Online Appendix for "Credit Crunches and the Great Stagflation"

This document contains additional material for the paper "Credit Crunches and the Great Stagflation".

A Oil shocks

The conventional view treats the supply shocks that are needed to account for the Great Stagflation as exogenous (e.g., Blinder, 1982). The most commonly cited such shocks are the oil price shocks of late 1973 and 1979 (e.g., Clarida, Gali and Gertler, 2000). Since oil is an important input for many industries, the increase in its price is a negative supply shock. Yet while the oil shocks almost certainly exacerbated the stagflation, a number of papers point out that they cannot have been the main driver (DeLong, 1997; Barsky and Kilian, 2001). We review and expand on the two main reasons for this.

Figure OA.2 plots the real price of oil against inflation and GDP growth. Panel A plots year-over-year inflation and GDP growth, and Panel B plots them quarterly (at an annual rate) to show the exact timing. Vertical lines mark the two oil shocks.

The first reason the oil shocks cannot have been the main driver of the Great Stagflation is that they arrived halfway through it. As Figure OA.2 shows, the real price of oil was flat or decreasing during the first two of the four stagflationary cycles (1966–67 and 1969–70). It was lower in December 1973, on the eve of the first oil shock, than it had been in the early 1960s. Therefore, oil played no role in the first half of the Great Stagflation (1965–1973). In contrast, the Reg *Q* credit crunches align closely with all four stagflation cycles of the Great Stagflation period (1965–1982).

The second reason is that the third and fourth stagflation cycles were already well underway by the time each oil shock hit. The first oil shock came on January 1, 1974, when OPEC increased the price of a barrel of oil from $4.31 to $10.11. Yet as Figure OA.2 shows, inflation was already high by this time on both an annual and quarterly basis. GDP growth had also fallen substantially. Specifically, by 1973 Q3 quarterly inflation had reached 10% and real GDP growth had fallen to −2.1% from 10.3% in 1973 Q1. The 1973–75 stagflation cycle was thus well underway prior to the first oil shock.

The pattern is similar for the 1979 oil shock, which occurred after the overthrow of the Shah of Iran. The price of oil began rising in May 1979, from $15.85 to $18.10, reaching a peak of $39.50 in April 1980. Yet as the figure again shows, inflation was already high before these price increases, and GDP growth was already low. Specifically, in 1979 Q1 inflation was 12.3% and GDP growth was 0.7% (versus 6.5% in 1978).[52] Hence, stagflation was also underway prior to the second oil shock. This again shows that while the oil shocks contributed to the Great Stagflation, they were not the main driver.

B International experience

While the U.S. has been the focal point of the Great Stagflation literature, many advanced economies also experienced stagflation during this era. For example, the U.K. had very serious stagflation over 1973–75, with inflation rising to 26% and real GDP growth falling to −3.4%. It is therefore interesting to ask whether the other advanced economies that experienced stagflation also had financial regulations similar to Reg Q.

The answer is yes. Reg Q is an example of a "credit control," a regulation imposed by the monetary authorities to control the price and quantity of credit in the economy. In the post-war era, credit controls became popular with many central banks who viewed them as powerful tools for achieving "monetary stability" and countering inflation (Dorrance and White, 1962). Hodgman (1973) provides a detailed description of the many

[52]Figure OA.2 also shows a precipitous but short-lived drop in real GDP growth in 1980 Q2. The literature argues that the severity of this drop was due to credit controls imposed in March 1980 (Owens and Schreft, 1995). The controls were lifted in July 1980, leading to a sharp rebound.

credit controls imposed by the U.K., France, Italy, Belgium, and the Netherlands during the 1960s and 70s. In the U.K., the influential report by the Radcliffe Committee (Radcliffe Report, 1959) set the policy tone for the years that followed, arguing that credit controls were an important tool for countering inflation as standard monetary measures were insufficient.[53]

The most common credit controls were systems of ceilings on bank deposit rates, on bank lending rates, and on the amount of bank lending. Though they differ in which part of the bank they affect directly, each type of ceiling ultimately restricts the flow of credit from banks and thus ends up having a similar impact. For instance, a ceiling on deposit rates reduces a bank's lending by preventing it from raising more deposits, while a ceiling on its lending ends up reducing the amount of deposits it needs to raise and hence the deposit rates it offers. All three types of ceilings were imposed at various times by each of the U.K., France, Italy, Belgium, and the Netherlands (Hodgman, 1973).

Reinhart and Sbrancia (2015) argue that in the post-WWII period, credit controls kept real interest rates artificially low across the advanced economies and hence played an important role in liquidating the large quantities of government debt that had been accumulated during the war. Because these policies were so widely employed from 1945 to 1980, they refer to this period as the "heyday of the financial repression era." Moreover, they show that during this period real interest rates were significantly lower than during the more free-market periods that came before and after.[54] The removal of Reg Q was part of a broad wave of financial deregulation that swept over the advanced economies beginning in the early 1980s.

Thus, the use of credit controls for monetary policy—Regulation Q in the US—was by no means special to the U.S. Rather, it was commonplace throughout the advanced

[53] Aikman, Bush and Taylor (2018) argue that the views of the Radcliffe Report were substantially influenced by the legacy of Keynes, who believed that adjustments in the short rate alone were not powerful enough to achieve economic stabilization.

[54] They estimate that ex-post real interest rates in the advanced economies were negative for about half the years 1945-1980, compared to less than 15% of the time since the early 1980s.

economies. Credit controls and heavy government involvement in the banking sector were viewed as important for effective monetary and financial stabilization policy. Thus, while we focus on the U.S. in this paper, it is plausible that a similar credit crunch channel operated in other advanced economies during the Great Stagflation.

A related literature going back to the 1970s studies financial repression in developing economies. The term was coined by McKinnon (1973) and Shaw (1973) to describe the combination of ceilings on deposits and lending with forced holdings of government debt that was common among developing economies. Governments used financial repression to direct subsidized credit to favored industries, typically nationalized industries and the export sector (McKinnon and Mathieson, 1981). The literature argues that these policies hinder growth and development by distorting the allocation of credit in the economy. By making deposit rates low, financial repression also reduced savings and investment (Roubini and Sala-i-Martin, 1992). There is substantial overlap between this literature and our finding that Reg Q contributed to stagflation.

The literature also finds that financially repressed countries have higher inflation (Roubini and Sala-i-Martin, 1992). It attributes this to the government's desire to lower its borrowing cost. Our findings provide a complementary mechanism: Reg Q, a form of financial repression, negatively impacted aggregate supply. This mechanism can help explain the high inflation seen in other countries with financial repression.

C Money market funds

A related question is whether households replaced deposits with money market mutual funds (MMFs) during the Great Stagflation. Since MMFs are not banks, they were not bound by Reg Q and could pay any yield they wished. In fact, MMFs were created in 1971 precisely as a way for depositors to circumvent the Reg Q deposit ceilings (Rosen and Katz, 1983). Inflows into MMFs would be a concern for our analysis if they somehow offset the contraction in bank lending to firms. There are in principle two ways this could happen: if MMFs lend their funds back to banks in the wholesale market, or if MMFs lend directly to firms in the bond market.

In practice, MMFs were very small until the tail-end of the Great Stagflation. While they grew at a fast rate, they remained negligible compared to banks until the very end of the decade. Specifically, at the end of 1978 MMF assets were only 0.7% of total deposits (see Flow of Funds Table L.108). By the end of 1980 they were 4.2%, a large increase, but still very small compared to banks. Hence, MMFs were far too small to have displaced banks or to have had much impact on aggregate lending.

More directly, our analysis takes into account the two ways MMFs impacted lending because we analyze *all* bank lending to firms, and because in Section D we look directly at commercial paper issuance. To the extent that MMFs recycled funds back to banks (via wholesale funding), this additional funding allowed banks to make more loans to firms and already shows up in our analysis of bank lending. To the extent that firms issued commercial paper to MMFs in the bond market, this shows up in our analysis of commercial paper issuance in Section D. However, Table OA.1 shows that firms' commercial paper issuance was far too small to undo the credit crunches.

Although MMFs did not undo the credit crunches, they helped to eventually bring about the end of Reg Q. By 1982 Q3, years of rapid growth had made MMFs reach 11.1% of deposits. The competitive threat they posed was now clear and banks and S&Ls lobbied Congress to deregulate deposits so they could meet this threat. This pressure was a major factor in the passage of the Garn-St. Germain Depository Institutions Act of 1982, which permitted the creation of Money Market Deposit Accounts (MMDAs). MMDAs were unregulated savings deposits intended to be "directly equivalent to and competitive with money market mutual funds" (Gilbert, 1986; Garcia, 2013). This deregulation effectively marked the end of Reg Q.[55]

[55]Some minor restrictions remained until 1986; restrictions on checking deposits remained until 2011.

D Corporate bonds and commercial paper

The Reg *Q* credit crunches would not have impacted the economy if firms could replace bank loans with corporate bonds and commercial paper. To see if this was the case, Table OA.1 summarizes the flow of net new lending across banks and bond markets using data from the Financial Accounts of the United States. Column (1) looks at regular business loans (C&I loans), while column (2) adds in commercial real estate (CRE) loans since many firms borrow against their real estate assets.[56] The next three columns look at the bond market: commercial paper in column (3), total corporate bond issuance in column (4), and corporate bond issuance excluding utilities and oil companies in column (5). We view commercial paper as a substitute for short-term bank loans, and corporate bonds as a substitute for long-term and CRE loans.

The table shows that commercial paper issuance is very small compared to bank lending: it averages only \$1 billion per year during the Great Stagflation versus \$11.17 billion in C&I loans and \$27.04 billion in C&I plus CRE loans. Corporate bond issuance is more substantial at \$10.74 billion on average. However, as the last column shows, three quarters of that issuance was by utilities and oil companies (with utilities accounting for the bulk). Bond issuance excluding these averages \$2.93 billion, only about a tenth of total bank lending.

In addition to being relatively small, corporate bond issuance also varies too little to offset the credit crunches in bank lending. For instance, during the 1973–75 credit crunch, bank lending decreased from \$48.13 to \$3.26 billion, while bond issuance excluding utilities and oil companies increased from \$1.15 to \$6.39 billion. Thus, increased bond issuance offset only about one ninth of the decline in bank lending.

Although bond issuance did not make up for the drop in bank lending, the largest increases in bond issuance do occur during the four credit crunches (1966–67, 1969–70,

[56] Although secured by real estate, CRE loans are mostly used for general business purposes as opposed to real estate development (Chaney, Sraer and Thesmar, 2012).

1973–75, and 1978–80). This is consistent with firms substituting to the bond market if they have access to it. As argued in Kashyap, Stein and Wilcox (1993), the substitution provides additional evidence that credit was down due to low supply (due to Reg *Q*), not low demand. Indeed, the strongest years for bond issuance, 1970 and 1975, are also the weakest for bank lending.

It is important to recognize that only a very small number of the largest, safest firms have access to the bond market. Thus, in addition to reducing total credit, a credit crunch also reallocates credit towards these firms. Since they are likely to be the least constrained to begin with, rather than the ones with the greatest need, credit crunches also reduce allocative efficiency.

To get a sense of how widespread bond market access is, we tabulate the number of firms that had a credit rating in each year, since having a credit rating is a necessary condition for issuing bonds. Figure OA.4 plots the total number of rated firms and the number of newly rated firms each year (the data are from Capital IQ). In 1975, there were 481 rated firms in the U.S. In comparison, there were 4,775 publicly-listed firms. Thus, even among firms large enough to be publicly listed, only around 10% had access to the bond market (of these, a significant fraction were utilities). In addition, listed firms are a very small fraction of all firms. Doidge, Karolyi and Stulz (2017) report that there were more than 340,000 firms with 20+ employees in the U.S. in 1977. Hence, 99.9% of firms did not have access to the bond market and were therefore dependent on banks.[57] Interestingly, Figure OA.4 shows that after each credit crunch there is a jump up in the number of newly-rated firms (1967, 1971 1975, and 1980). Firms thus sought access to the bond market during the credit crunches.

[57] While access to the bond market has expanded since the 1970s, it remains the case that the vast majority of firms cannot issue bonds and are bank dependent. For example, in 2016 there were 3,537 publicly listed firms in the U.S. according to the CRSP/Compustat database, of which 1,055 had a credit rating. Hence, about 30% of publicly listed firms have a credit rating. In comparison, there were more than 615,000 firms with 20+ employees in the U.S. in 2015 (Doidge et al., 2018).

E Comparison with the Global Financial Crisis

The most recent credit crunch in the U.S. was the 2008 Global Financial Crisis (GFC). A natural question is whether it had a negative impact on aggregate supply.

There is evidence that it did. The literature finds that the drop in home prices that triggered the GFC damaged banks' balance sheets. This led them to contract credit to firms in addition to housing. The lack of credit hurt firms' ability to produce. Chodorow-Reich (2014) finds that firms whose lenders were more impacted by the GFC were much less likely to obtain new loans and had to pay higher spreads. These more credit-constrained firms cut employment by more than other firms and shut down more of their establishments.

Giroud and Mueller (2017) also study the impact of credit supply on firms' real outcomes during the GFC. They compare firms by their leverage and find that more levered firms reduced employment and closed establishments relative to less levered firms. This is true within industry and within zip code, which controls for demand factors. They argue that their results are due to highly-levered firms being more financially constrained. Consistent with this, these firms were less likely to raise additional short- and long-term debt, and cut back more on investment. Hence, their evidence also points to credit constraints reducing supply during the GFC.

Neither Chodorow-Reich (2014) nor Giroud and Mueller (2017) observe firms' prices. Gilchrist et al. (2017) do observe them and find that liquidity-constrained firms raised prices relative to unconstrained firms. They argue that this could account for the "missing deflation" of the period, the fact that while inflation declined it did not result in outright deflation as models predicted (Christiano, Eichenbaum and Trabandt, 2015). The reason models predicted deflation was the very large drop in consumer demand due to the collapse in home prices (Mian, Rao and Sufi, 2013; Mian and Sufi, 2014). Thus, though the evidence indicates that tightened credit reduced firm supply during the GFC, the net impact on inflation was dominated by the decline in aggregate demand.

There are two other important differences between Reg Q and the GFC. The first is that the GFC was caused by a run on the shadow banking system and Reg Q was not. During the GFC, investors became concerned about the solvency of shadow banks (uninsured financial institutions). This made them withdraw their funds and deposit some of them with insured banks. Reg Q was the opposite: the deposit rate ceilings led to an outflow of insured deposits into uninsured instruments. The result was that the GFC and Reg Q affected different types of credit: the GFC primarily cut off non-prime mortgages while Reg Q cut off traditional business loans.

The second difference is in the effectiveness of monetary policy during the GFC versus Reg Q. Under Reg Q, when the Fed raised rates it opened up a wedge between the deposit rate earned by savers and the loan rate paid by borrowers, many of whom were rationed (recall the tight credit standards in Figure OA.5). This wedge made the return to saving low and the cost of borrowing high. A well-functioning banking system equates these two rates, but Reg Q prevented this. As long as Reg Q was in effect, monetary policy was in a bind: by raising rates to fight inflation, it made the wedge even bigger.

In contrast, monetary policy did not drive such a wedge in the GFC. Banks were able to equate the cost of deposits with the return to lending. When the Fed cut rates in 2008, deposit rates fell substantially as did lending rates (after accounting for credit risk). Consistent with the deposits channel of monetary policy (Drechsler, Savov and Schnabl, 2017), the Fed's rate cuts encouraged deposits to flow into banks, helping to offset the credit crunch. Thus, monetary policy was able to soften the impact of the GFC, whereas it exacerbated the credit crunches under Reg Q.

F Time-series analysis

We complement our aggregate time series graphs with formal analysis. We follow the standards of the literature on monetary policy impulse response functions. A highly influential paper in this literature is Gilchrist and Zakrajšek (2012), who use formal time-series techniques to study the impact of credit supply shocks as measured by the excess bond premium. We can use their framework to also estimate the impact of monetary policy during times when Reg Q is binding versus when Reg Q is not binding.

The analysis in Gilchrist and Zakrajšek (2012) starts in 1973 because the excess bond premium becomes available at that point. This is about halfway through the Reg Q period, making it difficult to use their measure for our purposes. Fortunately, Gilchrist and Zakrajšek (2012) show that the excess bond premium is highly correlated with the tightness of lending standards of U.S. commercial banks. This series is available from 1964, just before the start of the Reg Q period. It is also conceptually closer to the mechanism of the model since it pertains to banks instead of the bond market.

Tightness of lending standards is measured as the net percentage of banks reporting tighter credit standards for C&I loans to new customers in the Senior Loan Officer Opinion Survey (SLOOS). We obtain it from the Federal Reserve Bank of St. Louis's digital library FRASER from 1964 to 1981. We extend to 1982 (the end of the Reg Q period) using data from Lown and Morgan (2006). The survey was suspended from 1983 to 1990 and then re-instated. We therefore use 1990–2018 for the post-Reg Q sample.

We first replicate the VAR results of Gilchrist and Zakrajšek (2012) to confirm that we are applying their methodology correctly. We are able to match their findings (Gilchrist and Zakrajšek, 2012, Figure 5) exactly.

Next, we simply replace the excess bond premium with the tightness of lending standards from the SLOOS, keeping the ordering of the variables the same. We split the sample into two periods, Reg Q from 1965 to 1982 and post Reg Q from 1990 to 2018.

The results are shown in Figure OA.6, which follows Figure 5 in Gilchrist and Zakrajšek (2012). Each panel plots the response of a different outcome variable to a shock to credit standards. The first three panels show that consumption, investment, and output all drop in response to the shock, and that this is true in both during and post Reg Q.

The fourth panel looks at the impact on prices (the log GDP deflator). Gilchrist and

Zakrajšek (2012) find that credit tightening has a small deflationary effect. The figure shows that this result is concentrated in the post Reg Q sample. During Reg Q, the opposite is true: prices rise sharply following a credit tightening shock. This suggests that the Reg Q credit crunches were inflationary, which is consistent with the model.

Why would credit tightness become deflationary post Reg Q? As we showed in Section C in the paper, credit crunches are inflationary when they primarily affect lending to firms and deflationary when they primarily affect lending to households. The major source of variation in credit tightness post Reg Q was the 2008 Global Financial Crisis (GFC). As we explain in Section E, the GFC primarily affected mortgage markets and household balance sheets. It is therefore not surprising that credit tightness is mildly deflationary post Reg Q even as it was inflationary during Reg Q.

The remaining panels of Figure OA.6 are broadly consistent with Gilchrist and Zakrajšek (2012). The excess stock market return drops while the 10-year Treasury yield is largely unchanged. The credit tightening shock is associated with a larger tightening of credit standards during Reg Q than post Reg Q.

Interestingly, credit tightening is associated with an increase in the Fed funds rate during Reg Q versus a decrease post Reg Q. This makes the inflationary impact during Reg Q even more puzzling under conventional demand-centric models of monetary policy. It is less puzzling in our model where there is a positive relationship between raising rates and credit crunches.

Table OA.2 shows the point estimates of the impulse responses in Figure OA.6 at 0, 4, and 8 quarters. During Reg Q, credit standards tighten by 22 points following a credit tightening shock. This means that the net percentage of banks reporting tighter C&I lending standards rises by 22, e.g. from 50–50 to 61–39. The tightening is smaller, by 8 points post Reg Q. Thus, credit standards were more stable post Reg Q even though the period includes the GFC.

Following the shock, output falls by 0.98% and prices rise by 0.51% after 4 quarters during Reg Q. At 8 quarters, the effects are 0.95% and 0.77%, respectively. All are statistically significant. Post Reg Q, the decline in output is 0.39% at 4 quarters and 0.51% at 8 quarters and prices fall by 0.06% and 0.11%, respectively. The effects on output are significant post Reg Q while the effects on prices are insignificant.

For completeness, Figure OA.7 and Table OA.3 present impulse responses following a shock to the Fed funds rate. While output falls both during Reg Q and after, inflation again behaves in opposing ways: it rises during Reg Q and falls post Reg Q. This result is known as a "price puzzle" in the literature (Ramey, 2016). In our setting, it shows how different the Reg Q period was, indicating that the conventional wisdom is incomplete.

Overall, the results of the VAR analysis are consistent with credit crunches being inflationary during Reg Q and deflationary post Reg Q. This supports the hypothesis that credit crunches are inflationary when they affect firms and deflationary when they affect consumers. Compared to the cross section, the VAR results are not well identified; however, they capture the demand- as well as supply-based channels by which credit crunches affect the economy.

G Working capital intensity

Working capital intensity can be measured similarly to finance dependence as the working capital share of production costs. We proxy for this share simply by taking the ratio of inventories (our proxy for working capital) to COGS:

$$WCInt_i \equiv \frac{INV_i}{COGS_i} = \frac{1}{Turn_i}. \tag{A.114}$$

This ratio is the inverse of the industry's turnover rate. We measure it pre-Reg Q over 1958–65, just like $FinDep_i$. Intuitively, $WCInt_i$ captures the length of industry i's production cycle. The longer the production cycle, the more working capital industry i needs relative to a year's COGS.

Note that an industry with a long production cycle (high working capital intensity) sees the effects of a credit crunch with a lag. We account for this by leading the outcome variable (price growth and output growth) by one year:

$$y_{i,t+1} = \alpha_t + \gamma_i + \beta \, \text{RegQSpread}_t \times \text{WCInt}_i + \delta X_{i,t} + \epsilon_{i,t}. \tag{A.115}$$

The controls are the same as in Eq. (27) and Tables 3 and 4. We also use the same sample (1965 to 1982) and clustering. The coefficient of interest, β, tests the prediction of Proposition 3 that raising interest rates leads high working capital intensity industries to raise prices and cut output relative to other industries when Reg Q is binding.

G.1 Prices:

The results are reported in Table OA.5 for prices and Table OA.6 for output. Table OA.5 shows that when the Reg Q spread widens, industries with high working capital intensity raise prices relative to industries with a low working capital intensity in the following year. The magnitude of the univariate coefficient in column (1) is 4.918 and statistically significant. It implies that when the Reg Q spread widens by 100 bps, firms with a one-year longer production cycle raise prices by 4.9% more. The coefficient is stable and remains significant as we add controls in columns (2) to (5). It settles at 4.239 in column (5), which includes all controls. Table OA.5 therefore supports the prediction that industries with a higher working capital intensity are more exposed to the Reg Q credit crunches, leading them to raise prices by more.

G.2 Output:

Table OA.6 similarly shows that when the Reg Q spread widens, industries with high working capital intensity contract output in the following year compared to those with low working capital intensity. The univariate coefficient in column (1) is -5.847 and significant, indicating that output contracts by 5.8% per year of production cycle length. The coefficient remains stable and significant across columns and settles at -4.787 in column (5) with all the controls. Table OA.6 therefore shows that, like finance dependence, working capital predicts higher prices and lower output during the Reg Q credit crunches, i.e. it predicts stagflation in the cross section. This supports Proposition 3 and the mechanism of the model.

G.3 Interaction with finance dependence:

Proposition 3 further implies that finance dependence and working capital intensity are complementary, i.e. exposure to the Reg Q credit crunches should be increasing in their interaction. We test this hypothesis in Table OA.7 for prices and Table OA.8 for output. Table OA.7 shows the interaction of finance dependence and working capital intensity is a strong predictor of higher prices during the Reg Q credit crunches. The interaction coefficient is large and significant across all specifications, consistent with Proposition 3. Table OA.7 finds a quantitatively similar but statistically weaker result for output. The interaction coefficient is marginally significant in columns (1), (2), and (4) and insignificant in columns (3) and (5). The magnitude is large but so is its standard error. Taken together, Tables OA.7 and OA.8 support the prediction that exposure to the credit crunches is increasing in the interaction of finance dependence and working capital intensity.

G.4 Correlation with finance dependence:

To shed further light on working capital intensity and how it interacts with finance dependence, Figure OA.8 shows a bin scatter plot of the two measures. There is a strong negative pattern (the raw correlation is -36%). In other words, industries with long product cycle lengths tend to have more internal resources and rely less on external financing, making them somewhat insulated from credit crunches. This suggests that finance dependence is a more reliable measure of exposure to the credit crunches.

We check if this is confirmed in balance sheet data using the QFR dataset. Recall that this dataset provides detailed balance sheet information at the two-digit (sector) SIC level. Table 2 in the paper shows that finance dependence is strongly associated with measures of leverage and exposure to bank lending. To see how working capital intensity relates to these same measures, we include it as an additional variable and report the results in Table OA.9. Unlike finance dependence, we find that working capital intensity is only weakly related to measures of leverage and bank dependence. Across all measures, the coefficients on working capital intensity are an order of magnitude smaller than those on finance dependence and in some cases insignificant. If anything, the coefficients on finance dependence become larger when we control for working capital intensity. This can be explained by the result in Figure OA.8 that industries with higher working capital needs are more profitable and therefore have more internal resources available to meet those needs.

Overall, the results on working capital intensity support the predictions of the model. Industries with high working capital intensity have larger price increases and output contractions during the Reg Q credit crunches. We also find evidence that working capital intensity and finance dependence are complementary, as predicted. Nevertheless, the two measures are negatively related and finance dependence appears to be a more robust predictor of exposure to the Reg Q credit crunches as reflected in balance sheet characteristics. We therefore continue to focus on finance dependence as our main measure.

H Finance dependence measure

H.1 Validation using Compustat data

Finance dependence is computed using NBER manufacturing data. The NBER manufacturing data is a balanced sample covering 459 industries at the 4-digit SIC level, starting in 1958. However, the NBER data does not include financial variables.

Table 2 validates financial dependence using financial ratios computed from QFR data. The analysis using QFR data shows that more finance-dependent firms are more highly levered and have less internal liquidity compared to less finance-dependent firms. This suggests that more finance-dependent firms are more exposed to credit crunches caused by Reg Q.

We also examine finance dependence using Compustat data, which allows computation of financial ratios at the 4-digit industry level, whereas QFR data is only available at the 2-digit industry level. However, it is important to recognize that Compustat has the following limitations:

1. *Limited coverage*: Finance dependence is measured using balanced NBER data for the years 1958 to 1965. On the other hand, Compustat data is sparsely populated before (and during) our analysis period.

2. *No private firms*: NBER data includes both public and private firms, whereas Compustat only covers public firms.

3. *Noisy industry classification*: NBER data assigns industries based on plant-level data, while Compustat assigns industries at the firm level. Many firms operate across multiple industries, but Compustat only assigns a single industry. Moreover, Compustat provides no information on how it assigns a single industry when firms are active in more than one industry. This introduces noise (and potentially bias) into the industry classification.

We address these limitations in two ways. First, we extend the analysis period to include years after 1965. We focus on the period from 1965 to 1980, which overlaps with our main analysis period. Second, we compute finance dependence using Compustat data. By comparing financial ratios with financial dependence computed from Compustat (as opposed to NBER data), we can at least in part account for differences in coverage and industry classification.

We implement this analysis as follows. We compute financial ratios and other firm-level characteristics in Compustat and average them across years at the 4-digit industry level. We restrict the sample to industries with at least 3 firms per year in Compustat to limit the impact of outliers. We then merge these data with the NBER data at the 4-digit SIC level. This yields a sample of 98 industries.

We note that the industry coverage in Compustat is significantly lower than the coverage in the NBER data. For comparison, the NBER data covers 459 industries. Compustat coverage is lower because of limited firm coverage and the noisy industry classification. This is the reason why the original paper focused on validating finance dependence using QFR data, which has broad industry coverage.

Following the structure of our analysis using QFR data, we examine whether finance dependence captures industry-level variation in leverage and internal liquidity. One advantage of Compustat data relative to QFR data is that we can compute leverage using market equity, which is not available in QFR data. To measure leverage, we compute market leverage, short-term debt leverage, market-to-book ratio, and debt-to-equity ratio. For comparison, the QFR analysis examines the debt-to-equity ratio and the short-term debt share.[58] To measure internal liquidity, we compute the cash ratio and the debt service ratio. These are the same variables as in the QFR analysis.

Table OA.10 presents the results, following the same layout as our QFR analysis. Panel A provides summary statistics for financial ratios, while Panel B regresses financial ratios on finance dependence. Panels C and D provide robustness results.

As shown in Panel A, the average number of firms per industry is 9.21, and the average firm size is $320 million. We find that highly finance-dependent firms are larger than less finance-dependent firms, although the difference is not statistically significant.

The average finance dependence using NBER data is 0.50 with a standard deviation of 0.21. We also compute finance dependence using Compustat, yielding an average of

[58] The QFR analysis also examines the share of bank debt, which is not available in Compustat.

0.55 with a standard deviation of 0.22. The correlation between the two indices is 0.67, indicating that finance dependence is relatively robust despite differences in the underlying firm coverage and industry classification. To keep the sample consistent, we use finance dependence computed from Compustat for our main analysis. We also provide robustness for finance dependence computed from NBER data.

We find that finance-dependent industries are significantly more levered and rely more on short-term debt. As shown in Panel B, a one standard deviation increase in finance dependence is associated with a 7 percentage point increase in market leverage, a 3.1 percentage point increase in short-term leverage, and a 4.6 percentage point increase in the debt-to-equity ratio. These results mirror the QFR findings, which also indicate that finance-dependent industries have higher leverage and use more short-term debt. Moreover, we find that a one standard deviation increase in financial dependence is associated with a 0.54 decline in the market-to-book ratio, suggesting that lower market-to-book ratios are linked to higher finance dependence. These results indicate that industries with greater financial dependence require more debt financing.

We also find that finance-dependent firms hold less cash and generate less operating income relative to their short-term debt. A one standard deviation increase in financial dependence is associated with a 7.5 percentage point reduction in the cash ratio and a 0.86 decline in the debt service ratio. These findings align with those from the QFR analysis. These results indicate that industries with greater financial dependence have lower internal liquidity.

The results are broadly robust when using finance dependence computed from NBER data. As shown in Panel C, the coefficients are slightly smaller with NBER data relative to Compustat data. With the exception of one coefficient, all results remain statistically significant. The decline in coefficients is possibly due to measurement error in financial dependence because of the difference in firm coverage, sample period, and industry classification between NBER and Compustat data.

The results also hold when including industries with fewer than 3 firms per year. As shown in Panel D, the coefficients are slightly smaller than those in Panel B. All results remain statistically significant at the 10% level or higher. Again, the decline in coefficients is consistent with potential measurement error.

Overall, our analysis of Compustat data confirms and complements the findings from the QFR data. Both datasets suggest that finance-dependent firms use more debt financing and have less internal liquidity, making them more vulnerable to credit crunches during the Reg Q period.

H.2 Finance dependence and financial constraint indices

In this section, we evaluate how our finance dependence measure relates to some existing financial constraint indices from the literature. Specifically, we compare finance dependence to the KZ index (based on Lamont, Polk and Saá-Requejo (2001)) and the Hadlock and Pierce (2010) index (henceforth, "HP index").

We compute the KZ index and the HP index using Compustat data. We compute the variables following the same methodology that we use to compute financial ratios. Similar to the analysis above, this methodology yields a dataset at the 4-digit industry level covering 98 industries.

Table OA.11 presents the results following the same structure as above. Panel A provides summary statistics for financial constraint indices, while Panel B regresses financial constraint indices on finance dependence. Panels C and D provide robustness results.

We find that more finance-dependent industries have a higher KZ index. Specifically, a one standard deviation increase in finance dependence is associated with a 0.93-point increase in the KZ index (approximately one-third of a standard deviation). In contrast, we find no relationship between finance dependence and the HP index; the coefficient is close to zero and not statistically significant. These results remain robust when using financial dependence (NBER), as shown in Panel C, and when extending the dataset to industries with fewer than three firms per year, as shown in Panel D.

These results may be seen as only a partial success in supporting the hypothesis that finance dependence is correlated with standard financial-constraint indices: only the KZ index, not the HP index, shows a correlation with finance dependence. More broadly, we believe it is important to consider two key caveats when comparing financial dependence and financial constraint indices:

1. Finance dependence and financial constraint indices are designed to measure different aspects of firm financing, which are not necessarily correlated. Finance dependence is intended to capture sensitivity to overall financial conditions, while financial constraint indices aim to measure firm-level financial constraints.

   Finance dependence specifically reflects the extent to which an industry relies on financing as an input for production. The intuition is similar to sensitivity to other inputs, such as oil prices. For instance, firms heavily reliant on oil in production are more sensitive to changes in oil prices than those with lower oil dependence. Thus, in the event of a negative financing shock (e.g., a credit crunch), finance dependence should capture sensitivity to such a shock, regardless of a firm's financial constraint status.

   In contrast, financial constraint indices like the KZ and HP indices are designed to capture firm-specific financing constraints. These indices measure the gap between external and internal financing, which can arise from information asymmetries. They are not intended to capture sensitivity to economy-wide constraints, such as those occurring during a credit crunch. As Kaplan and Zingales (1997) argue, financially constrained firms may even be less sensitive, rather than more sensitive, to a negative financing shock. A completely constrained firm may not respond to a shock at all, while a partially constrained firm might.

2. It remains unclear whether financial constraint indices accurately capture financial

constraints. The literature suggests that these indices are only loosely correlated with each other, which casts doubt on the validity of any individual measure (Farre-Mensa and Ljungqvist (2016)). Additionally, the HP index depends largely on firm size and age, which, while possible indicators of financial constraints, may also reflect other firm characteristics. Moreover, the HP index was developed several decades after our analysis period. As a result, it may not effectively capture financial constraints in the 1960s and 1970s.

H.3 Comparison with the Rajan and Zingales (1998) index

Finally, we compare our finance dependence measure with the Rajan and Zingales (1998) index (henceforth, the "RZ index"). The key distinction between these two measures is that finance dependence focuses on the need for financing in production activities, while the RZ index emphasizes the need for financing related to investment.

We compute the RZ index using Compustat, the dataset originally employed by Rajan and Zingales (1998). Rajan and Zingales (1998) require 10 years of data to compute the RZ index because the denominator includes investment, a highly volatile variable. Since the numerator of the RZ index (operating cash flow) is only available starting in 1971, the RZ index can only be computed beginning in 1980. To address this limitation, we calculate the RZ index for the period 1980–1990, aligning with the time frame used in Rajan and Zingales (1998). We normalize the KZ index to have a mean of zero and a standard deviation of one. For a proper comparison, we also compute finance dependence using Compustat data over the same period (1980–1990).

Table OA.12 presents the results. We find that finance dependence and the RZ index are positively correlated. A one-standard deviation increase in finance dependence is associated with a 0.29 standard deviation increase in the RZ index. This indicates a positive relationship between finance dependence and investment. However, we note that the explanatory power of finance dependence is limited, with an R^2 of 8.1%.

To further investigate the relationship, we compute an alternative RZ index by replacing investment in the denominator with production cost, aligning it with the denominator used in the calculation of finance dependence. This adjustment reveals a stronger relationship between the two variables. A one-standard deviation increase in finance dependence is now associated with a 0.56 standard deviation increase in the modified RZ index, and the R^2 rises to 30.9%. This suggests that the difference in focus—production versus investment—is a key driver of the variation between the two indices, consistent with their intended purposes.

Overall, we find that finance dependence is positively associated with the RZ index. Moreover, we find that the relationship strengthens when putting the focus on production instead of investment.

I Additional Robustness

We provide additional robustness tests for the main results in the paper.

I.1 Alternative Control Variables

In this section, we consider alternative specifications of control variables for our main regression results. We first run the same finance dependence and prices or output regressions as in Table 3 and Table 4 but with alternative controls. Table OA.13 presents the results for price growth as the outcome variable. The table has the following structure:

1. Panel A replicates the baseline specification from the original paper.

2. Panel B introduces additional controls for (i) industry-specific energy intensity in year in year $t-1$; (ii) the growth of TFP from year $t-2$ to year $t-1$; and (iii) the 7-year trailing standard deviations, as of year $t-1$, of price and output growth. These controls are added individually and collectively. We find that the results remain qualitatively and quantitatively robust.

3. Panel C follows the same structure as Panel B, adding the lagged outcome variable (change in prices) as an additional control. Once again, the results are qualitatively and quantitatively robust.

4. Panel D includes interactions of all control variables with the Reg Q spread. The coefficient of interest increases slightly across all specifications and remains statistically significant.

Table OA.14 presents the same results for output growth. The analysis is structured the same way. Panel A to D show that all the results are qualitatively and quantitatively robust.

In summary, the price growth and output growth results remain robust when using the alternative control specifications above.

Next, we consider the same alternative control specifications for our results using the industry Reg-Q spread. Tables OA.15 and OA.16 present the results for price growth and output growth, respectively. We structure them the same as Table OA.13 and OA.14. The results for price and output growth are both robust to all three alternative specifications.

I.2 Effect on profits

The fact that the coefficient for output in Table 4 is larger than for prices in Table 3 implies that revenues fall (output falls more than prices rise). This is consistent with our hypothesis. Our hypothesis further predicts that profits should fall, as finance dependent firms are made worse off by the credit crunches. This prediction applies to profits net of financing costs (net income). Since we do not observe net income, we can only look at gross profits (sales minus operating costs). In Table OA.17, we find a negative insignificant coefficient. Although our hypothesis does not make a direct prediction for gross profits, the point estimate for net profits is likely to be even more negative since finance dependent firms have larger financing costs.

The behavior of profits helps to rule out that our results are due to industries with higher market power reducing markups in response to an input cost shock (De Loecker, Eeckhout and Unger, 2020). This could explain the results in Tables 3 and Table 4 if low finance dependence firms have more market power. However, in that case the gross profits of these firms should fall more. Table OA.17 finds that, if anything, the relationship goes the other way. Our results are thus not driven by differences in the response of markups to a common shock. Instead, they are consistent with finance dependent firms suffering a larger shock to begin with – the credit crunches.

I.3 Demand-side controls

We consider that cross-industry variation in the elasticity of demand may be correlated with our main variable of interest and bias our estimated coefficients. While controlling for such variation would help isolate the supply-side channel we seek to identify, we were unable to find credible estimates of industry-level demand elasticities from the existing literature. We believe this reflects the intrinsic difficulty of estimating such elasticities, which requires strong identification assumptions.

That said, we propose a proxy for cross-industry variation in demand elasticities based on how industry demand responds to aggregate demand shock induced by a hike in interest rates. Specifically, we use the cross-sectional variation in industry level output growth in 1958-1960, after the Fed raised rates by around 350 basis points. The underlying assumption is that output growth during this period were are driven by demand shock induced by the rate hike and therefore reveal heterogeneity in how industry-specific demand responds to interest rates.

We use real output growth from 1958 to 1960 ("Output Gr. 5860") at the 4-digit SIC level from the NBER CES dataset. We interact this with the Reg-Q spread and add this interaction to our baseline regression results (Table 3 and 4). Table OA.19 presents the results with this demand-side control. For both prices (Panel A) and output (Panel B), the main coefficients remain similar in magnitude and significant at the 1% level. This indicates that our baseline coefficients were not meaningfully biased by industry variation in demand elasticities. The interactions between Reg Q spread and output growth themselves are not statistically significant.

I.4 C&I loan weights for the industry Reg Q spread

To construct the industry Reg-Q spread used in Table 7 and Table 8, we apply contemporaneous C&I loan shares as the weights. For robustness, we also estimated two alternative specifications for the C&I loan shares. The first specification uses loan shares at the start of our sample period (1964q4). The second specification uses loan weights averaged over the entire analysis period.

Table OA.18 presents the results. Panel A provides the baseline specification. Panel B provides a specification using pre-determined weights as of 1964q4. Panel C provides a specification using average weights over the sample period. We find that the results are qualitatively and quantitatively unchanged when using these alternative specifications.

I.5 Alternative clustering

We consider alternative clustering for Section 3.2. One potential concern regarding our regressions, which are a shift-share approach, is as follows. Suppose, for simplicity, that two industries have identical employment shares across counties. In this case, both industries would be similarly exposed to variations in the RegQ spread. Consequently, they would face a common shock, which could cause their error terms to be correlated. Standard methods, such as robust standard errors or clustering at the industry level, do not account for this shared exposure. More generally, the intuition is that error terms should be allowed to correlate when industries experience the same (exogenous) shock. Therefore, if the shock stems from variations in the RegQ spread, we should permit correlation of error terms within common exposures.

Following the approach of Adão, Kolesár and Morales (2019), we group industries based on their exposure to the RegQ spread. Industries with similar Industry RegQ spreads likely share similar exposure to the underlying shock, given their employment shares.

To implement this, we compute the average Industry RegQ spread over the sample period (1965–1982), rank industries by their Industry RegQ spread, and cluster them by common exposure. We form clusters with 10 industries each, resulting in a total of 46 clusters, in line with the recommended range of 30–50 clusters. We then estimate the baseline regressions with clustered standard errors by common exposure to the Reg Q spread.

Table OA.20 presents these results. Panel A shows the findings for price growth. We observe that standard errors increase relative to our baseline specification, but all results remain statistically significant, even with larger standard errors. Panel B shows the results for output growth, where standard errors slightly decrease relative to the baseline specification, and all results remain statistically significant.

Table OA.1: Sources of external financing

The table shows aggregate figures for originations of bank loans and corporate bonds during the Reg Q period from 1965 to 1982, reported in billions of 1965 dollars. Bank loans are from the U.S. Financial Accounts, Table F.102, "Nonfinancial Business; Depository Institution Loans N.E.C.; Liability, Transactions" (series FA143168005.A). Bank loans and CRE adds commercial mortgages, "Nonfinancial Business; Total Mortgages; Liability, Transactions" (series FA143165005.A). Commercial paper is "Nonfinancial Corporate Business; Commercial Paper; Liability, Transactions" (series FA103169100.A). Corporate bonds are "Nonfinancial Corporate Business; Corporate Bonds; Liability, Transactions" (series FA103163003.A). Corporate bonds ex. utilities and oil excludes corporate bond issuance by utilities (SIC codes 4000 to 4999) and oil companies (SIC codes 1300 to 1399). Industry-level issuance is from the Mergent Fixed Income Securities Database (1965 to 1969) and SDC Platinum (1970 to 1982).

Year	Bank loans	Bank loans & CRE	Commercial paper	Corporate bonds	Corp. bonds ex. util. & oil
1965	12.45	22.07	−0.33	4.85	0.70
1966	10.47	20.23	0.80	9.88	0.73
1967	7.41	14.29	1.32	13.73	3.14
1968	10.11	22.56	1.09	11.53	1.20
1969	10.39	20.59	0.94	10.12	0.94
1970	5.17	19.46	1.42	15.81	5.66
1971	5.14	23.88	−0.69	14.57	4.51
1972	11.57	39.05	0.54	9.13	1.96
1973	22.44	48.13	0.97	6.30	1.15
1974	18.56	33.44	2.54	12.07	3.82
1975	−6.10	3.26	−1.66	15.58	6.39
1976	1.90	16.05	0.78	12.45	2.60
1977	12.03	33.48	0.84	11.70	1.91
1978	16.67	37.68	1.26	9.90	1.71
1979	19.40	39.16	3.74	7.17	2.40
1980	11.08	25.98	1.46	10.19	4.12
1981	14.79	33.09	4.97	8.38	3.84
1982	17.56	34.34	−2.00	10.00	5.89
Mean	11.17	27.04	1.00	10.74	2.93

Table OA.2: Impulse response from shock to credit standards

The table presents impulse responses to an orthogonalized shock to credit standards at contemporaneous time and after four and eight quarters. They are based on an estimation of a vector autoregression model (VAR) based on Gilchrist and Zakrajsek (2012) but replacing the excess bond premium with credit standard tightening from SLOOS. The VAR includes the following endogenous variables with two lags each, in this recursive ordering: log-difference of real consumption, log-difference of investment, log-difference of GDP, log-difference of the GDP price deflator, net share of respondents tightening C&I loans credit standards, quarterly value-weighted excess stock market return, the ten-year nominal Treasury yield, and the effective nominal federal funds rate. Consumption is real PCE, investment is real business fixed investment, output is real GDP, prices are GDP deflator, all from FRED. Ten-year treasury yield and federal funds rate are also from FRED. Excess market returns are from CRSP. The responses of consumption, investment, output, and price growth and that of the excess market return have been accumulated. Coefficients are in percentage points. Standard errors are based on 2,000 bootstrap replications. Binding Reg-Q period is 1965Q1-1982Q4 and post Reg-Q period is 1990Q2-2018Q4.

t	Variable	Binding Reg-Q		Post Reg-Q	
		Coefficient	Std. Error	Coefficient	Std. Error.
0	Consumption	—	—	—	—
4	Consumption	−0.65**	0.26	−0.30***	0.09
8	Consumption	−0.79*	0.46	−0.41***	0.16
0	Investment	—	—	—	—
4	Investment	−1.97**	0.91	−1.90***	0.32
8	Investment	−1.74*	1.02	−2.65***	0.58
0	Output	—	—	—	—
4	Output	−0.98***	0.31	−0.39***	0.10
8	Output	−0.95**	0.43	−0.51***	0.17
0	Prices	—	—	—	—
4	Prices	0.51**	0.21	−0.06	0.04
8	Prices	0.77**	0.36	−0.11	0.07
0	Credit standards	22.20***	2.91	8.16***	0.60
4	Credit standards	−1.39	3.59	3.40***	1.12
8	Credit standards	−0.24	2.56	−0.94	1.06
0	Excess market return	−1.59	1.54	−0.41	0.76
4	Excess market return	−0.08	2.46	−2.72**	1.34
8	Excess market return	−1.44	2.67	−2.75	1.78
0	Ten-year Treasury yield	0.09	0.09	−0.07**	0.03
4	Ten-year Treasury yield	−0.05	0.20	−0.14**	0.06
8	Ten-year Treasury yield	0.25	0.25	−0.14**	0.06
0	Federal funds rate	0.70***	0.23	−0.10***	0.02
4	Federal funds rate	0.26	0.48	−0.36***	0.09
8	Federal funds rate	0.35	0.43	−0.37***	0.11

Table OA.3: Impulse response from shock to Fed funds rate

The table presents impulse responses to an orthogonalized shock to the Fed funds rate at contemporaneous time and after four and eight quarters. They are based on an estimation of a vector autoregression model (VAR) based on Gilchrist and Zakrajsek (2012) but replacing the excess bond premium with credit standard tightening from SLOOS. The VAR includes the following endogenous variables with two lags each, in this recursive ordering: log-difference of real consumption, log-difference of investment, log-difference of GDP, log-difference of the GDP price deflator, net share of respondents tightening C&I loans credit standards, quarterly value-weighted excess stock market return, the ten-year nominal Treasury yield, and the effective nominal federal funds rate. Consumption is real PCE, investment is real business fixed investment, output is real GDP, prices are GDP deflator, all from FRED. Ten-year treasury yield and federal funds rate are also from FRED. Excess market returns are from CRSP. The responses of consumption, investment, output, and price growth and that of the excess market return have been accumulated. Coefficients are in percentage points. Standard errors are based on 2,000 bootstrap replications. Binding Reg-Q period is 1965Q1-1982Q4 and post Reg-Q period is 1990Q2-2018Q4.

t	Variable	Binding Reg-Q		Post Reg-Q	
		Coefficient	Std. Error	Coefficient	Std. Error.
0	Consumption	—	—	—	—
4	Consumption	-0.58***	0.19	0.00	0.11
8	Consumption	-0.76**	0.31	-0.07	0.19
0	Investment	—	—	—	—
4	Investment	0.49	0.62	0.08	0.31
8	Investment	-0.65	0.69	-0.40	0.63
0	Output	—	—	—	—
4	Output	-0.47**	0.21	-0.05	0.11
8	Output	-0.86***	0.30	-0.16	0.20
0	Prices	—	—	—	—
4	Prices	0.31**	0.15	-0.08	0.06
8	Prices	0.47*	0.25	-0.13	0.09
0	Credit standards	—	—	—	—
4	Credit standards	3.03	2.48	2.13	1.35
8	Credit standards	-2.02	1.76	4.22***	1.36
0	Excess market return	—	—	—	—
4	Excess market return	-6.10***	1.77	1.37	1.41
8	Excess market return	-3.89**	1.79	-0.20	1.99
0	Ten-year Treasury yield	—	—	—	—
4	Ten-year Treasury yield	0.32**	0.14	-0.01	0.06
8	Ten-year Treasury yield	0.24	0.17	0.00	0.07
0	Federal funds rate	0.88***	0.11	0.23***	0.02
4	Federal funds rate	0.70**	0.34	0.31***	0.09
8	Federal funds rate	0.23	0.29	0.10	0.12

Table OA.4: Finance dependence by sector

The table shows finance dependence at the two-digit SIC level. Finance dependence is one minus industry *i*'s gross profit (sales minus production costs) divided by production costs (materials and labor), averaged over 1958 to 1965 and winsorized at the 5% level. We first calculate finance dependence at the four-digit SIC level then average it within two-digit SIC sectors. The data are from the NBER manufacturing database, which covers 459 manufacturing industries at the four-digit SIC level.

	SIC2	Fin. Dep.
Apparel & Other Textile Products	23	0.66
Chemical & Allied Products	28	0.29
Electronic & Other Electric Equipment	36	0.38
Fabricated Metal Products	34	0.53
Food & Kindred Products	20	0.58
Furniture & Fixtures	25	0.57
Industrial Machinery & Equipment	35	0.40
Instruments & Related Products	38	0.26
Leather & Leather Products	31	0.63
Lumber & Wood Products	24	0.69
Miscellaneous Manufacturing Industries	39	0.46
Paper & Allied Products	26	0.59
Petroleum & Coal Products	29	0.64
Primary Metal Industries	33	0.63
Printing & Publishing	27	0.33
Rubber & Miscellaneous Plastics Produ	30	0.50
Stone, Clay, & Glass Products	32	0.40
Textile Mill Products	22	0.70
Tobacco Products	21	0.43
Transportation Equipment	37	0.60

Table OA.5: Working capital intensity and prices

Panel regressions of prices on working capital intensity and the Reg Q spread:

$$\Delta\text{Prices}_{i,t+1} = \alpha_t + \gamma_i + \beta\text{Reg}Q\text{Spread}_t \times \text{WCInt}_i + X_{i,t} + \epsilon_{i,t}.$$

Price growth is the percentage change of industry i's shipments deflator in year $t+1$. Working capital intensity is industry i's inventory divided by production costs (materials and labor), averaged over 1958 to 1965 and winsorized at the 5% level. The Reg Q spread is the weighted average spread between market rates and the Reg Q ceiling rates on savings, small time, and large time deposits (using their shares as weights). Energy intensity is energy costs divided by output. TFP is total five-factor productivity in 1965. The standard deviations of price growth and real output growth are from 1958 to 1965. Wage growth is the percentage change of hourly production wages (production wages divided by hours worked). Materials price growth is the percentage change of industry i's cost of materials deflator. Standard errors are clustered by industry. The data are from the NBER manufacturing database, which covers 459 manufacturing industries. The sample is the Reg Q period from 1965 to 1982.

	ΔPrices				
	(1)	(2)	(3)	(4)	(5)
Reg Q spread × WC int.	4.918***	5.286***	4.028***	4.946***	4.239***
	(1.075)	(1.040)	(1.117)	(1.081)	(1.077)
Reg Q spread × Energy int.		0.294***			0.292***
		(0.073)			(0.078)
Reg Q spread × TFP		0.314			0.683*
		(0.398)			(0.360)
Reg Q spread × $\sigma(\Delta\text{Prices})$			−35.258***		−36.452***
			(13.390)		(13.188)
Reg Q spread × $\sigma(\Delta\text{Output})$			−0.306		0.508
			(1.054)		(1.056)
ΔWage				−0.012	−0.009
				(0.018)	(0.017)
ΔMaterials price	0.166***	0.161***	0.181***	0.166***	0.177***
	(0.045)	(0.045)	(0.045)	(0.045)	(0.045)
Time FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Obs.	8,262	8,262	8,262	8,262	8,262
R^2	0.307	0.310	0.313	0.307	0.316

Table OA.6: Working capital intensity and output

Panel regressions of output on working capital intensity and the Reg Q spread:

$$\Delta \text{Output}_{i,t+1} = \alpha_t + \gamma_i + \beta \text{Reg}Q\text{Spread}_t \times \text{WCInt}_i + X_{i,t} + \epsilon_{i,t}.$$

Output growth is the percentage change of industry i's output (shipments plus the change in inventories deflated by the shipments deflator) in year $t+1$. Working capital intensity is industry i's inventory divided by production costs (materials and labor), averaged over 1958 to 1965 and winsorized at the 5% level. The Reg Q spread is the weighted average spread between market rates and the Reg Q ceiling rates on savings, small time, and large time deposits (using their shares as weights). Energy intensity is energy costs divided by output. TFP is total five-factor productivity in 1965. The standard deviations of price growth and real output growth are from 1958 to 1965. Wage growth is the percentage change of hourly production wages (production wages divided by hours worked). Materials price growth is the percentage change of industry i's cost of materials deflator. Standard errors are clustered by industry. The data are from the NBER manufacturing database, which covers 459 manufacturing industries. The sample is the Reg Q period from 1965 to 1982.

	ΔOutput				
	(1)	(2)	(3)	(4)	(5)
Reg Q spread $\times$ WC int.	−5.847***	−6.461***	−4.051**	−6.122***	−4.787**
	(2.028)	(1.987)	(2.011)	(2.055)	(2.005)
Reg Q spread $\times$ Energy int.		−0.065			−0.079
		(0.080)			(0.087)
Reg Q spread $\times$ TFP		2.142***			1.379*
		(0.739)			(0.777)
Reg Q spread $\times$ $\sigma(\Delta\text{Prices})$			44.254***		46.344***
			(10.574)		(10.506)
Reg Q spread $\times$ $\sigma(\Delta\text{Output})$			−9.148***		−9.008***
			(2.696)		(2.734)
ΔWage				0.019	0.019
				(0.053)	(0.052)
ΔMaterials price				−0.108**	−0.133***
				(0.046)	(0.043)
Time FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Obs.	8,262	8,262	8,262	8,262	8,262
R^2	0.238	0.239	0.243	0.239	0.245

Table OA.7: Working capital intensity, finance dependence, and prices

Panel regressions of prices on the Reg Q spread and working capital intensity, finance dependence, and their interaction:

$$\Delta \text{Prices}_{i,t+1} = \alpha_t + \gamma_i + \ldots + \beta \text{RegQSpread}_t \times \text{WCInt}_i \times \text{FinDep}_i + \ldots + X_{i,t} + \epsilon_{i,t}.$$

Price growth is the percentage change of industry i's shipments deflator in year $t+1$. Working capital intensity is industry i's inventory divided by production costs (materials and labor), averaged over 1958 to 1965 and winsorized at the 5% level. The Reg Q spread is the weighted average spread between market rates and the Reg Q ceiling rates on savings, small time, and large time deposits (using their shares as weights). Energy intensity is energy costs divided by output. TFP is total five-factor productivity in 1965. The standard deviations of price growth and real output growth are from 1958 to 1965. Wage growth is the percentage change of hourly production wages (production wages divided by hours worked). Materials price growth is the percentage change of industry i's cost of materials deflator. Standard errors are clustered by industry. The data are from the NBER manufacturing database, which covers 459 manufacturing industries. The sample is the Reg Q period from 1965 to 1982.

	ΔPrices				
	(1)	(2)	(3)	(4)	(5)
Reg Q spread × WC int. × Fin dep.	17.897***	15.284***	16.615***	17.951***	13.666***
	(5.136)	(4.968)	(5.319)	(5.131)	(5.029)
Reg Q spread × WC int.	−5.114**	−3.585*	−4.883**	−5.105**	−3.309*
	(2.077)	(1.999)	(2.022)	(2.076)	(1.913)
Reg Q spread × Fin dep.	−7.757***	−6.775***	−6.846***	−7.768***	−5.746***
	(1.482)	(1.447)	(1.435)	(1.483)	(1.344)
Reg Q spread × Energy int.		0.187**			0.206***
		(0.073)			(0.076)
Reg Q spread × TFP		0.454			0.752**
		(0.382)			(0.357)
Reg Q spread × $\sigma(\Delta \text{Prices})$			−27.968**		−30.395**
			(13.158)		(13.011)
Reg Q spread × $\sigma(\Delta \text{Output})$			0.308		0.921
			(1.064)		(1.076)
ΔWage				−0.013	−0.010
				(0.018)	(0.017)
ΔMaterials price	0.163***	0.160***	0.176***	0.163***	0.173***
	(0.044)	(0.044)	(0.045)	(0.044)	(0.045)
Time FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Obs.	8,262	8,262	8,262	8,262	8,262
R^2	0.314	0.316	0.318	0.314	0.320

Table OA.8: Working capital intensity, finance dependence, and output

Panel regressions of output on the Reg Q spread and working capital intensity, finance dependence, and their interaction:

$$\Delta\text{Output}_{i,t+1} = \alpha_t + \gamma_i + \ldots + \beta\text{RegQSpread}_t \times \text{WCInt}_i \times \text{FinDep}_i + \ldots + X_{i,t} + \epsilon_{i,t}.$$

Output growth is the percentage change of industry i's output (shipments plus the change in inventories deflated by the shipments deflator) in year $t+1$. Working capital intensity is industry i's inventory divided by production costs (materials and labor), averaged over 1958 to 1965 and winsorized at the 5% level. The Reg Q spread is the weighted average spread between market rates and the Reg Q ceiling rates on savings, small time, and large time deposits (using their shares as weights). Energy intensity is energy costs divided by output. TFP is total five-factor productivity in 1965. The standard deviations of price growth and real output growth are from 1958 to 1965. Wage growth is the percentage change of hourly production wages (production wages divided by hours worked). Materials price growth is the percentage change of industry i's cost of materials deflator. Standard errors are clustered by industry. The data are from the NBER manufacturing database, which covers 459 manufacturing industries. The sample is the Reg Q period from 1965 to 1982.

	ΔOutput				
	(1)	(2)	(3)	(4)	(5)
Reg Q spread × WC int. × Fin dep.	−17.017*	−16.461*	−15.063	−16.351*	−13.053
	(9.709)	(9.411)	(9.233)	(9.742)	(9.027)
Reg Q spread × WC int.	1.339	0.342	1.930	0.764	0.085
	(4.401)	(4.167)	(4.252)	(4.390)	(4.114)
Reg Q spread × Fin dep.	4.098	3.695	3.100	3.910	2.228
	(2.596)	(2.456)	(2.481)	(2.600)	(2.367)
Reg Q spread × Energy int.		−0.035			−0.070
		(0.080)			(0.084)
Reg Q spread × TFP		2.154***			1.420*
		(0.739)			(0.769)
Reg Q spread × $\sigma(\Delta\text{Prices})$			44.556***		47.477***
			(11.005)		(10.812)
Reg Q spread × $\sigma(\Delta\text{Output})$			−8.999***		−8.739***
			(2.685)		(2.718)
ΔWage				0.020	0.021
				(0.053)	(0.052)
ΔMaterials price				−0.106**	−0.132***
				(0.047)	(0.043)
Time FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Obs.	8,262	8,262	8,262	8,262	8,262
R^2	0.238	0.240	0.243	0.240	0.246

Table OA.9: Working capital intensity and balance sheet characteristics

The table uses the Quarterly Financial Reports (QFR) to relate finance dependence to financial characteristics. The QFR reports are available at the two-digit SIC level starting in 1947. We calculate finance dependence and working capital inensity in the QFR data in the same way as in the NBER-CES dataset (and over the same period from 1958 to 1965). The QFR measure of costs includes SG&A (selling, general, and administrative expenses), which makes the measure higher on average. The balance sheet characteristics are measured in 1965. Leverage is the ratio of debt over equity. The short-term share of debt is short-term debt over debt. The bank share of debt is bank debt over debt. The cash ratio is cash and securities over current liabilities. The debt service ratio is operating income divided by debt due in one year. Working capital is inventory plus net receivables.

	Leverage	Short-term share of debt	Bank share of debt	Cash ratio	Debt service ratio	Oper. income/ working cap.
	(1)	(2)	(3)	(4)	(5)	(6)
WC int.	0.051	0.232***	0.116*	−0.253***	−2.826***	−0.239***
	(0.050)	(0.056)	(0.060)	(0.061)	(0.770)	(0.043)
Fin. dep.	1.689***	2.722***	2.555***	−2.949***	−54.775***	−3.373***
	(0.516)	(0.586)	(0.624)	(0.636)	(7.987)	(0.450)
Constant	−1.270**	−2.441***	−2.043***	3.250***	55.587***	3.639***
	(0.490)	(0.556)	(0.593)	(0.604)	(7.585)	(0.427)
Obs.	19	19	19	19	19	19
R^2	0.408	0.625	0.512	0.625	0.748	0.794

Table OA.10: Finance dependence and balance sheet characteristics, 4-Digit SIC (1965-1980)

Panel A presents summary statistics at the 4-digit SIC industry level, including only industries with greater than 3 firms per year in the Compustat data over the sample period of 1965-1980 with annual frequency. Finance dependence (NBER) 1965 is one minus industry i's gross profit (sales minus production costs) divided by production costs (materials and labor) using NBER-CES data, averaged over 1958 to 1965 and winsorized at the 5% level. Finance dependence (Compustat) is calculated from the same formula but using Compustat data and averaged over 1965 to 1980. The following financial ratios are calculated from Compustat: market-to-book is market value of equity divided by book value of equity, market leverage is total debt divided by the sum of total debt and market value of equity, short-term leverage is current debt divided by the sum of current debt and market value of equity, debt to equity is total debt divided by book value of equity, Op. Inc. to Cur. Debt is operating income divided by current debt, and cash ratio is cash divided by current liabilities. Panel B regresses these financial ratios on finance dependence (Compustat) using the same sample. Panel C regresses the financial ratios on finance dependence (NBER) 1965 using the same sample. Panel D regresses the financial ratios on finance dependence (Compustat) using a sample that includes all 4-digit SIC codes.

Panel A: Summary statistics, industries with greater than 3 firms per year

			Finance Dependence (Compustat) 1965-1980			
	All		Low		High	
Period: 1965-1980	Mean	St. Dev.	Mean	St. Dev.	Mean	St. Dev.
Finance dependence (NBER) 1965	0.50	(0.21)	0.28	(0.24)	0.53	(0.19)
Finance dependence (Compustat)	0.55	(0.22)	0.40	(0.19)	0.72	(0.07)
# Firms per industry	9.21	(6.84)	9.69	(6.71)	8.67	(7.01)
Total assets	320	(805)	225	(607)	426	(978)
Market-to-book	1.71	(0.93)	2.08	(0.85)	1.28	(0.84)
Market leverage	0.27	(0.14)	0.21	(0.10)	0.34	(0.15)
Short-term leverage	0.09	(0.07)	0.07	(0.04)	0.12	(0.09)
Debt to equity	0.46	(0.19)	0.40	(0.18)	0.52	(0.19)
Op. Inc. to Cur. Debt	4.68	(3.43)	5.38	(3.86)	3.88	(2.69)
Cash Ratio	0.35	(0.21)	0.40	(0.22)	0.29	(0.18)
# Industries	98		52		46	

Panel B: Finance dependence (Compustat) and financial ratios, industries with greater than 3 firms per year

	Market-to Book (1)	Market Leverage (2)	Short-term Market Leverage (3)	Debt to Equity (4)	Operating Income to Current Debt (5)	Cash Ratio (6)
Finance dependence (Compustat)	−2.449***	0.320***	0.141***	0.209**	−3.900**	−0.341***
	(0.359)	(0.056)	(0.031)	(0.088)	(1.552)	(0.091)
Constant	3.054***	0.095***	0.014	0.346***	6.819***	0.536***
	(0.211)	(0.033)	(0.018)	(0.052)	(0.916)	(0.054)
Obs.	97	97	97	98	98	98
R^2	0.325	0.251	0.173	0.054	0.061	0.124

Panel C: Finance dependence (NBER) and financial ratios, industries with greater than 3 firms per year

	Market-to Book (1)	Market Leverage (2)	Short-term Market Leverage (3)	Debt to Equity (4)	Operating Income to Current Debt (5)	Cash Ratio (6)
Finance dependence (NBER) 1965	−1.684***	0.263***	0.111***	0.164**	−1.553	−0.248***
	(0.333)	(0.049)	(0.027)	(0.076)	(1.362)	(0.080)
Constant	2.400***	0.163***	0.046***	0.393***	5.315***	0.451***
	(0.160)	(0.023)	(0.013)	(0.037)	(0.657)	(0.038)
Obs.	97	97	97	98	98	98
R^2	0.208	0.230	0.147	0.045	0.013	0.090

Panel D: Finance dependence (Compustat) and financial ratios, all industries

	Market-to Book (1)	Market Leverage (2)	Short-term Market Leverage (3)	Debt to Equity (4)	Operating Income to Current Debt (5)	Cash Ratio (6)
Finance dependence (Compustat)	−1.944***	0.259***	0.099***	0.159*	−4.251*	−0.274**
	(0.370)	(0.059)	(0.035)	(0.092)	(2.525)	(0.117)
Constant	2.809***	0.137***	0.045**	0.400***	7.847***	0.513***
	(0.219)	(0.035)	(0.020)	(0.055)	(1.494)	(0.069)
Obs.	120	120	120	130	130	130
R^2	0.187	0.140	0.063	0.022	0.021	0.040

Table OA.11: Finance dependence and financial constraint indices, 4-Digit SIC (1965-1980)

Panel A presents summary statistics at the 4-digit SIC industry level, including only industries with greater than 3 firms per year in the Compustat data over the sample period of 1965-1980 with annual frequency. Finance dependence (NBER) 1965 is one minus industry *i*'s gross profit (sales minus production costs) divided by production costs (materials and labor) using NBER-CES data, averaged over 1958 to 1965 and winsorized at the 5% level. Finance dependence (Compustat) is calculated from the same formula but using Compustat data and averaged over 1965 to 1980. KZ financial constraint is calculated following Lamont, Polk and Saá-Requejo (2001) and the HP SA financial constraint is calculated following Hadlock and Pierce (2010), both using Compustat data for the 1965-1980 period. Panel B regresses these two financial constraint indices on finance dependence (Compustat) using the same sample. Panel C regresses them on finance dependence (NBER) 1965 using the same sample. Panel D regresses them on finance dependence (Compustat) using a sample that includes all 4-digit SIC codes.

Panel A: Summary statistics, industries with greater than 3 firms per year

			Finance Dependence (Compustat) 1965-1980			
	All		Low		High	
Period: 1965-1980	Mean	St. Dev.	Mean	St. Dev.	Mean	St. Dev.
Finance dependence (NBER) 1965	0.50	(0.21)	0.28	(0.24)	0.53	(0.19)
Finance dependence (Compustat)	0.55	(0.22)	0.40	(0.19)	0.72	(0.07)
KZ financial constraint	-3.81	(2.81)	-4.38	(3.33)	-3.16	(1.89)
HP SA financial constraint	-3.07	(0.47)	-3.05	(0.35)	-3.09	(0.58)
# Industries	98		52		46	

Panel B: Finance dependence (Compustat) and financial constraint indices, industries with greater than 3 firms per year

	KZ Financial Constraint (1)	HP SA Financial Constraint (2)
Finance dependence (Compustat)	4.241***	−0.034
	(1.243)	(0.198)
Constant	−6.139***	−3.084***
	(0.732)	(0.117)
Obs.	97	98
R^2	0.107	0.000

Panel C: Finance dependence (NBER) and financial constraint indices, industries with greater than 3 firms per year

	KZ Financial Constraint (1)	HP SA Financial Constraint (2)
Finance dependence (NBER) 1965	4.542***	0.142
	(1.024)	(0.186)
Constant	−5.680***	−3.129***
	(0.494)	(0.091)
Obs.	97	101
R^2	0.169	0.006

Panel D: Finance dependence (Compustat) and financial constraint indices, all industries

	KZ Financial Constraint (1)	HP SA Financial Constraint (2)
Finance dependence (Compustat)	3.421***	0.076
	(1.095)	(0.193)
Constant	−5.430***	−3.086***
	(0.645)	(0.114)
Obs.	126	130
R^2	0.072	0.001

Table OA.12: Finance dependence and Rajan-Zingales index, 4-Digit SIC (1980-1990)

Panel A presents summary statistics at the 4-digit SIC industry level, including only industries with greater than 3 firms per year in the Compustat data over the sample period of 1965-1980 with annual frequency. Finance dependence (NBER) 1965 is one minus industry i's gross profit (sales minus production costs) divided by production costs (materials and labor) using NBER-CES data, averaged over 1958 to 1965 and winsorized at the 5% level. Finance dependence (Compustat) is calculated from the same formula but using Compustat data and averaged over 1980 to 1990. RZ Index is calculated following Rajan and Zingales (1998). RZ Production Index is calculated with the same formula, but replacing investment in the denominator with production cost. Both are normalized to have a mean of zero and a standard deviation of one. Panel B regresses these RZ indices on finance dependence (Compustat) using the same sample. Panel C regresses them on finance dependence (NBER) 1965 using the same sample. Panel D regresses them on finance dependence (Compustat) using a sample that includes all 4-digit SIC codes.

Panel A: Summary statistics, industries with greater than 3 firms per year

			Finance Dependence (Compustat) 1980-1990			
	All		Low		High	
Period: 1980-1990	Mean	St. Dev.	Mean	St. Dev.	Mean	St. Dev.
Finance dependence (NBER) 1965	0.50	(0.21)	0.27	(0.22)	0.53	(0.19)
Finance dependence (Compustat)	0.50	(0.24)	0.32	(0.20)	0.69	(0.08)
RZ Index (Normalized)	0.00	(1.00)	-0.10	(1.14)	0.10	(0.82)
RZ Production Index (Normalized)	0.00	(1.00)	-0.42	(1.10)	0.43	(0.66)
# Industries	109		55		54	

Panel B: Finance dependence (Compustat) and Rajan-Zingales index, industries with greater than 3 firms per year

	RZ Index (Normalized)	RZ Production Index (Normalized)
	(1)	(2)
Finance dependence (Compustat)	1.194***	2.335***
	(0.388)	(0.336)
Constant	−0.601***	−1.176***
	(0.216)	(0.187)
Obs.	108	108
R^2	0.081	0.309

Panel C: Finance dependence (NBER) and Rajan-Zingales index, industries with greater than 3 firms per year

	RZ Index (Normalized)	RZ Production Index (Normalized)
	(1)	(2)
Finance dependence (NBER) 1965	0.990***	1.907***
	(0.376)	(0.342)
Constant	−0.408**	−0.786***
	(0.181)	(0.164)
Obs.	108	108
R^2	0.060	0.223

Panel D: Finance dependence (Compustat) and Rajan-Zingales index, all industries

	RZ Index (Normalized)	RZ Production Index (Normalized)
	(1)	(2)
Finance dependence (Compustat)	0.929***	2.068***
	(0.330)	(0.286)
Constant	−0.453**	−1.008***
	(0.182)	(0.158)
Obs.	128	128
R^2	0.058	0.289

Table OA.13: Finance Dependence and Prices with Alternative Control Variables

Panel regressions of prices on finance dependence and the Reg Q spread:

$$\Delta \text{Prices}_{i,t} = \alpha_t + \gamma_i + \beta \text{RegQSpread}_t \times \text{FinDep}_i + X_{i,t} + \epsilon_{i,t}.$$

Price growth is the percentage change of industry i's shipments deflator in year t. Finance dependence is one minus industry i's gross profit (sales minus production costs) divided by production costs (materials and labor), averaged over 1958 to 1965 and winsorized at the 5% level. The Reg Q spread is the weighted average spread between market rates and the Reg Q ceiling rates on savings, small time, and large time deposits (using their shares as weights). Energy intensity is energy costs divided by output, 1958-1965 average. TFP is total five-factor productivity, 1958-1965 average. The standard deviations of price growth and output growth are from 1958 to 1965 (output is shipments plus the change in inventories deflated by the shipments deflator). Wage growth is the percentage change of hourly production wages (production wages divided by hours worked). Materials price growth is the percentage change of industry i's cost of materials deflator. Standard errors are clustered by industry. Panel A presents results using the above specification of control variables as in Table 3 in the paper, where energy intensity, TFP, and the standard deviations are interacted with the Reg Q spread. Panel B replaces the control variables with lagged energy intensity (rather than energy intensity, 1958-1965 average), lagged TFP growth (rather than TFP level, 1958-1965 average), lagged 7-year trailing standard deviations of price growth and output growth (rather than standard deviations over 1958 to 1965), wage growth, and materials price growth, none of which are interacted with the Reg Q spread. Panel C follows Panel B but adds the lagged dependent variable of price growth. Panel D adds the interactions with Reg Q spread of lagged energy intensity, lagged TFP growth, lagged 7-year trailing standard deviations of price growth and output growth, wage growth, and materials price growth. The data are from the NBER-CES manufacturing database, which covers 459 manufacturing industries. The sample is the Reg Q period from 1965 to 1982.

Panel A: Baseline Specification

	ΔPrices				
	(1)	(2)	(3)	(4)	(5)
Reg Q spread × Fin. dep.	1.850***	1.991***	1.473***	1.855***	1.637***
	(0.367)	(0.377)	(0.344)	(0.366)	(0.357)
Reg Q spread × Energy int.		0.105**			0.100**
		(0.047)			(0.045)
Reg Q spread × TFP		0.595*			0.497
		(0.325)			(0.335)
Reg Q spread × σ(ΔPrices)			15.893**		14.454**
			(6.599)		(6.539)
Reg Q spread × σ(ΔOutput)			0.047		0.394
			(0.808)		(0.799)
ΔWage				0.019	0.018
				(0.015)	(0.015)
ΔMaterials price	0.855***	0.852***	0.848***	0.855***	0.846***
	(0.069)	(0.069)	(0.067)	(0.069)	(0.067)
Time FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Obs.	8,262	8,262	8,262	8,262	8,262
R^2	0.587	0.588	0.588	0.587	0.589

Panel B: Moving Controls

	ΔPrices				
	(1)	(2)	(3)	(4)	(5)
Reg Q spread × Fin. dep.	1.850***	1.840***	1.885***	1.855***	1.887***
	(0.367)	(0.370)	(0.365)	(0.366)	(0.366)
Lag Energy int.		−0.002**			−0.001
		(0.001)			(0.001)
Lag ΔTFP		0.013			0.010
		(0.017)			(0.017)
Lag Trailing σ(ΔPrices)			−0.116***		−0.112***
			(0.037)		(0.038)
Lag Trailing σ(ΔOutput)			−0.012		−0.012
			(0.012)		(0.012)
ΔWage				0.019	0.020
				(0.015)	(0.015)
ΔMaterials price	0.855***	0.856***	0.844***	0.855***	0.845***
	(0.069)	(0.069)	(0.068)	(0.069)	(0.069)
Time FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Obs.	8,262	8,262	8,262	8,262	8,262
R^2	0.587	0.587	0.589	0.587	0.589

Panel C: Moving Controls and Lagged Dependent

	ΔPrices				
	(1)	(2)	(3)	(4)	(5)
Reg Q spread × Fin. dep.	1.692***	1.652***	1.694***	1.697***	1.672***
	(0.373)	(0.379)	(0.374)	(0.373)	(0.376)
Lag ΔPrices	0.053**	0.080**	0.067**	0.052**	0.097***
	(0.027)	(0.034)	(0.028)	(0.027)	(0.037)
Lag Energy int.		−0.001*			−0.000
		(0.001)			(0.001)
Lag ΔTFP		0.063***			0.069***
		(0.020)			(0.021)
Lag Trailing σ(ΔPrices)			−0.145***		−0.150***
			(0.043)		(0.046)
Lag Trailing σ(ΔOutput)			−0.012		−0.011
			(0.011)		(0.012)
ΔWage				0.015	0.015
				(0.016)	(0.016)
ΔMaterials price	0.855***	0.856***	0.841***	0.854***	0.841***
	(0.070)	(0.070)	(0.069)	(0.070)	(0.070)
Time FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Obs.	8,262	8,262	8,262	8,262	8,262
R^2	0.589	0.591	0.592	0.589	0.594

Panel D: Moving Controls and Lagged Dependent, Interacted with Reg-Q Spread

	ΔPrices				
	(1)	(2)	(3)	(4)	(5)
Reg Q spread × Fin. dep.	1.749***	1.858***	1.450***	1.754***	1.534***
	(0.375)	(0.391)	(0.337)	(0.375)	(0.351)
Lag ΔPrices	0.054**	0.082**	0.063**	0.054**	0.092**
	(0.026)	(0.034)	(0.029)	(0.026)	(0.037)
Reg Q spread × Lag Energy int.		0.067			0.038
		(0.042)			(0.041)
Reg Q spread × Lag ΔTFP		1.748			2.127
		(2.107)			(2.132)
Reg Q spread × Lag Trailing σ(ΔPrices)			8.392*		8.091*
			(4.284)		(4.555)
Reg Q spread × Lag Trailing σ(ΔOutput)			−0.258		−0.391
			(0.769)		(0.766)
Reg Q spread × ΔHourly wage				0.549	0.117
				(1.730)	(1.704)
Reg Q spread × ΔMaterials price	8.724***	8.359***	9.613***	8.745***	9.442***
	(2.766)	(2.806)	(3.388)	(2.765)	(3.500)
ΔMaterials price	0.702***	0.709***	0.664***	0.702***	0.667***
	(0.053)	(0.053)	(0.056)	(0.053)	(0.056)
Lag ΔTFP		0.042			0.042
		(0.033)			(0.034)
Lag Energy int.		−0.003**			−0.001
		(0.001)			(0.001)
Lag Trailing σ(ΔPrices)			−0.254***		−0.252***
			(0.048)		(0.048)
Lag Trailing σ(ΔOutput)			−0.010		−0.008
			(0.014)		(0.014)
ΔWage				0.010	0.016
				(0.023)	(0.023)
Time FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Obs.	8,262	8,262	8,262	8,262	8,262
R^2	0.550	0.551	0.550	0.550	0.551

Table OA.14: Finance Dependence and Output with Alternative Control Variables

Panel regressions of output on finance dependence and the Reg Q spread:

$$\Delta\text{Output}_{i,t} = \alpha_t + \gamma_i + \beta\text{Reg}Q\text{Spread}_t \times \text{FinDep}_i + X_{i,t} + \epsilon_{i,t}.$$

Output growth is the percentage change of industry i's output (shipments plus the change in inventories deflated by the shipments deflator) in year t. Finance dependence is one minus industry i's gross profit (sales minus production costs) divided by production costs (materials and labor), averaged over 1958 to 1965 and winsorized at the 5% level. The Reg Q spread is the weighted average spread between market rates and the Reg Q ceiling rates on savings, small time, and large time deposits (using their shares as weights). Energy intensity is energy costs divided by output, 1958-1965 average. TFP is total five-factor productivity, 1958-1965 average. The standard deviations of price growth and output growth are from 1958 to 1965 (output is shipments plus the change in inventories deflated by the shipments deflator). Wage growth is the percentage change of hourly production wages (production wages divided by hours worked). Materials price growth is the percentage change of industry i's cost of materials deflator. Standard errors are clustered by industry. Panel A presents results using the above specification of control variables as in Table 3 in the paper, where energy intensity, TFP, and the standard deviations are interacted with the Reg Q spread. Panel B replaces the control variables with lagged energy intensity (rather than energy intensity, 1958-1965 average), lagged TFP growth (rather than TFP level, 1958-1965 average), lagged 7-year trailing standard deviations of price growth and output growth (rather than standard deviations over 1958 to 1965), wage growth, and materials price growth, none of which are interacted with the Reg Q spread. Panel C follows Panel B but adds the lagged dependent variable of output growth. Panel D adds the interactions with Reg Q spread of lagged energy intensity, lagged TFP growth, lagged 7-year trailing standard deviations of price growth and output growth, wage growth, and materials price growth. The data are from the NBER-CES manufacturing database, which covers 459 manufacturing industries. The sample is the Reg Q period from 1965 to 1982.

Panel A: Baseline Specification

	ΔOutput				
	(1)	(2)	(3)	(4)	(5)
Reg Q spread × Fin. dep.	−3.760***	−3.715***	−3.703***	−3.670***	−3.694***
	(0.817)	(0.817)	(0.853)	(0.838)	(0.871)
Reg Q spread × Energy int.		0.065			0.108
		(0.094)			(0.093)
Reg Q spread × TFP		1.446			1.453*
		(0.884)			(0.848)
Reg Q spread × $\sigma(\Delta\text{Prices})$			0.226		8.523
			(10.326)		(10.020)
Reg Q spread × $\sigma(\Delta\text{Output})$			−1.886		−1.955
			(3.126)		(3.062)
ΔWage				0.145***	0.147***
				(0.043)	(0.043)
ΔMaterials price				−0.290***	−0.298***
				(0.048)	(0.047)
Time FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Obs.	8,262	8,262	8,262	8,262	8,262
R^2	0.249	0.249	0.249	0.260	0.261

Panel B: Moving Controls

	ΔOutput				
	(1)	(2)	(3)	(4)	(5)
Reg Q spread × Fin. dep.	−3.760***	−3.702***	−3.807***	−3.670***	−3.613***
	(0.817)	(0.811)	(0.813)	(0.838)	(0.827)
Lag Energy int.		0.003*			0.005**
		(0.002)			(0.002)
Lag ΔTFP		0.013			0.014
		(0.034)			(0.034)
Lag Trailing $\sigma(\Delta\text{Prices})$			0.100**		0.013
			(0.039)		(0.043)
Lag Trailing $\sigma(\Delta\text{Output})$			−0.090**		−0.084*
			(0.043)		(0.043)
ΔWage				0.145***	0.144***
				(0.043)	(0.043)
ΔMaterials price				−0.290***	−0.294***
				(0.048)	(0.048)
Time FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Obs.	8,262	8,262	8,262	8,262	8,262
R^2	0.249	0.249	0.250	0.260	0.262

Panel C: Moving Controls and Lagged Dependent

	ΔOutput				
	(1)	(2)	(3)	(4)	(5)
Reg Q spread × Fin. dep.	−3.866***	−3.771***	−3.903***	−3.768***	−3.674***
	(0.819)	(0.810)	(0.815)	(0.837)	(0.824)
Lag ΔOutput	−0.054**	−0.089***	−0.051**	−0.049**	−0.078**
	(0.024)	(0.034)	(0.025)	(0.024)	(0.034)
Lag Energy int.		0.002			0.004**
		(0.002)			(0.002)
Lag ΔTFP		0.132**			0.119**
		(0.052)			(0.053)
Lag Trailing σ(ΔPrices)			0.088**		0.010
			(0.041)		(0.043)
Lag Trailing σ(ΔOutput)			−0.083*		−0.074*
			(0.044)		(0.044)
ΔWage				0.142***	0.140***
				(0.043)	(0.044)
ΔMaterials price				−0.286***	−0.287***
				(0.048)	(0.048)
Time FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Obs.	8,262	8,262	8,262	8,262	8,262
R^2	0.251	0.252	0.252	0.262	0.264

Panel D: Moving Controls and Lagged Dependent, Interacted with Reg-Q Spread

	ΔOutput				
	(1)	(2)	(3)	(4)	(5)
Reg Q spread × Fin. dep.	−3.748***	−3.674***	−4.029***	−3.709***	−4.006***
	(0.837)	(0.841)	(0.832)	(0.833)	(0.848)
Lag ΔOutput	−0.049**	−0.080**	−0.042*	−0.048**	−0.070**
	(0.024)	(0.034)	(0.024)	(0.024)	(0.033)
Reg Q spread × Lag Energy int.		−0.015			−0.070
		(0.070)			(0.071)
Reg Q spread × Lag ΔTFP		−0.747			0.439
		(4.221)			(4.043)
Reg Q spread × Lag Trailing σ(ΔPrices)			12.537***		12.505***
			(4.062)		(4.090)
Reg Q spread × Lag Trailing σ(ΔOutput)			−9.486***		−9.869***
			(3.256)		(3.181)
Reg Q spread × ΔHourly wage				8.536	8.617*
				(5.183)	(5.191)
Reg Q spread × ΔMaterials price	8.397**	8.294**	9.403**	8.564**	9.756***
	(3.539)	(3.588)	(3.646)	(3.495)	(3.678)
ΔMaterials price	−0.431***	−0.431***	−0.466***	−0.436***	−0.475***
	(0.070)	(0.071)	(0.076)	(0.070)	(0.077)
Lag ΔTFP		0.129**			0.108*
		(0.061)			(0.059)
Lag Energy int.		0.004*			0.005**
		(0.002)			(0.002)
Lag Trailing σ(ΔPrices)			−0.140**		−0.151**
			(0.065)		(0.066)
Lag Trailing σ(ΔOutput)			0.028		0.035
			(0.044)		(0.044)
ΔWage				0.043	0.045
				(0.084)	(0.085)
Time FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Obs.	8,262	8,262	8,262	8,262	8,262
R^2	0.256	0.257	0.259	0.258	0.262

Table OA.15: Industry Reg Q Spread and Prices with Alternative Controls

Panel regressions of prices on the industry Reg Q spread:

$$\Delta\text{Prices}_{i,t} \;=\; \alpha_t + \gamma_i + \beta\text{RegQSpread}_{i,t} + X_{i,t} + \epsilon_{i,t}.$$

Price growth is the percentage change of industry i's shipments deflator in year t. The industry Reg Q spread is the average Reg Q spread of banks in the counties where an industry operates (we weight banks by C&I loans within a county and counties by industry employment within an industry). A bank's Reg Q spread is the average spread on savings, small time and large time deposits using the bank's shares of each type as weights. The aggregate Reg Q spread weights across counties by total manufacturing employment. Energy intensity is energy costs divided by output. TFP is total five-factor productivity in 1965. The standard deviations of price growth and real output growth are from 1958 to 1965. Wage growth is the percentage change of hourly production wages (production wages divided by hours worked). Materials price growth is the percentage change of industry i's cost of materials deflator. Panel A presents results using the above specification of control variables as in Table 3 in the paper, where energy intensity, TFP, and the standard deviations are interacted with the aggregate Reg Q spread. Panel B replaces the control variables with lagged energy intensity (rather than energy intensity, 1958-1965 average), lagged TFP growth (rather than TFP level, 1958-1965 average), lagged 7-year trailing standard deviations of price growth and output growth (rather than standard deviations over 1958 to 1965), wage growth, and materials price growth, none of which are interacted with the Reg Q spread. Panel C follows Panel B but adds the lagged dependent variable of price growth. Panel D adds the interactions with aggregate Reg Q spread of lagged energy intensity, lagged TFP growth, and lagged 7-year trailing standard deviations of price growth and output growth. Standard errors are clustered by industry. The data are from the NBER-CES manufacturing database, which covers 459 manufacturing industries. The sample is the Reg Q period from 1965 to 1982.

Panel A: Baseline Specification

	ΔPrices				
	(1)	(2)	(3)	(4)	(5)
Industry Reg Q spread	1.558**	1.601**	1.583**	1.544**	1.604**
	(0.720)	(0.709)	(0.727)	(0.719)	(0.713)
Agg. Reg Q spread × Energy int.		−0.019			−0.015
		(0.029)			(0.028)
Agg. Reg Q spread × TFP		0.267			0.274
		(0.255)			(0.260)
Agg. Reg Q spread × $\sigma(\Delta\text{Prices})$			5.191		4.889
			(4.918)		(4.907)
Agg. Reg Q spread × $\sigma(\text{Output})$			1.104*		1.147*
			(0.664)		(0.666)
ΔWage				0.023	0.023
				(0.018)	(0.018)
ΔMaterials price	0.853***	0.853***	0.851***	0.853***	0.851***
	(0.076)	(0.076)	(0.075)	(0.076)	(0.075)
Time FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Obs.	6,477	6,477	6,477	6,477	6,477
R^2	0.580	0.580	0.580	0.580	0.581

Panel B: Moving Controls

	ΔPrices				
	(1)	(2)	(3)	(4)	(5)
Industry Reg Q spread	1.558**	1.596**	1.475**	1.544**	1.496**
	(0.720)	(0.724)	(0.699)	(0.719)	(0.704)
Lag Energy int.		−0.002**			−0.001
		(0.001)			(0.001)
Lag ΔTFP		0.030*			0.028
		(0.018)			(0.018)
Lag Trailing $\sigma(\Delta\text{Prices})$			−0.103***		−0.095**
			(0.038)		(0.040)
Lag Trailing $\sigma(\Delta\text{Output})$			−0.023**		−0.024**
			(0.012)		(0.012)
ΔWage				0.023	0.026
				(0.018)	(0.017)
ΔMaterials price	0.853***	0.855***	0.842***	0.853***	0.844***
	(0.076)	(0.076)	(0.076)	(0.076)	(0.077)
Time FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Obs.	6,477	6,477	6,477	6,477	6,477
R^2	0.580	0.581	0.582	0.580	0.582

Panel C: Moving Controls and Lagged Dependent

	ΔPrices				
	(1)	(2)	(3)	(4)	(5)
Industry Reg Q spread	1.502**	1.537**	1.385**	1.491**	1.400**
	(0.713)	(0.722)	(0.686)	(0.713)	(0.697)
Lag ΔPrices	0.045	0.077**	0.058*	0.044	0.092**
	(0.028)	(0.036)	(0.030)	(0.028)	(0.039)
Lag Energy int.		−0.002**			−0.001
		(0.001)			(0.001)
Lag ΔTFP		0.077***			0.083***
		(0.022)			(0.023)
Lag Trailing σ(ΔPrices)			−0.127***		−0.131***
			(0.045)		(0.048)
Lag Trailing σ(ΔOutput)			−0.022**		−0.023*
			(0.011)		(0.012)
ΔWage				0.020	0.021
				(0.018)	(0.018)
ΔMaterials price	0.854***	0.855***	0.841***	0.853***	0.840***
	(0.077)	(0.077)	(0.077)	(0.077)	(0.078)
Time FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Obs.	6,477	6,477	6,477	6,477	6,477
R^2	0.581	0.584	0.584	0.581	0.587

Panel D: Moving Controls and Lagged Dependent, Interacted with Reg-Q Spread

	ΔPrices				
	(1)	(2)	(3)	(4)	(5)
Industry Reg Q spread	1.502**	1.619**	1.405**	1.491**	1.535**
	(0.713)	(0.760)	(0.699)	(0.713)	(0.752)
Lag ΔPrices	0.045	0.077**	0.057*	0.044	0.091**
	(0.028)	(0.036)	(0.031)	(0.028)	(0.039)
Agg. Reg Q spread × Lag Energy int.		−0.003			−0.013
		(0.023)			(0.022)
Agg. Reg Q spread × Lag ΔTFP		2.326			2.438
		(1.559)			(1.578)
Agg. Reg Q spread × Lag Trailing σ(ΔPrices)			3.154**		3.352**
			(1.525)		(1.647)
Agg. Reg Q spread × Lag Trailing σ(ΔOutput)			−0.234		−0.459
			(0.587)		(0.604)
ΔWage				0.020	0.021
				(0.018)	(0.018)
ΔMaterials price	0.854***	0.856***	0.833***	0.853***	0.834***
	(0.077)	(0.077)	(0.075)	(0.077)	(0.076)
Lag ΔTFP		0.040			0.043
		(0.033)			(0.034)
Lag Energy int.		−0.001			−0.000
		(0.001)			(0.001)
Lag Trailing σ(ΔPrices)			−0.201***		−0.206***
			(0.042)		(0.043)
Lag Trailing σ(ΔOutput)			−0.019		−0.018
			(0.014)		(0.015)
Time FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Obs.	6,477	6,477	6,477	6,477	6,477
R^2	0.581	0.584	0.585	0.581	0.588

Table OA.16: Industry Reg Q Spread and Output with Alternative Controls

Panel regressions of output on the industry Reg Q spread:

$$\Delta\text{Output}_{i,t} = \alpha_t + \gamma_i + \beta\text{Reg}Q\text{Spread}_{i,t} + X_{i,t} + \epsilon_{i,t}.$$

Output growth is the percentage change of industry i's output (shipments plus the change in inventories deflated by the shipments deflator) in year t. The industry Reg Q spread is the average Reg Q spread of banks in the counties where an industry operates (we weight banks by C&I loans within a county and counties by industry employment within an industry). A bank's Reg Q spread is the average spread on savings, small time and large time deposits using the bank's shares of each type as weights. The aggregate Reg Q spread weights across counties by total manufacturing employment. Energy intensity is energy costs divided by output. TFP is total five-factor productivity in 1965. The standard deviations of price growth and real output growth are from 1958 to 1965. Wage growth is the percentage change of hourly production wages (production wages divided by hours worked). Materials price growth is the percentage change of industry i's cost of materials deflator. Panel A presents results using the above specification of control variables as in Table 3 in the paper, where energy intensity, TFP, and the standard deviations are interacted with the aggregate Reg Q spread. Panel B replaces the control variables with lagged energy intensity (rather than energy intensity, 1958-1965 average), lagged TFP growth (rather than TFP level, 1958-1965 average), lagged 7-year trailing standard deviations of price growth and output growth (rather than standard deviations over 1958 to 1965), wage growth, and materials price growth, none of which are interacted with the Reg Q spread. Panel C follows Panel B but adds the lagged dependent variable of output growth. Panel D adds the interactions with aggregate Reg Q spread of lagged energy intensity, lagged TFP growth, and lagged 7-year trailing standard deviations of price growth and output growth. Standard errors are clustered by industry. The data are from the NBER-CES manufacturing database, which covers 459 manufacturing industries. The sample is the Reg Q period from 1965 to 1982.

Panel A: Baseline Specification

	ΔOutput				
	(1)	(2)	(3)	(4)	(5)
Industry Reg Q spread	−4.120**	−4.307***	−4.306***	−4.240**	−4.702***
	(1.654)	(1.558)	(1.623)	(1.654)	(1.529)
Agg. Reg Q spread × Energy int.		0.034			0.060
		(0.060)			(0.059)
Agg. Reg Q spread × TFP		1.264**			1.149*
		(0.617)			(0.606)
Agg. Reg Q spread × σ(ΔPrices)			2.026		4.947
			(6.475)		(6.251)
Agg. Reg Q spread × σ(Output)			−3.414*		−3.323*
			(1.911)		(1.898)
ΔWage				0.124**	0.126**
				(0.049)	(0.049)
ΔMaterials price				−0.258***	−0.264***
				(0.051)	(0.051)
Time FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Obs.	6,477	6,477	6,477	6,477	6,477
R^2	0.226	0.227	0.227	0.236	0.238

Panel B: Moving Controls

	ΔOutput				
	(1)	(2)	(3)	(4)	(5)
Industry Reg Q spread	−4.120**	−4.131**	−4.067**	−4.240**	−4.260**
	(1.654)	(1.650)	(1.663)	(1.654)	(1.648)
Lag Energy int.		0.004**			0.006***
		(0.002)			(0.002)
Lag ΔTFP		0.021			0.028
		(0.037)			(0.037)
Lag Trailing σ(ΔPrices)			0.109***		0.022
			(0.040)		(0.044)
Lag Trailing σ(ΔOutput)			−0.066		−0.062
			(0.049)		(0.049)
ΔWage				0.124**	0.123**
				(0.049)	(0.049)
ΔMaterials price				−0.258***	−0.264***
				(0.051)	(0.051)
Time FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Obs.	6,477	6,477	6,477	6,477	6,477
R^2	0.226	0.226	0.227	0.236	0.238

Panel C: Moving Controls and Lagged Dependent

	ΔOutput				
	(1)	(2)	(3)	(4)	(5)
Industry Reg Q spread	−4.240**	−4.237**	−4.185**	−4.342**	−4.347**
	(1.683)	(1.684)	(1.689)	(1.678)	(1.680)
Lag ΔOutput	−0.049*	−0.082**	−0.046	−0.043	−0.072*
	(0.028)	(0.039)	(0.028)	(0.028)	(0.039)
Lag Energy int.		0.004*			0.005**
		(0.002)			(0.002)
Lag ΔTFP		0.130**			0.124**
		(0.060)			(0.060)
Lag Trailing $\sigma(\Delta\text{Prices})$			0.099**		0.021
			(0.042)		(0.044)
Lag Trailing $\sigma(\Delta\text{Output})$			−0.058		−0.051
			(0.051)		(0.051)
ΔWage				0.120**	0.120**
				(0.049)	(0.050)
ΔMaterials price				−0.254***	−0.257***
				(0.051)	(0.051)
Time FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Obs.	6,477	6,477	6,477	6,477	6,477
R^2	0.228	0.230	0.229	0.237	0.240

Panel D: Moving Controls and Lagged Dependent, Interacted with Reg-Q Spread

	ΔOutput				
	(1)	(2)	(3)	(4)	(5)
Industry Reg Q spread	−4.240**	−3.976**	−4.381***	−4.342**	−4.238***
	(1.683)	(1.672)	(1.641)	(1.678)	(1.615)
Lag ΔOutput	−0.049*	−0.081**	−0.044	−0.043	−0.067*
	(0.028)	(0.039)	(0.028)	(0.028)	(0.039)
Agg. Reg Q spread × Lag Energy int.		−0.080			−0.091*
		(0.049)			(0.047)
Agg. Reg Q spread × Lag ΔTFP		−0.934			−0.933
		(2.952)			(2.871)
Agg. Reg Q spread × Lag Trailing $\sigma(\Delta\text{Prices})$			2.719		5.574***
			(2.047)		(1.993)
Agg. Reg Q spread × Lag Trailing $\sigma(\Delta\text{Output})$			−5.215		−5.708*
			(3.195)		(3.111)
ΔWage				0.120**	0.124**
				(0.049)	(0.050)
ΔMaterials price				−0.254***	−0.269***
				(0.051)	(0.052)
Lag ΔTFP		0.146**			0.137**
		(0.066)			(0.065)
Lag Energy int.		0.007**			0.008***
		(0.003)			(0.003)
Lag Trailing $\sigma(\Delta\text{Prices})$			0.042		−0.103*
			(0.061)		(0.061)
Lag Trailing $\sigma(\Delta\text{Output})$			0.016		0.031
			(0.047)		(0.045)
Time FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Obs.	6,477	6,477	6,477	6,477	6,477
R^2	0.228	0.230	0.230	0.237	0.242

Table OA.17: Finance dependence and profits

Panel regressions of gross profits on finance dependence and the Reg Q spread:

$$\Delta\text{Gross profits}_{i,t} = \alpha_t + \gamma_i + \beta\text{Reg}Q\text{Spread}_t \times \text{FinDep}_i + X_{i,t} + \epsilon_{i,t}.$$

Gross profit growth is the percentage change of industry i's gross profit (sales minus production costs) in year t. Finance dependence is one minus industry i's gross profit (sales minus production costs) divided by production costs (materials and labor), averaged over 1958 to 1965 and winsorized at the 5% level. The Reg Q spread is the weighted average spread between market rates and the Reg Q ceiling rates on savings, small time, and large time deposits (using their shares as weights). Energy intensity is energy costs divided by shipments (each deflated by its deflator). TFP is total five-factor productivity in 1965. The standard deviations of price growth and real output growth are from 1958 to 1965. Wage growth is the percentage change of hourly production wages (production wages divided by hours worked). Materials price growth is the percentage change of industry i's cost of materials deflator. Standard errors are clustered by industry. The data are from the NBER-CES manufacturing database, which covers 459 manufacturing industries. The sample is the Reg Q period from 1965 to 1982.

	ΔGross profit				
	(1)	(2)	(3)	(4)	(5)
Reg Q spread × Fin. dep.	−0.325	−0.459	−0.980	−0.352	−0.983
	(0.778)	(0.781)	(0.782)	(0.761)	(0.765)
Reg Q spread × Energy int.		−0.047			−0.086
		(0.110)			(0.107)
Reg Q spread × TFP		1.541**			1.387**
		(0.619)			(0.627)
Reg Q spread × $\sigma(\Delta\text{Prices})$			26.888***		16.707*
			(9.736)		(9.006)
Reg Q spread × $\sigma(\Delta\text{Output})$			0.546		1.418
			(1.713)		(1.715)
ΔWage				0.028	0.027
				(0.038)	(0.038)
ΔMaterials price				0.205***	0.198***
				(0.045)	(0.045)
Time FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Obs.	8,262	8,262	8,262	8,262	8,262
R^2	0.118	0.119	0.120	0.125	0.127

Table OA.18: Industry Reg Q Spread, Prices and Output with Alternative Bank Weights

Panel regressions of prices or output on the industry Reg Q spread:

$$\Delta y_{i,t} = \alpha_t + \gamma_i + \beta \text{RegQSpread}_{i,t} + X_{i,t} + \epsilon_{i,t}.$$

Price growth is the percentage change of industry i's shipments deflator in year t. Output growth is the percentage change of industry i's output (shipments plus the change in inventories deflated by the shipments deflator) in year t. The industry Reg Q spread is the average Reg Q spread of banks in the counties where an industry operates (we weight banks by C&I loans within a county and counties by industry employment within an industry). We weight counties by industry employment within an industry. In Panel A, we weight banks by contemporaneous C&I loans within a county. In Panel B, we weight banks by C&I loans within a county in 1964q4. In Panel C, we weight banks by the 1965-1982 average of C&I loans within a county. A bank's Reg Q spread is the average spread on savings, small time and large time deposits using the bank's shares of each type as weights. The aggregate Reg Q spread weights across counties by total manufacturing employment. Energy intensity is energy costs divided by output. TFP is total five-factor productivity in 1965. The standard deviations of price growth and real output growth are from 1958 to 1965. Wage growth is the percentage change of hourly production wages (production wages divided by hours worked). Materials price growth is the percentage change of industry i's cost of materials deflator. Standard errors are clustered by industry. The data are from the NBER-CES manufacturing database, which covers 459 manufacturing industries. The sample is the Reg Q period from 1965 to 1982.

Panel A: Baseline bank weights: Contemporaneous CI loans

	ΔPrices				
	(1)	(2)	(3)	(4)	(5)
Industry Reg Q spread	1.575**	1.617**	1.600**	1.561**	1.621**
	(0.719)	(0.708)	(0.726)	(0.718)	(0.712)
Agg. Reg Q spread × Energy int.		−0.019			−0.015
		(0.029)			(0.028)
Agg. Reg Q spread × TFP		0.267			0.274
		(0.255)			(0.261)
Agg. Reg Q spread × σ(ΔPrices)			5.196		4.894
			(4.918)		(4.908)
Agg. Reg Q spread × σ(Output)			1.104*		1.147*
			(0.664)		(0.666)
ΔWage				0.023	0.023
				(0.018)	(0.018)
ΔMaterials price	0.853***	0.853***	0.851***	0.853***	0.851***
	(0.076)	(0.076)	(0.075)	(0.076)	(0.075)
Time FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Obs.	6,477	6,477	6,477	6,477	6,477
R^2	0.580	0.580	0.580	0.580	0.581

	ΔOutput				
	(1)	(2)	(3)	(4)	(5)
Industry Reg Q spread	−4.121**	−4.309***	−4.306***	−4.242**	−4.704***
	(1.652)	(1.556)	(1.621)	(1.652)	(1.528)
Agg. Reg Q spread × Energy int.		0.034			0.060
		(0.060)			(0.059)
Agg. Reg Q spread × TFP		1.264**			1.150*
		(0.617)			(0.607)
Agg. Reg Q spread × σ(ΔPrices)			2.018		4.939
			(6.476)		(6.251)
Agg. Reg Q spread × σ(Output)			−3.409*		−3.318*
			(1.910)		(1.897)
ΔWage				0.124**	0.126**
				(0.049)	(0.049)
ΔMaterials price				−0.258***	−0.264***
				(0.051)	(0.051)
Time FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Obs.	6,477	6,477	6,477	6,477	6,477
R^2	0.226	0.227	0.227	0.236	0.238

Panel B: Alternative bank weights: CI loans in 1964q4

	ΔPrices				
	(1)	(2)	(3)	(4)	(5)
Industry Reg Q spread	1.452**	1.525**	1.423**	1.436**	1.473**
	(0.709)	(0.700)	(0.710)	(0.708)	(0.695)
Agg. Reg Q spread × Energy int.		−0.020			−0.016
		(0.028)			(0.028)
Agg. Reg Q spread × TFP		0.271			0.279
		(0.248)			(0.252)
Agg. Reg Q spread × σ(ΔPrices)			4.642		4.329
			(4.769)		(4.759)
Agg. Reg Q spread × σ(Output)			1.034		1.076*
			(0.645)		(0.644)
ΔWage				0.023	0.023
				(0.018)	(0.018)
ΔMaterials price	0.853***	0.854***	0.851***	0.853***	0.852***
	(0.076)	(0.076)	(0.075)	(0.076)	(0.075)
Time FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Obs.	6,477	6,477	6,477	6,477	6,477
R^2	0.580	0.580	0.580	0.580	0.580

	ΔOutput				
	(1)	(2)	(3)	(4)	(5)
Industry Reg Q spread	−3.887***	−3.959***	−3.968***	−4.066***	−4.336***
	(1.456)	(1.373)	(1.429)	(1.459)	(1.352)
Agg. Reg Q spread × Energy int.		0.031			0.057
		(0.057)			(0.057)
Agg. Reg Q spread × TFP		1.176**			1.061*
		(0.595)			(0.585)
Agg. Reg Q spread × σ(ΔPrices)			2.558		5.369
			(6.263)		(6.041)
Agg. Reg Q spread × σ(Output)			−3.153*		−3.067*
			(1.847)		(1.834)
ΔWage				0.125**	0.126**
				(0.049)	(0.049)
ΔMaterials price				−0.259***	−0.264***
				(0.051)	(0.051)
Time FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Obs.	6,477	6,477	6,477	6,477	6,477
R^2	0.226	0.227	0.227	0.236	0.238

Panel C: Alternative bank weights: Average CI loans 1965-1982

	ΔPrices				
	(1)	(2)	(3)	(4)	(5)
Industry Reg Q spread	1.461**	1.507**	1.477**	1.446**	1.500**
	(0.721)	(0.710)	(0.728)	(0.720)	(0.714)
Agg. Reg Q spread × Energy int.		−0.018			−0.015
		(0.028)			(0.028)
Agg. Reg Q spread × TFP		0.265			0.272
		(0.251)			(0.256)
Agg. Reg Q spread × σ(ΔPrices)			4.923		4.623
			(4.854)		(4.844)
Agg. Reg Q spread × σ(Output)			1.089*		1.132*
			(0.659)		(0.660)
ΔWage				0.023	0.023
				(0.018)	(0.018)
ΔMaterials price	0.853***	0.853***	0.851***	0.853***	0.852***
	(0.076)	(0.076)	(0.075)	(0.076)	(0.075)
Time FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Obs.	6,477	6,477	6,477	6,477	6,477
R^2	0.580	0.580	0.580	0.580	0.580

	ΔOutput				
	(1)	(2)	(3)	(4)	(5)
Industry Reg Q spread	−3.924**	−4.083***	−4.106**	−4.090**	−4.532***
	(1.669)	(1.571)	(1.639)	(1.672)	(1.545)
Agg. Reg Q spread × Energy int.		0.030			0.056
		(0.059)			(0.058)
Agg. Reg Q spread × TFP		1.234**			1.120*
		(0.608)			(0.598)
Agg. Reg Q spread × σ(ΔPrices)			2.255		5.107
			(6.381)		(6.157)
Agg. Reg Q spread × σ(Output)			−3.336*		−3.254*
			(1.879)		(1.866)
ΔWage				0.125**	0.126**
				(0.049)	(0.049)
ΔMaterials price				−0.259***	−0.264***
				(0.051)	(0.051)
Time FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Obs.	6,477	6,477	6,477	6,477	6,477
R^2	0.226	0.227	0.227	0.236	0.238

Table OA.19: Finance Dependence, Prices and Output with Demand-Side Controls

Panel regressions of prices or output on finance dependence and the Reg *Q* spread, as in Table 3 and 4 in the paper, but with the interaction between Reg *Q* spread and industry-level output growth in 1959-1960 as an additional control variable. Panel A presents results for price growth and Panel B presents results for real output growth.

Panel A: Δ Prices

	ΔPrices				
	(1)	(2)	(3)	(4)	(5)
Reg Q spread × Fin. dep.	1.850***	2.003***	1.475***	1.855***	1.646***
	(0.367)	(0.375)	(0.347)	(0.366)	(0.359)
Reg Q spread × Energy int.		0.106**			0.100**
		(0.048)			(0.045)
Reg Q spread × TFP		0.600*			0.500
		(0.324)			(0.335)
Reg Q spread × σ(ΔPrices)			15.891**		14.439**
			(6.607)		(6.552)
Reg Q spread × σ(ΔOutput)			0.045		0.386
			(0.812)		(0.804)
ΔWage				0.019	0.018
				(0.015)	(0.015)
ΔMaterials price	0.855***	0.852***	0.848***	0.855***	0.846***
	(0.069)	(0.069)	(0.067)	(0.069)	(0.067)
Reg Q spread × Output Gr. 5860		0.002	0.000		0.002
		(0.006)	(0.006)		(0.006)
Time FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Obs.	8,262	8,262	8,262	8,262	8,262
R^2	0.587	0.588	0.588	0.587	0.589

Panel B: Δ Output

	ΔOutput				
	(1)	(2)	(3)	(4)	(5)
Reg Q spread × Fin. dep.	−3.760***	−3.799***	−3.799***	−3.670***	−3.772***
	(0.817)	(0.828)	(0.865)	(0.838)	(0.884)
Reg Q spread × Energy int.		0.063			0.106
		(0.094)			(0.093)
Reg Q spread × TFP		1.416			1.429*
		(0.883)			(0.845)
Reg Q spread × σ(ΔPrices)			0.334		8.657
			(10.324)		(10.015)
Reg Q spread × σ(ΔOutput)			−1.781		−1.885
			(3.199)		(3.118)
ΔWage				0.145***	0.147***
				(0.043)	(0.043)
ΔMaterials price				−0.290***	−0.298***
				(0.048)	(0.047)
Reg Q spread × Output Gr. 5860		−0.016	−0.018		−0.014
		(0.017)	(0.018)		(0.017)
Time FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Obs.	8,262	8,262	8,262	8,262	8,262
R^2	0.249	0.249	0.249	0.260	0.261

Table OA.20: Industry Reg Q Spread and Prices or Output with Shift-Share Quantile Clustering

Panel regressions of prices or output on the industry Reg Q spread:

$$\Delta y_{i,t} = \alpha_t + \gamma_i + \beta \text{RegQSpread}_{i,t} + X_{i,t} + \epsilon_{i,t}.$$

Price growth is the percentage change of industry i's shipments deflator in year t. Output growth is the percentage change of industry i's output (shipments plus the change in inventories deflated by the shipments deflator) in year t. The industry Reg Q spread is the average Reg Q spread of banks in the counties where an industry operates (we weight banks by C&I loans within a county and counties by industry employment within an industry). A bank's Reg Q spread is the average spread on savings, small time and large time deposits using the bank's shares of each type as weights. The aggregate Reg Q spread weights across counties by total manufacturing employment. Energy intensity is energy costs divided by output. TFP is total five-factor productivity in 1965. The standard deviations of price growth and real output growth are from 1958 to 1965. Wage growth is the percentage change of hourly production wages (production wages divided by hours worked). Materials price growth is the percentage change of industry i's cost of materials deflator. Standard errors are clustered by industry. Standard errors are clustered by quantiles of industries based on the 1965-1982 average of the industry Reg Q spread. Specifically, there are 46 quantiles with ten industries in each quantile. The data are from the NBER-CES manufacturing database, which covers 459 manufacturing industries. The sample is the Reg Q period from 1965 to 1982.

Panel A: Prices

	ΔPrices				
	(1)	(2)	(3)	(4)	(5)
Industry Reg Q spread	1.558**	1.601**	1.583**	1.544**	1.604**
	(0.750)	(0.736)	(0.761)	(0.750)	(0.748)
Agg. Reg Q spread × Energy int.		−0.019			−0.015
		(0.027)			(0.027)
Agg. Reg Q spread × TFP		0.267			0.274
		(0.237)			(0.242)
Agg. Reg Q spread × σ(ΔPrices)			5.191		4.889
			(4.991)		(5.053)
Agg. Reg Q spread × σ(Output)			1.104*		1.147*
			(0.601)		(0.589)
ΔWage				0.023	0.023
				(0.017)	(0.017)
ΔMaterials price	0.853***	0.853***	0.851***	0.853***	0.851***
	(0.090)	(0.090)	(0.088)	(0.090)	(0.089)
Time FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Obs.	6,477	6,477	6,477	6,477	6,477
R^2	0.580	0.580	0.580	0.580	0.581

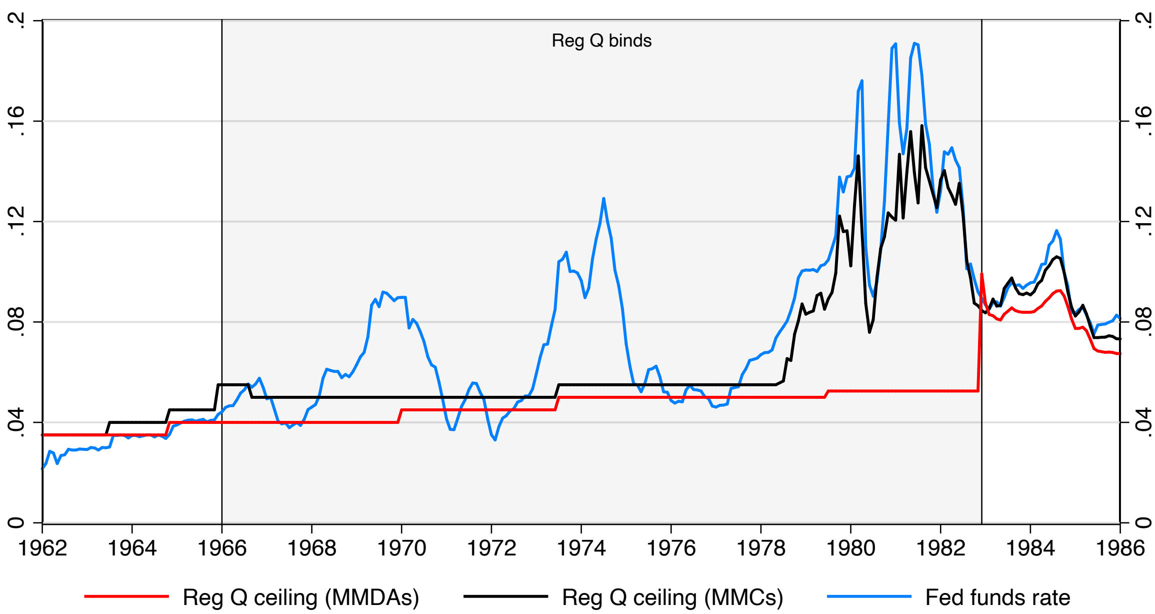
Panel B: Output

	ΔOutput				
	(1)	(2)	(3)	(4)	(5)
Industry Reg Q spread	−4.120***	−4.307***	−4.306***	−4.240***	−4.702***
	(1.275)	(1.284)	(1.259)	(1.298)	(1.287)
Agg. Reg Q spread × Energy int.		0.034			0.060
		(0.072)			(0.069)
Agg. Reg Q spread × TFP		1.264**			1.149*
		(0.625)			(0.620)
Agg. Reg Q spread × σ(ΔPrices)			2.026		4.947
			(6.551)		(6.280)
Agg. Reg Q spread × σ(Output)			−3.414*		−3.323*
			(1.976)		(1.950)
ΔWage				0.124**	0.126**
				(0.053)	(0.053)
ΔMaterials price				−0.258***	−0.264***
				(0.044)	(0.045)
Time FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Obs.	6,477	6,477	6,477	6,477	6,477
R^2	0.226	0.227	0.227	0.236	0.238

Figure OA.1: Reg Q ceiling rates and the Reg Q spread

The figure plots the Reg Q ceiling rates on savings and small time deposits (Panel A) and the Reg Q spread (Panel B). The ceiling rate on savings deposits is replaced by the rate on Money Market Deposit Accounts (MMDAs) in December 1982. The ceiling rate on small time deposits is replaced by the rate on six-month Money Market Certificates (MMCs) in July 1978. The Reg Q spread is an average of the spreads on savings, small time, and large time deposits, using their shares as weights. The spread on savings deposits is the Fed funds rate minus their ceiling rate until the introduction of MMDAs and zero after. The spread on small time deposits is the six-month TBill rate minus their ceiling rate until the introduction of MMCs and zero after. The spread on large time deposits is zero. Gray shading covers the period when Reg Q binds. The data are monthly from 1962 to 1986.

Panel A:



Panel B:

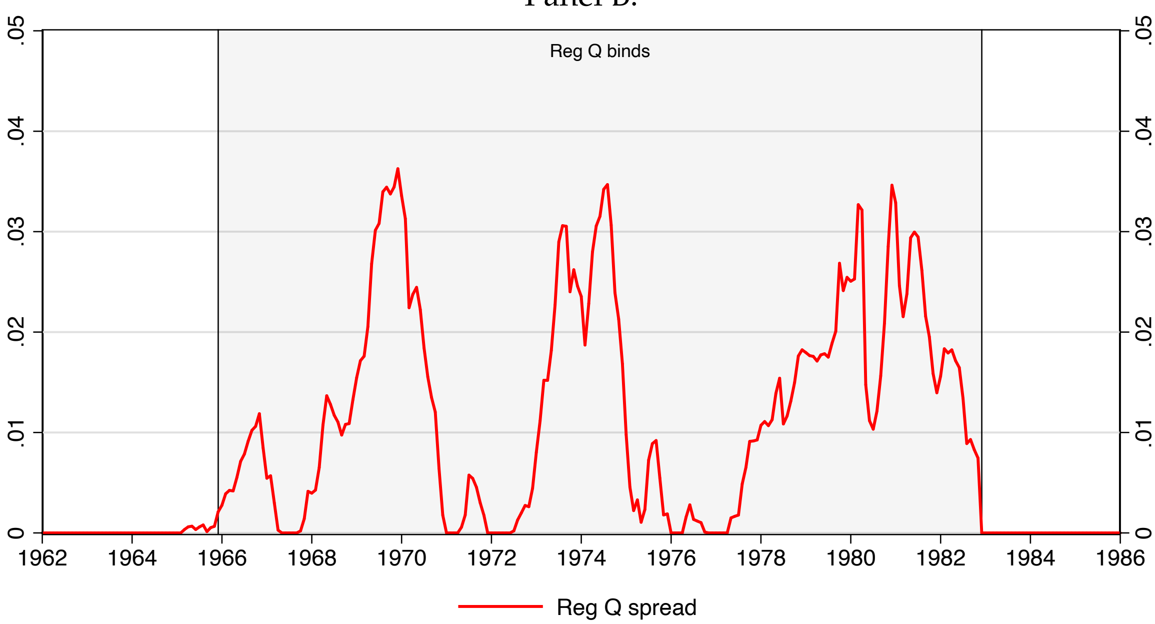
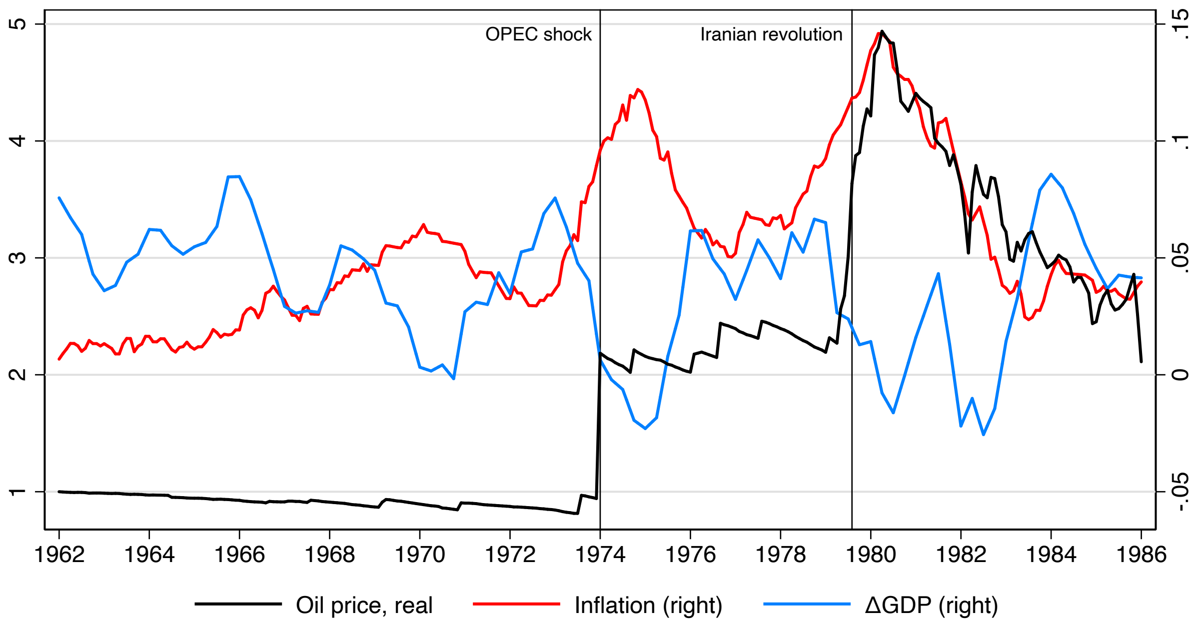


Figure OA.2: Oil

The figure plots the real price of oil, inflation, and GDP growth in annual (Panel A) and quarterly (Panel B) data. The real price of oil is the price of a barrel of West Texas Intermediate crude oil divided by CPI. Inflation is the percentage change in CPI and GDP growth is the percentage change of real GDP. The lines "OPEC shock" and "Iranian revolution" mark the oil price jumps of January 1974 and August 1979, respectively. The data are monthly from 1962 to 1986.

Panel A: Annual



Panel B: Quarterly

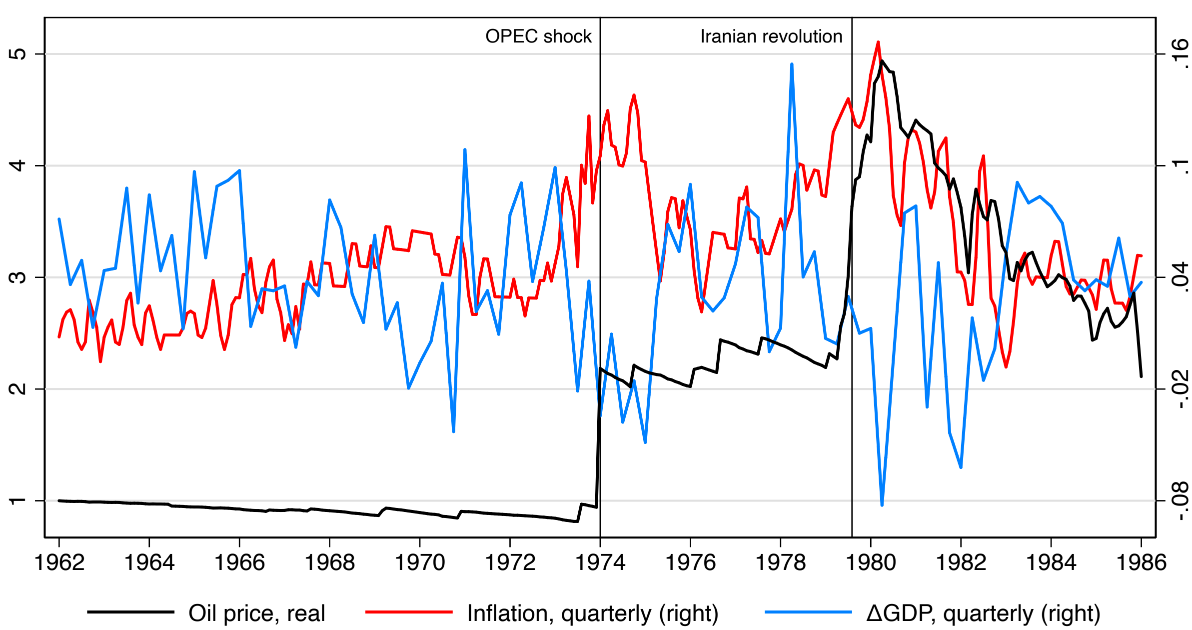


Figure OA.3: Credit Crunches and the Great Stagflation (Employment)

The figure plots real deposit growth (savings, and small time deposits), inflation, and employment growth. Inflation and employment growth are the year-over-year percentage changes in, respectively, the Consumer Price Index (CPI) and non-farm employment. Gray shading covers the period when Reg *Q* is binding. The data are monthly from 1962 to 1986.

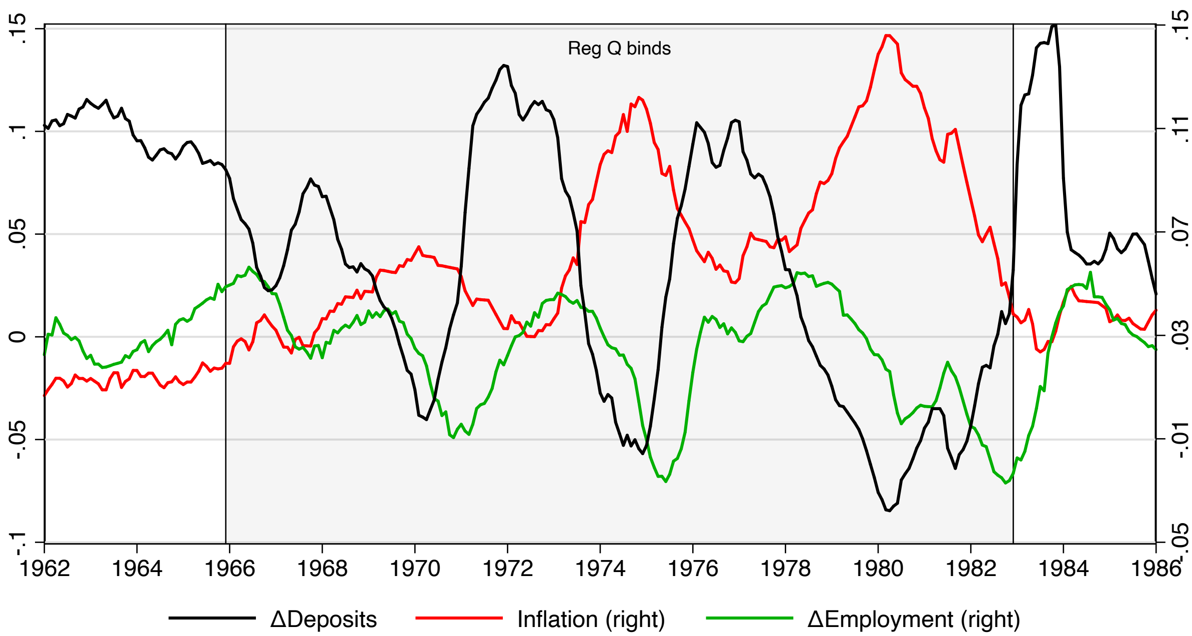


Figure OA.4: Number of Firms with a Credit Rating

The figure plots the total number of firms with a credit rating from S&P each year ("Total rated"), and the number of firms that are rated for the first time in that year ("First rated"). The data are from the Capital IQ S&P Credit Ratings dataset. Vertical lines mark the period when Reg *Q* binds. The sample is 1960 to 1984.

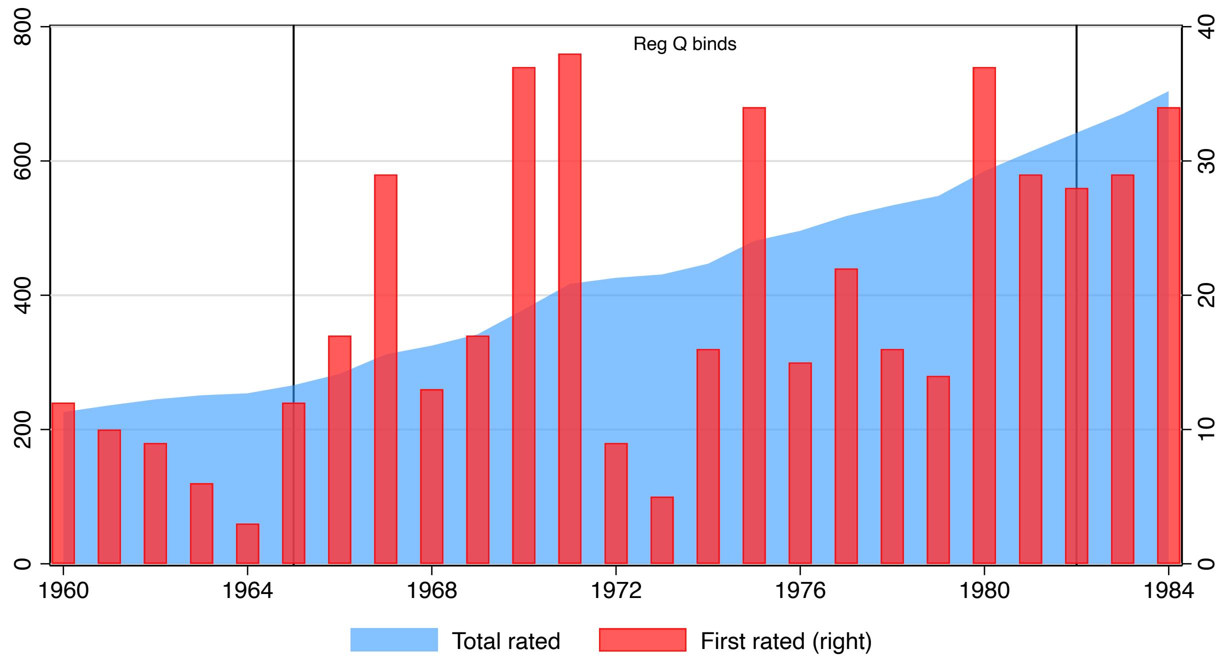
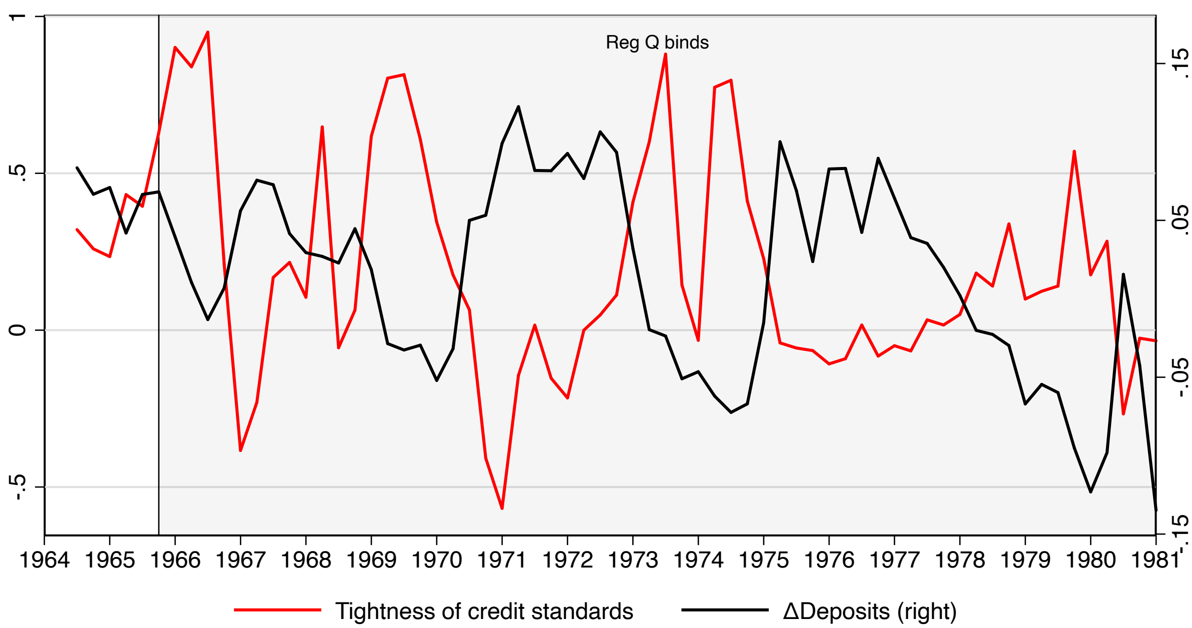


Figure OA.5: C&I Loan Supply

The figure plots deposit growth against the tightness of credit standards (Panel A) and estimated loan supply (Panel B) for commercial and industrial (C&I) loans. The data are from the Federal Reserve's Changes in Bank Lending Practices Survey. Tightness of credit standards is based on "Practice concerning review of credit lines or loan applications: New customers." We convert it to a net percentage as in the modern Senior Loan Officer Opinion Survey. Estimated loan supply subtracts the net percentage tightening credit standards from the net percentage reporting higher "Strength of demand for commercial and industrial loans: Anticipated in next 3 months." Gray shading covers the period when Reg Q is binding. The data are quarterly from 1964 to 1981.

Panel A:



Panel B:

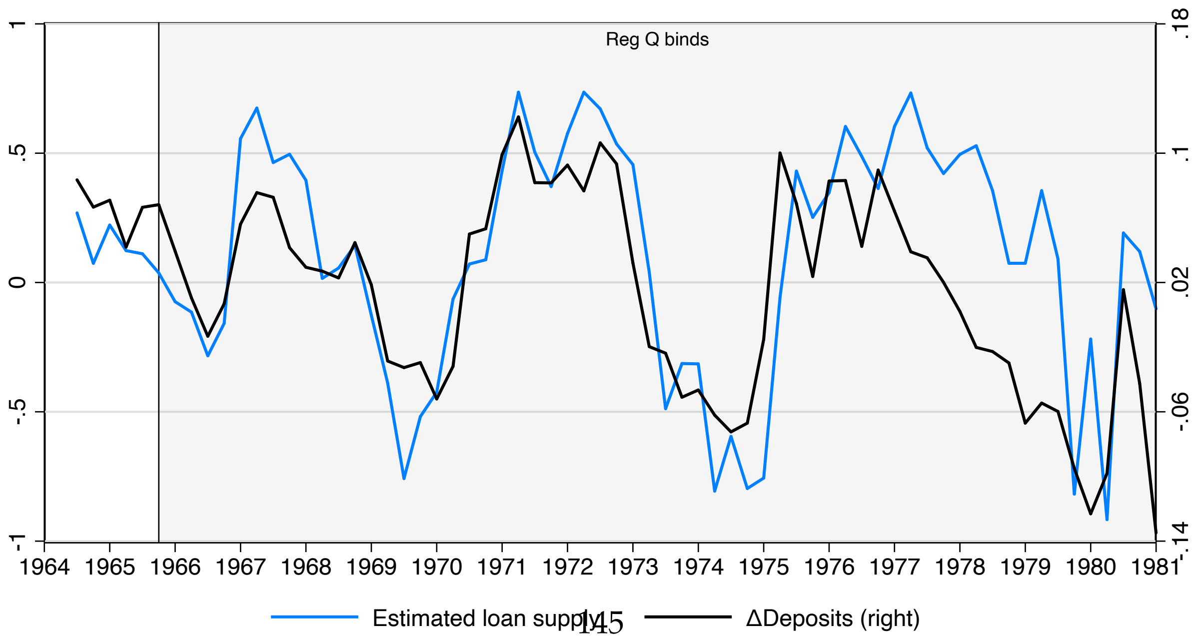


Figure OA.6: Impulse response from shock to credit standards

The figure plots impulse responses to an orthogonalized shock to credit standards based on an estimation of a vector autoregression model (VAR) based on Gilchrist and Zakrajsek (2012) but replacing the excess bond premium with credit standard tightening from SLOOS, as described in Table OA.2. The responses of consumption, investment, output, and price growth and that of the excess market return have been accumulated. The vertical axis is in percentage point. Shaded bands are 95-percent confidence intervals based on 2,000 bootstrap replications. Binding Reg-Q period is 1965Q1-1982Q4 and post Reg-Q period is 1990Q2-2018Q4.

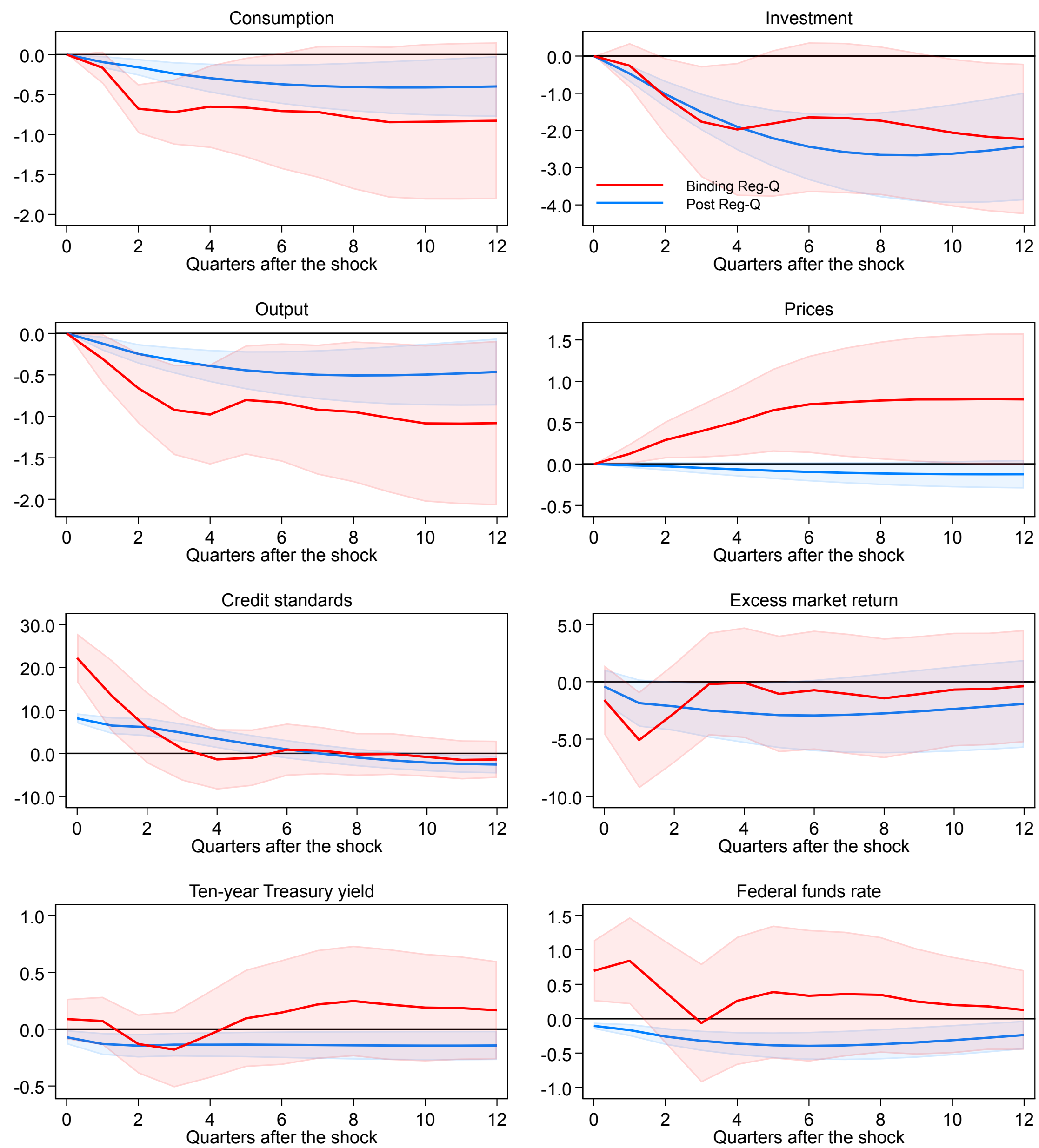


Figure OA.7: Impulse response from shock to Federal funds rate

The figure plots impulse responses to an orthogonalized shock to effective Federal funds rate based on an estimation of a vector autoregression model (VAR) based on Gilchrist and Zakrajsek (2012) but replacing the excess bond premium with credit standard tightening from SLOOS, as described in Table OA.3. The responses of consumption, investment, output, and price growth and that of the excess market return have been accumulated. The vertical axis is in percentage point. Shaded bands are 95-percent confidence intervals based on 2,000 bootstrap replications. Binding Reg-Q period is 1965Q1-1982Q4 and post Reg-Q period is 1990Q2-2018Q4.

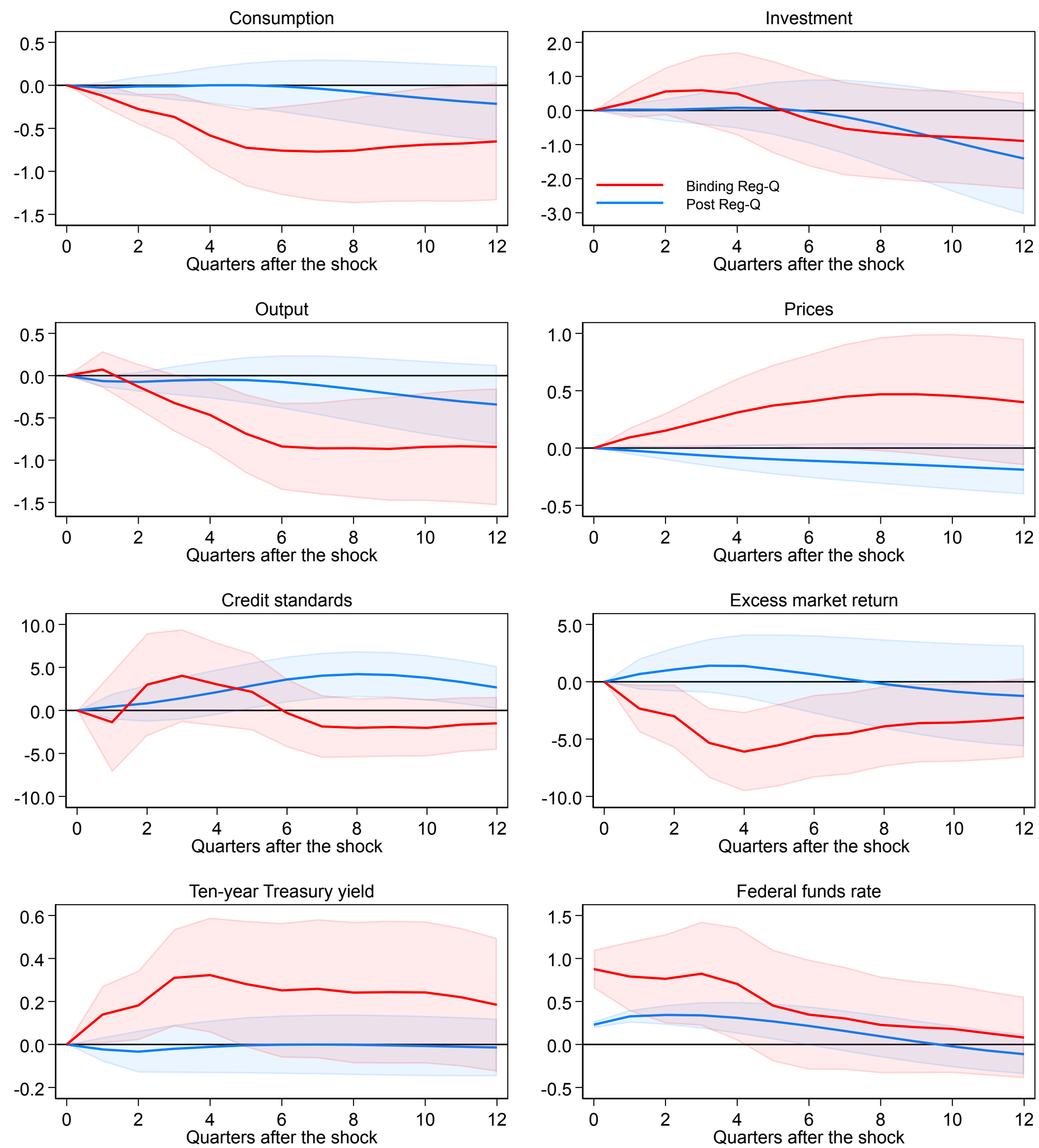


Figure OA.8: Working capital intensity and finance dependence

The figure provides a bin scatter plot of working capital intensity against finance dependence. Working capital intensity is industry i's inventory divided by production costs (materials and labor), averaged over 1958 to 1965 and winsorized at the 5% level. Finance dependence is one minus industry i's gross profit (sales minus production costs) divided by production costs (materials and labor), averaged over 1958 to 1965 and winsorized at the 5% level. The data are from the NBER manufacturing database, which covers 459 manufacturing industries. The sample is the Reg Q period from 1965 to 1982.