coefficient on the tax term stays similar; since U.S. tax changes should a priori matter relatively more for firms that operate only domestically, this helps alleviate concerns that my results in Table 3 are spurious.

Second, I run this regression on a balanced sample. This is intended to check that the variation driving the results indeed comes from comparing firms that are highly exposed to the changes in the corporate taxation (i.e. those that invest more in equipment) vs firms that are not (i.e. those investing relatively more in structures) in years when the tax changes happen (i.e., 1967, 1968, 1970, 1972, 1975) vs other years. Table A.7 reports the results of this exercise. The results are almost identical to those in Table 3.

Finally, I also re-run the main analysis double-clustering standard errors by industry and by year. This is the most restrictive standard error specification; it allows for error correlation within industries over time and within years across industries. The results are shown in Table A.8. All coefficients remain statistically significant.

6. Conclusion

This paper studies how inflation affects corporate investment through two non-neutralities of U.S. corporate taxation – historical cost depreciation and FIFO inventory accounting.

I do not find robust evidence for such an effect. This can be due to bias in my research design, lack of statistical power, or it can be due to high effective discount rates used by firms as emphasized by theories of corporate investment with financial frictions, short-termism, and non-convex adjustment costs. Further research using more comprehensive administrative data rather than Compustat could shed more light on this (non-)result.

I do find a strong response of investment to tax changes enacted in the 1970s, especially to the changes in the investment tax credit. Given that the credit applies in the same year as when investment happens, this result is also consistent with firm using high effective discount rates (Graham 2022). The magnitude of the effect I document is in the same range as the estimates found in the literature. The effect is robust and can be seen as causal, assuming my identification strategy is valid.

Lastly, I can speculate on how the interaction of inflation and corporate tax non-neutralities could affect corporate investment in the recent burst of inflation that started in 2021. The crucial point is that the magnitude of the effects – both through historical cost depreciation and through FIFO accounting – is scaled by corporate tax rate factor $t_c/(1-t_c)$. The top statutory rate was 48% during most of the Great Inflation period. Since 2018 corporate tax rate is flat at 21%. This means that the tax rate factor is 3.5 times smaller today: 0.92 vs 0.27. Thus, any effect on investment – even if it could be robustly established for the Great Inflation period – is likely to be much smaller in 2022 than in the 1970s.

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A1. Computation of replacement-cost capital stock for Compustat firms

Following Salinger and Summers (1983) and Cummins et al. (1994) I assume that the net capital stock (PPENT) at the beginning of my sample (the year 1965) is a replacement-cost value. Then I solve for the depreciation rate δ from:

$$K_T = (1 - \delta^T)K_0 + (1 - \delta)^{T-1}K_1 + ... + I_T,$$

where K_0 and K_T are net capital stocks at the beginning and the end of each sample, and I_t is CAPEX in period t. Using the BEA nonresidential private investment deflator, I compute replacement-cost net PPE recursively:

$$\hat{K}_{it} = (1 - \delta_i)\hat{K}_{i,t-1}(1 + \pi_t) + I_{it},$$

where $\hat{K}_{it}$ is replacement-cost capital stock of firm i in year t, δ_i is the estimated firm-specific depreciation rate, π is the percent change in the investment deflator in year t, and I_{it} is CAPEX in year t.

A2. Tax deductibility of nominal interest and firms' cost of capital

Let t_p be personal tax rate, R be the nominal interest on debt, π^e be expected inflation, and r be real after-tax required return by investor:

$$r = R(1 - t_p) - \pi^e$$

Assume after-tax Fisher relation holds. That is, $dr/d\pi^e = 0$. Firm's real cost of debt ρ_d is given by:

$$\rho_d = R(1 - t_c) - \pi^e$$

Combining these equations, we get:

$$\rho_d = \frac{1 - t_c}{1 - t_p} r + \frac{t_p - t_c}{1 - t_p} \pi.$$

Hence:

$$\frac{d\rho_d}{d\pi} = \frac{t_p - t_c}{1 - t_p}$$

Whether this is positive or negative depends on the relative magnitudes of t_p and t_c. Furthermore, the expression depends critically on the assumption of after-tax Fisher relation. If I assume only that before-tax Fisher relation holds (that is, nominal interest rates go up one-for-one with expected inflation, not more than one-for-one to compensate for taxes levied on the inflation premium), then:

$$\frac{d\rho_d}{d\pi} = -\frac{t_c}{1 - t_p} < 0$$

Now, turn to the cost of equity. After-tax real cost of equity:

$$\rho_e = D + E - \pi$$

where D is dividend return and E is ex-dividend nominal return per dollar invested in equity. Adopt tax capitalization view of equity taxation, so that required real after-tax return for marginal investor is:

$$\rho_i = (1 - c)(D + E) - \pi$$

where c is capital gains tax.

Assume $\rho_i = r + X$ where X – fixed equity risk premium. Then:

$$\rho_e = \frac{1}{1-c} r + \frac{1}{1-c} X + \frac{c}{1-c} \pi$$

So:

$$\frac{d\rho_e}{d\pi} = \frac{c}{1-c} > 0$$

Discount rate ρ is then:

$$\rho = w_d \rho_d + w_e \rho_e,$$

where w_d and w_e are shares of debt and equity in project's financing. Clearly, whether $\partial\rho/\partial\pi^e$ is positive or negative is difficult to deduce ex ante. It depends on how debt and equity markets react to inflation, and on firms' financing mix.

A3. Additional figures and tables

Table A.1: Variable definitions

Variable	Description	Source
CPI inflation	Year-on-year change in the Consumer Price Index	Bureau of Labor Statistics, retrieved from FRED
1-year-ahead expected inflation	Livingston Survey, December vintages. Percent change from October of the year of the survey to December of the next year, annualized	Philadelphia Fed
Industry investment	Industry investment in equipment and structures	BEA Fixed Assets Accounts
Assets	Book total assets (Compustat code: AT)	Compustat North America Annual
Debt / Assets	Total book leverage (DLC + $DLTT$ / AT)	Compustat North America Annual
ST debt /Assets	DLC / AT	Compustat North America Annual
LT debt /Assets	$DLTT$ / AT	Compustat North America Annual
ROA	Return on assets, NI / AT	Compustat North America Annual
CAPEX /Assets	$CAPX$ / (1 + capital goods inflation) × 1 / AT	Compustat North America Annual and BEA National Accounts and Fixed Assets Tables
Tobin's Q	$(PRCC_F \times CSHPRI + DLC + DLTT + PSTKL - TXDITC)/AT$	Compustat North America Annual
Cash flow / Assets	Operating cash flow scaled by book assets, $(NI + DP)/AT$	Compustat North America Annual
FIFO	Indicator that is equal to 0 if firm uses LIFO ($INVVAL = 2$) and 1 otherwise	Compustat North America Annual
Industry investment & capital	Industry-level investment and capital stock	BEA Fixed Assets Accounts

Table A.2: Recovery periods for tax depreciation prescribed by IRS Bulletin 1962-2

Sector	Recovery period for:	
	Equipment	Structures
Food	16	45
Tobacco	15	45
Textiles	13	45
Apparel	9	45
Wood products	10	45
Furniture	10	45
Paper	14	45
Publishing	11	45
Chemicals	11	45
Petroleum	16	45
Rubber	12	45
Leather	11	45
Stone, glass, concrete	16	45
Primary metal inds	16	45
Fabricated metal prods	12	45
Machinery	12	45
Electronics	10	45
Transportation eqnt	12	45
Precision tools	12	45
Misc mfc	12	45
Wholesale trade	10	60
Retail trade	10	50
Services	10	45
Transportation	12	45

Figure A.1: Tax term of the cost of capital by industry

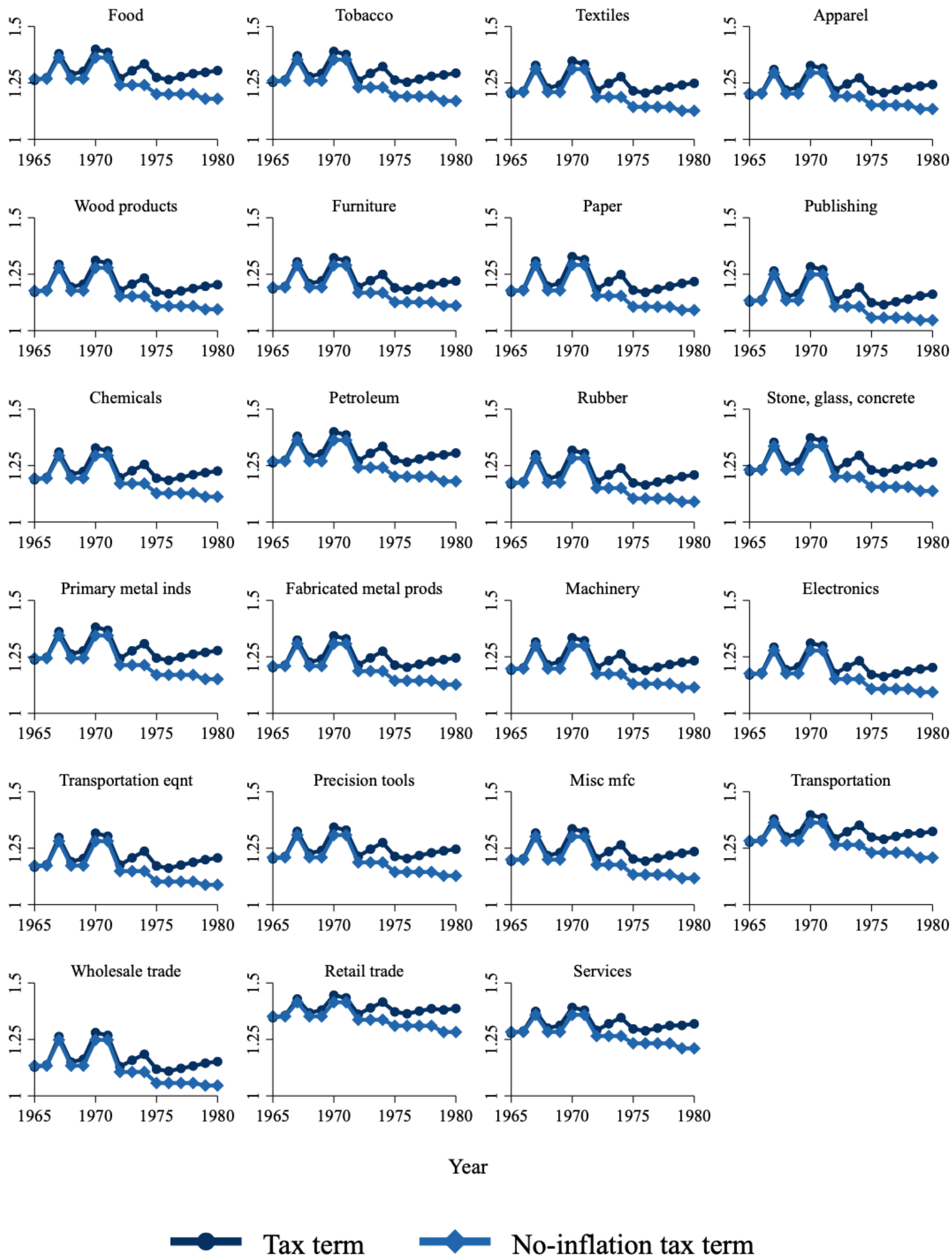

Figure A.2: Inflation tax term by industry

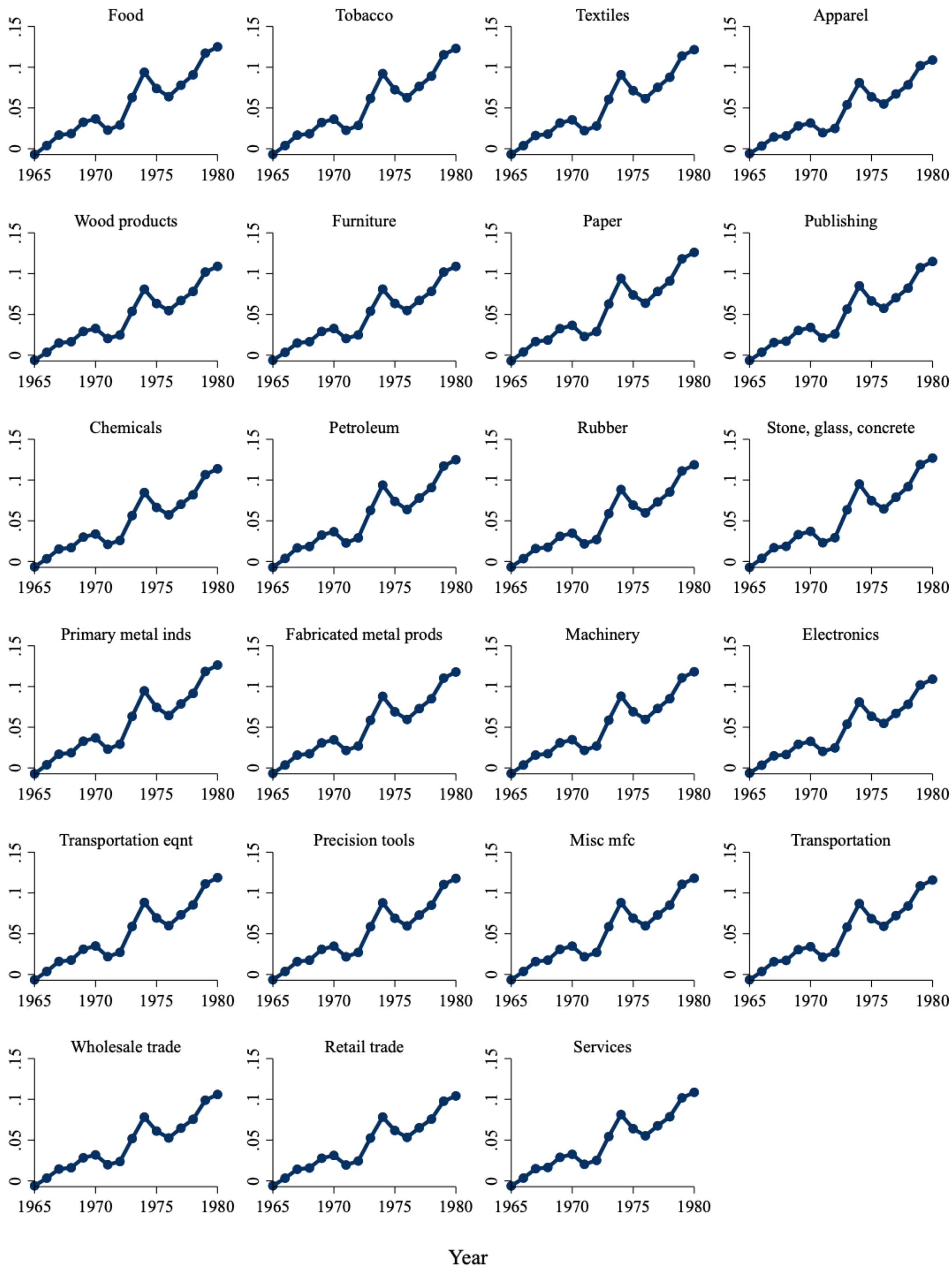

Figure A.3: Inflation, FIFO inventory and the cost of capital

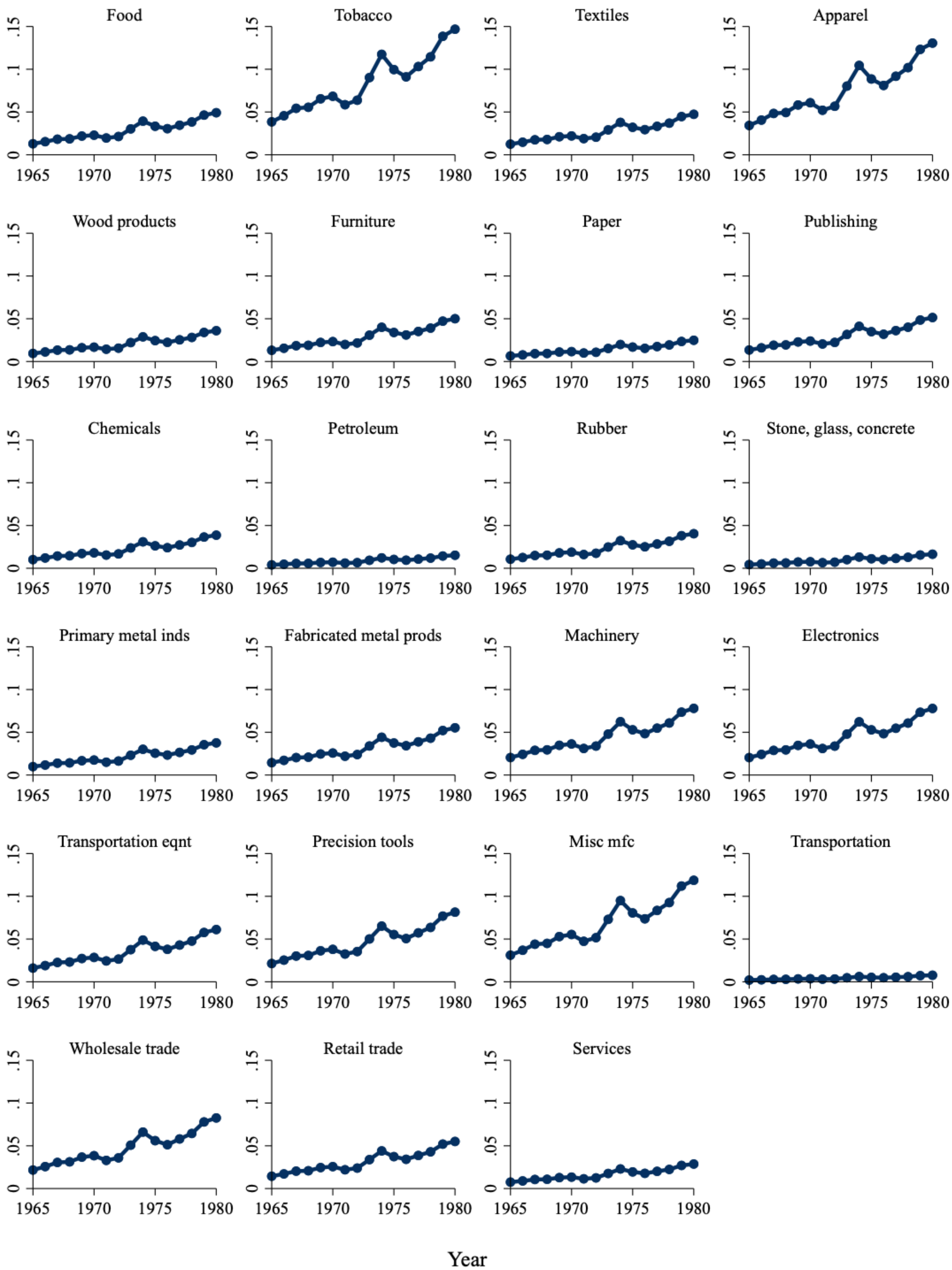

Figure A.4: Sensitivity of z to expected inflation

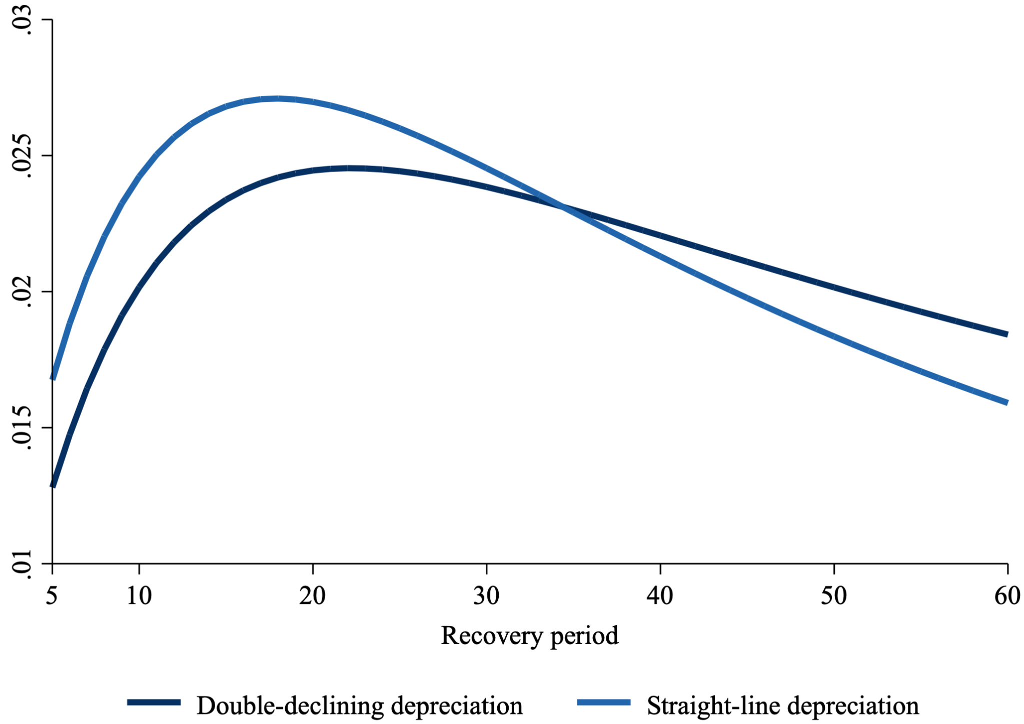

Table A.3: Inflation, cost of capital and corporate investment: Domestic firms only

	Dependent variable: $I_{i,t}/A_{i,t-1}$		
	(1)	(2)	(3)
Tax term$_{j,t}$	-0.116**		
	(0.048)		
Inventory term$_{j,t}$	-0.135		-0.136
	(0.191)		(0.201)
Inventory term$_{j,t}$ $\times$ FIFO$_{i,t}$	-0.011		-0.011
	(0.118)		(0.117)
No-inflation tax term$_{j,t}$		-0.121***	-0.116**
		(0.042)	(0.050)
Inflation tax term$_{j,t}$		-0.001	-0.120
		(0.298)	(0.344)
$Q_{i,t-1}$	0.014***	0.014***	0.014***
	(0.002)	(0.002)	(0.002)
$CF_{i,t}/A_{i,t-1}$	0.244***	0.244***	0.244***
	(0.022)	(0.022)	(0.022)
Firm FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Controls	No	Yes	No
R^2	0.543	0.543	0.543
Within R^2	0.082	0.082	0.082
N	16,736	16,736	16,736

Table A.4: Different real discount rates for z

	Dependent variable: $I_{i,t}/A_{i,t-1}$		
	$\rho = 0.04$	$\rho = 0.02$	$\rho = 0.06$
No-inflation tax term$_{j,t}$	-0.188***	-0.197***	-0.169***
	(0.043)	(0.036)	(0.048)
Inflation tax term$_{j,t}$	0.066	-0.134	0.252
	(0.314)	(0.233)	(0.318)
Firm FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Controls (Q and CF)	Yes	Yes	Yes
R^2	0.562	0.562	0.562
Within R^2	0.090	0.090	0.090
N	33,729	33,729	33,729

Figure A.5: Inflation tax term of firms with high vs slow sensitivity of COC to inflation

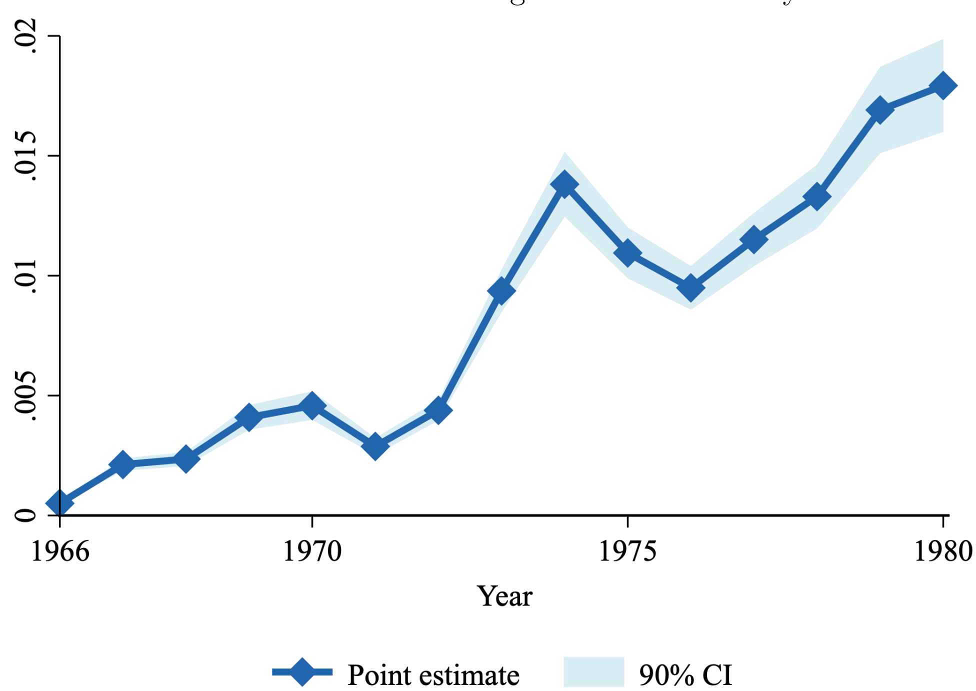

Figure A.6: Investment of firms with high vs slow sensitivity of COC to inflation

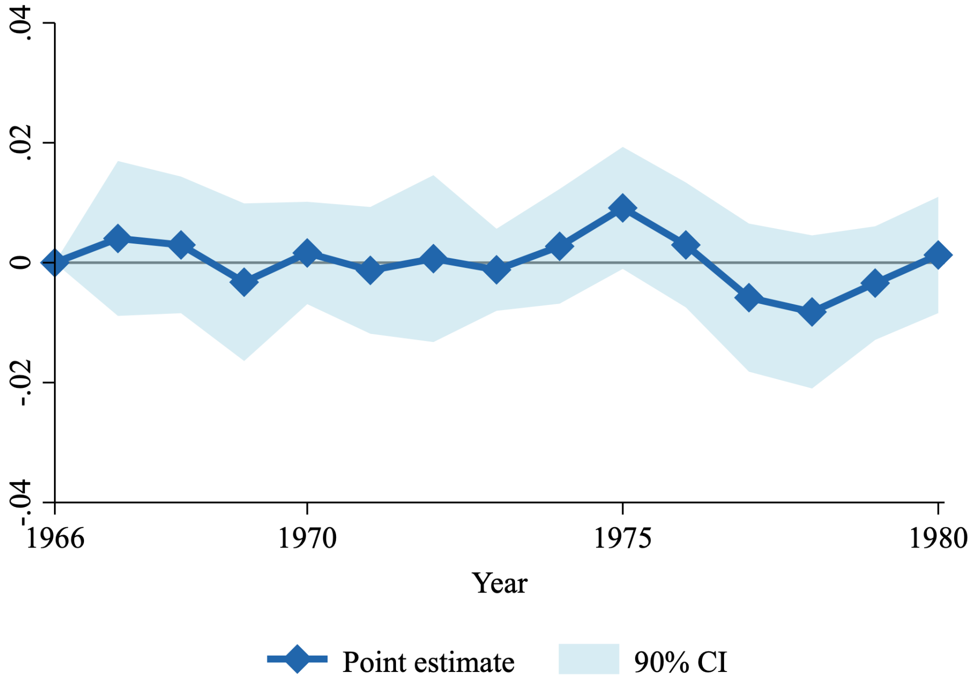

Table A.5: Sectoral inflation tax sensitivity and cyclicality

Sector	$\Delta z/\Delta\pi^e$	Market β	Output cyclicality
Food	0.0225	0.71	0.57
Tobacco	0.0223	0.59	0.57
Textiles	0.0218	0.92	1.26
Apparel	0.0193	0.91	0.52
Wood products	0.0201	1.40	1.87
Furniture	0.0201	0.96	1.46
Paper	0.0224	1.11	1.53
Publishing	0.0209	0.82	0.38
Chemicals	0.0207	1.13	1.40
Petroleum	0.0225	1.04	2.32
Rubber	0.0214	1.32	1.61
Leather	0.0207	0.57	0.52
Stone, glass, concrete	0.0228	1.08	1.22
Primary metal inds	0.0227	1.36	2.49
Fabricated metal prods	0.0213	0.98	1.69
Machinery	0.0213	1.11	1.47
Electronics	0.0201	1.22	1.45
Transportation eqnt	0.0214	1.01	1.15
Precision tools	0.0213	1.09	1.11
Misc mfc	0.0213	1.00	0.96
Retail trade	0.0192	0.74	0.86
Services	0.0200	0.83	0.48
Transportation	0.0210	0.88	1.03
Wholesale trade	0.0195	0.86	1.21

	$\Delta z/\Delta\pi^e$	Market β	Output cyclicality
$\Delta z/\Delta\pi^e$	1.000	0.143	0.326
Market β	0.143	1.000	0.776
Output cyclicality	0.326	0.776	1.000

Table A.6: Tax term and investment: Domestic firms only

	Dependent variable: $I_{i,t}/A_{i,t-1}$			
	(1)	(2)	(3)	(4)
No-inflation tax term$_{j,t}$	-0.185***	-0.121**	-0.102	
	(0.052)	(0.047)	(0.069)	
$Q_{i,t-1}$		0.014***	0.012***	0.014***
		(0.002)	(0.002)	(0.002)
$CF_{i,t}/A_{i,t-1}$		0.244***	0.173***	0.245***
		(0.022)	(0.016)	(0.022)
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Controls	No	No	Yes	No
R^2	0.502	0.543	0.564	0.543
Within R^2	0.001	0.082	0.124	0.081
N	16,736	16,736	16,736	16,736

Table A.7: Tax term and investment: Balanced sample

	Dependent variable: $I_{i,t}/A_{i,t-1}$			
	(1)	(2)	(3)	(4)
No-inflation tax term$_{j,t}$	-0.242***	-0.208***	-0.213**	
	(0.059)	(0.066)	(0.086)	
$Q_{i,t-1}$		0.010***	0.007***	0.010***
		(0.003)	(0.003)	(0.003)
$CF_{i,t}/A_{i,t-1}$		0.331***	0.258***	0.332***
		(0.031)	(0.027)	(0.030)
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Controls	No	No	Yes	No
R^2	0.489	0.549	0.558	0.548
Within R^2	0.002	0.119	0.137	0.118
N	12,120	12,120	12,120	12,120

Table A.8: Tax term and investment: Double clustering

	Dependent variable: $I_{i,t}/A_{i,t-1}$			
	(1)	(2)	(3)	(4)
No-inflation tax term$_{j,t}$	-0.259***	-0.193***	-0.191**	
	(0.049)	(0.064)	(0.080)	
$Q_{i,t-1}$		0.012***	0.009***	0.012***
		(0.002)	(0.002)	(0.002)
$CF_{i,t}/A_{i,t-1}$		0.256***	0.189***	0.256***
		(0.025)	(0.018)	(0.025)
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Controls	No	No	Yes	No
R^2	0.520	0.562	0.578	0.562
Within R^2	0.001	0.090	0.123	0.089
N	33,729	33,729	33,729	33,729