

# Commentary: Credit Channel or Credit Actions? An Interpretation of the Postwar Transmission Mechanism

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*Mark Gertler*

Once again, Christina Romer and David Romer have done the profession a great service by poring through the historical record and the institutions in order to understand how Federal Reserve policy affects the economy. I **am** a great admirer of the **Romers'** work. And let me make clear that my frequent references to the "Romer Dummies" apply to the authors' indicator variable for monetary policy, and not to the authors themselves.

The main point of this paper is that in interpreting evidence for a credit channel of monetary policy, it is important to make the distinction between credit actions and open market operations. I completely agree. But I **am** going to argue that this caveat applies to all empirical work that studies how monetary policy affects the economy—not just work on the credit channel. Further, the evidence shows that credit conditions continue to influence the way open market operations ultimately affect the economy, though the precise way they matter surely has evolved over time.

Before digging into details, I would like to clarify what is meant by a credit channel to monetary policy. I have some semantic differences with the authors, and it is important to straighten them out. I interpret a credit channel as a conduit through which monetary policy affects the spread between the cost of external and internal funds for certain classes of borrowers. That is, a credit channel alters how smoothly

funds flow between lenders and borrowers.

The authors present one version that fits my definition. But I think there are at least two. I illustrate this point in Table 1. The version the authors present emphasizes what I call the reserve requirement mechanism. I call the other the balance sheet mechanism.

**Table 1**  
**Two Versions of the Credit Channel**

Bank		Money Market Fund	
A	L	A	L
Loans	Deposits (D)	Commercial Paper (CP)	MMDS
Securities Reserves (R)	CDs		

**1. Reserve Requirement Mechanism:** R down  $\Rightarrow$  i up and D down  $\Rightarrow$   $(i^P - i)$  up due to constraints on CD issues  $\Rightarrow$  Mix declines as some bank borrowers substitute to commercial paper

**2. Balance Sheet Mechanism:** R down  $\Rightarrow$  i up  $\Rightarrow$  spending down  $\Rightarrow$  i up and spending down weaken borrowers' balance sheets  $\Rightarrow$   $(i^P - i)$  up since the drain in liquidity and collateral raises the cost of external finance for borrowers with imperfect access to credit markets (for example, small and medium-sized companies and households.)  $\Rightarrow$  Mix declines, reflecting a "flight to quality credit."

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Note:  $i$  = riskless rate;  $i^P$  = prime lending rate; mix = bank loans / (bank loans + commercial paper)

As the authors correctly argue, the reserve requirement mechanism rests on the premise that banks cannot completely decouple lending from deposits. That is, for one reason or another, banks do not have perfect access to the certificate-of-deposit (CD) market. A decline in reserves, therefore, may directly constrain bank lending by forcing a

reduction in deposits subject to legal reserve requirements. This constriction in the pool of banks' funds forces up the spread between the bank lending and the riskless rates. Another manifestation is that the bank loan/commercial paper mix may decline, as some bank borrowers substitute to the commercial paper market.

The authors argue that this mechanism is only relevant to the extent that it is accompanied by regulatory constraints on banks' ability to issue managed liabilities—what they term credit actions. I largely agree. In the contemporary financial climate, it's hard to see how banks have restricted access to managed liabilities. One important qualification I would add, though, is that in times of financial distress, this access may dry up.<sup>1</sup>

The way I prefer to motivate the credit channel is with the balance sheet mechanism, exactly for the kinds of issues the authors raise. The balance sheet mechanism plays off the idea that for borrowers with imperfect access to capital markets, collateral—broadly defined—is an important determinant of the terms of credit.

Suppose that monetary policy raises short-term interest rates and that this produces an initial decline in demand. Both the rise in interest rates and the decline in demand weaken borrowers' balance sheets. Both asset values and cash flow after interest payments decline. For small and medium-size companies and households—that is, for those borrowers for whom collateral is most likely a key factor in access to credit—the terms of external finance tighten. One manifestation is a rise in the spread between the bank loan rate and the risk-free rate.<sup>2</sup> The short-term financing mix also shifts in favor of commercial paper. But here the decline in the mix reflects a change in the quality mix of borrowers—that is, it reflects a relative flight of credit from smaller borrowers to large high-grade borrowers who normally operate in the commercial paper market.

The balance sheet mechanism captures phenomena very similar to the reserve requirement mechanism. It similarly predicts an enhanced impact of monetary policy on borrowers with imperfect access to credit markets. Further, in either scenario, the spread between the bank loan and risk-free rates and the quality composition of credit are

important financial indicators. A key distinction, though, is that the balance sheet mechanism does not in any direct way rely on regulatory constraints. It should therefore be operative even when credit actions are absent. With these distinctions in mind let me **turn** to the empirical work.

The authors ask whether, after controlling for credit actions, monetary policy has any predictive power for the two measures of credit conditions: the bank loan/commercial paper mix and the spread between the prime rate and the commercial paper rate. Or do credit actions instead absorb all the forecasting power? The authors make a sensible case that credit actions have explanatory power for the financial indicators. But the evidence indicates that the explanatory power of monetary policy remains significant. In probabilistic terms, it is not appreciably altered by the addition of the credit action dummy.

To make this point plainly, I compute the dynamic response of each financial indicator to a shift in monetary policy two different ways: first, using a regression that does not control for credit actions; and, second, using a regression that does. Chart 1 presents results from using the Romer dates to measure the stance of monetary policy, and Chart 2 presents results from using the funds rate. In all four cases (two financial indicators times two monetary indicators), a shift in monetary policy has a significant impact on the financial indicator, even after controlling for credit actions. The addition of the credit dummy reduces the point estimates somewhat. Given the width of the standard error bands in the respective cases, though, it seems unlikely that one could formally reject the hypothesis that controlling for credit actions made no difference to the impact of monetary policy.

So monetary policy still matters. Not just credit actions. Thus, this evidence alone does not prove the absence of a credit channel of monetary policy.

To put another perspective on the issue, I redid the experiment using real GNP growth as the dependent variable rather than a financial indicator. That is, I asked how the inclusion of the credit action dummy affected the response of real GNP to tight money. And I also asked how a credit action influenced the dynamics of GNP. Chart 3

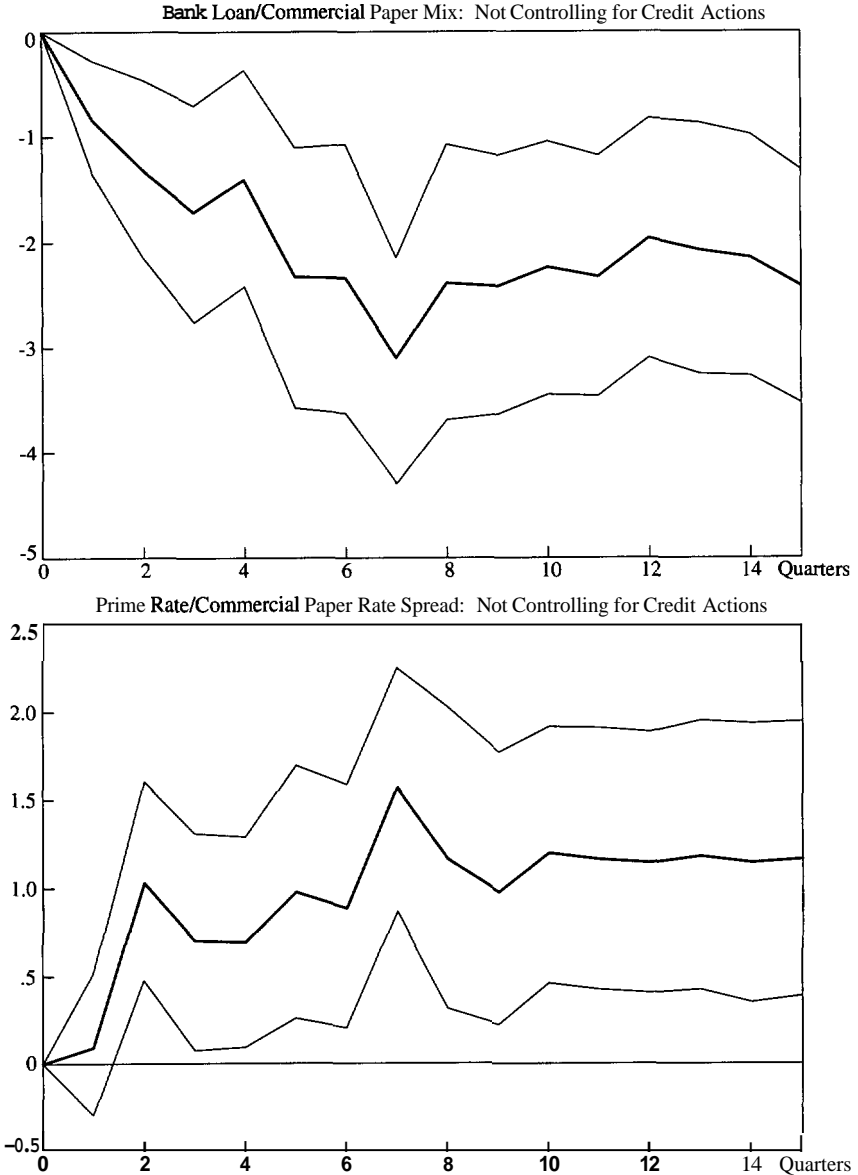
presents results for the case where the Romer dates reflect the stance of monetary policy. Interestingly, the inclusion of the credit action variable reduces the importance of monetary policy for output by about the same magnitude as it does for the financial indicators.<sup>3</sup> Further, the response of GNP to monetary policy is no longer statistically significant (though it is close). A credit action, however, does have a significant impact on GNP, after controlling for monetary policy. The impact, further, appears to have a greater impact on GNP than an episode of tight money. Thus, while a credit action appears to have a relatively large impact on the financial indicators, it similarly appears to have a relatively large impact on GNP growth.<sup>4</sup>

I am somewhat torn as to how to interpret these results. On the one hand, I am not prepared to argue that credit actions have a stronger impact on GNP growth than does monetary policy. The results could instead reflect the difficulty of distinguishing credit actions from episodes of tight money. By no accident, credit actions overlap closely periods of tight money. Around each credit action date, the funds rate rises sharply. Further, the three credit actions in the period from 1969 to 1980 line up very closely to the Romer tight money dates. It is conceivable that, in some instances, credit actions are more a symptom of tight money episodes than a true causal force. My hunch is that credit actions do matter, but that the methodology may overstate their relative importance. This could be true not only for the GNP results, of course, but also for the financial indicator results.

On the other hand, the results make plain a possibly important critique of the vast recent empirical literature on the effects of monetary policy. By ignoring credit actions, these studies likely overstate the importance of monetary policy on real activity. I think the 1980 credit controls provide the best example. The empirical studies I refer to assign the full weight of the 1980 recession to monetary policy. But it is clear that the credit controls were important. Another example might be the Basle Accord. Though it is not in the authors' list of credit actions, it fits the definition. It was a regulatory action, beginning sometime in 1988, that tightened constraint on bank lending. A researcher who completely ignores the Basle Accord might overstate the effect of the tightening of monetary policy in 1988 on the subsequent slowdown of GNP growth.

### Chart 1

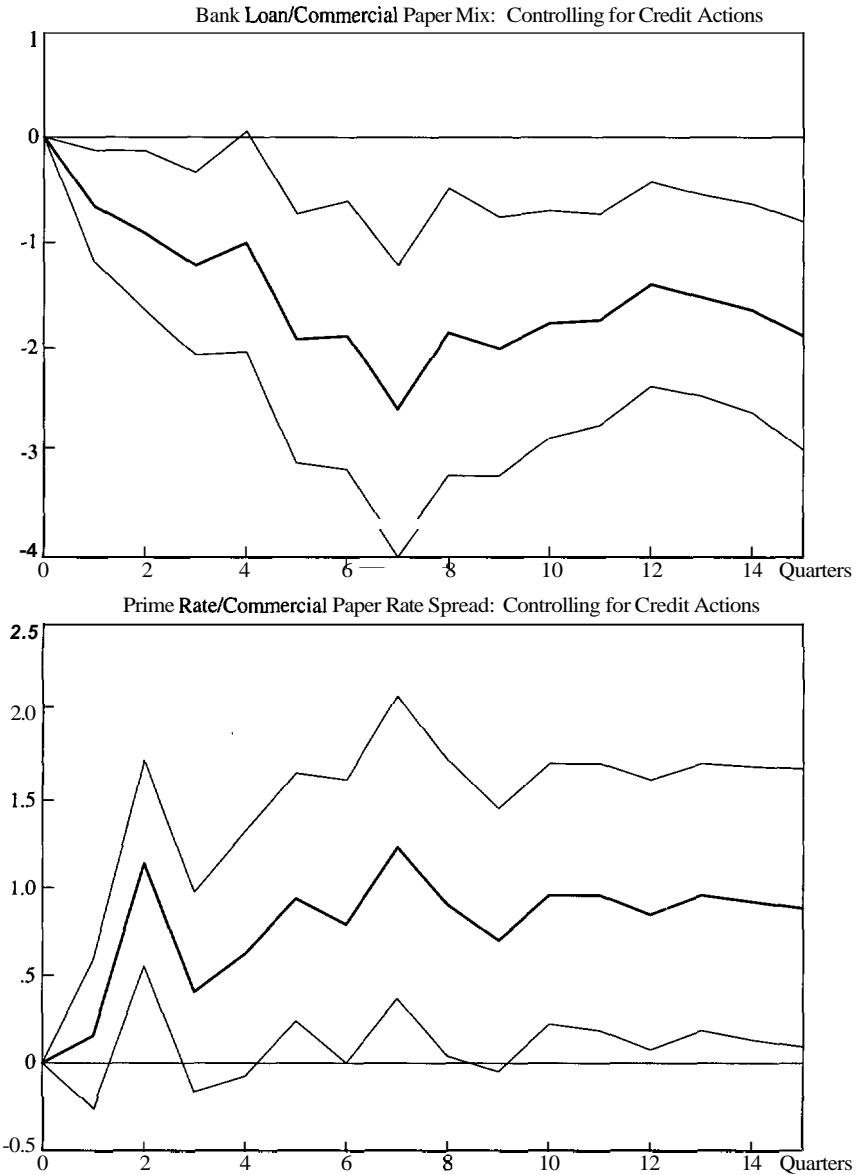
## Impact of the Tight Money Indicator on Credit Market Variables: The Influence of the Credit Action Variable



Notes. Each box plots the cumulative percentage change in a credit market variable (the bank loan/commercial paper mix or the prime rate/commercial paper rate spread) after a policy shock in quarter 0. The bands represent 95 percent confidence intervals. The responses of the credit market variables are calculated from two types of regressions. (i) Regressions not controlling for credit actions: change in the variable on 8 own lags and 3 lags of the Romer indicator for tight money (ii) Regressions that control for credit actions: 8 lags of the credit action dummy are added to (i) The sample is 1962:Q1 - 1992:Q1.

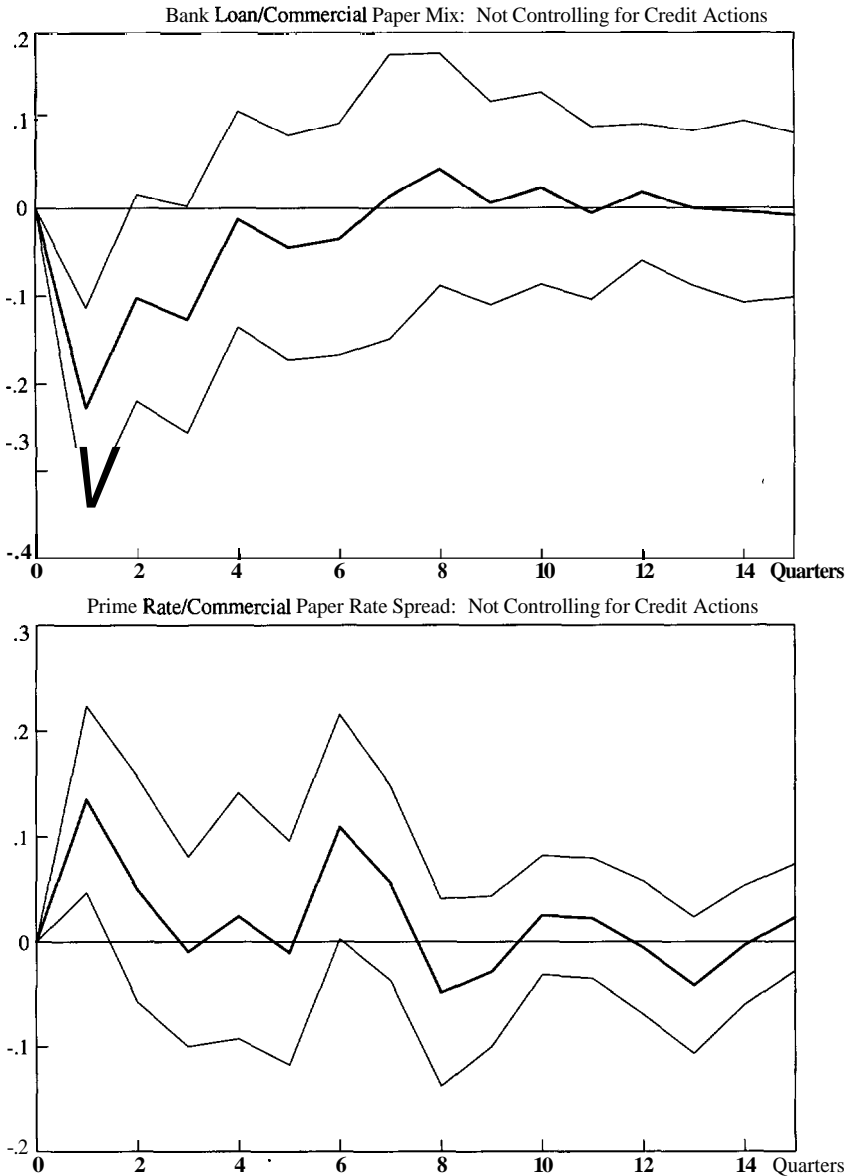
### Chart 1 (cont.)

## Impact of the Tight Money Indicator on Credit Market Variables: The Influence of the Credit Action Variable



## Chart 2

### Impact of a Rise in the Federal Funds Rate on Credit Market Variables: The Influence of the Credit Action Variable

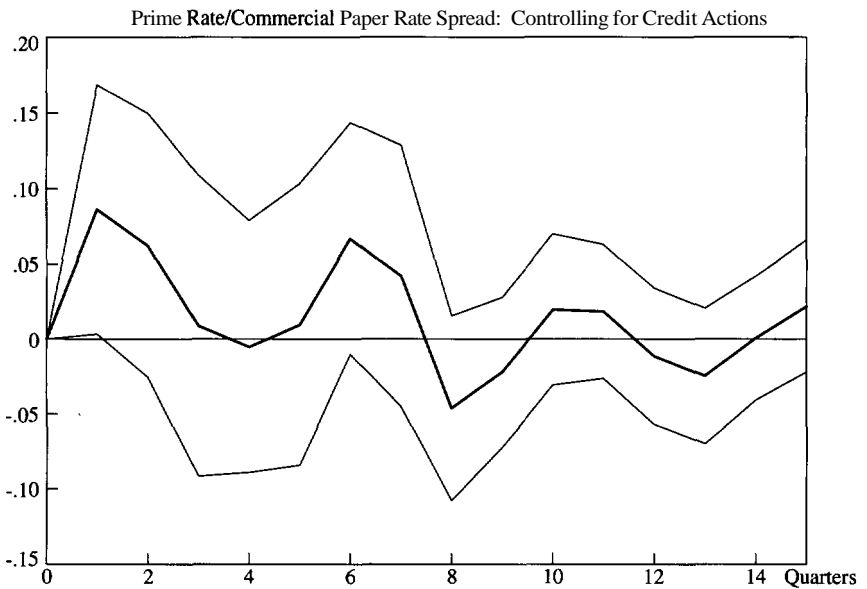
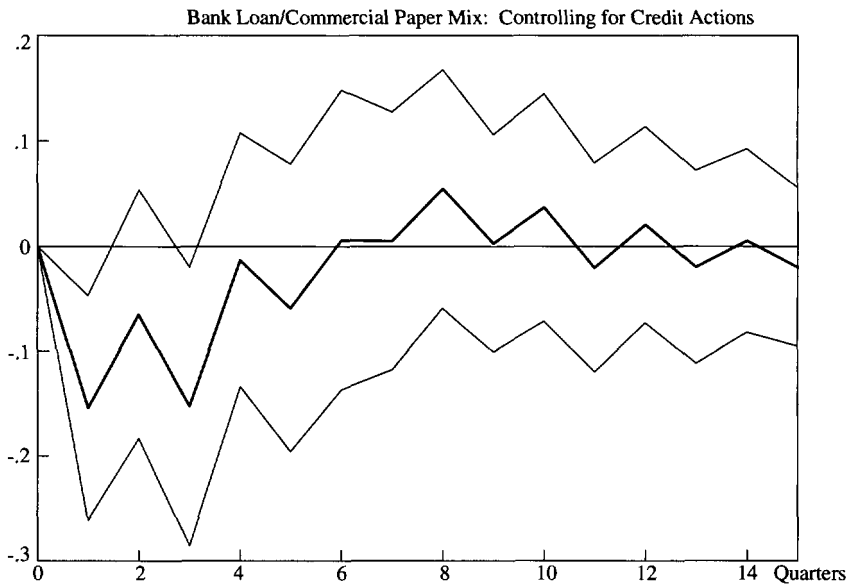


Notes: Each box plots the cumulative percentage change in a credit market variable (the **bank loan/commercial paper mix** or the **prime rate/commercial paper rate spread**) after a rise in the Federal Funds rate in quarter 0. The bands represent 95 percent confidence intervals. The responses of the **credit market variables** are calculated from two types of regressions. (i) Regressions not controlling for credit actions: change in the variable on 8 own lags and 8 lags of the Federal funds rate (ii) Regressions that control for credit actions. 8 lags of the credit action dummy are added to (i). The sample is 1962:Q1 - 1992:Q1.



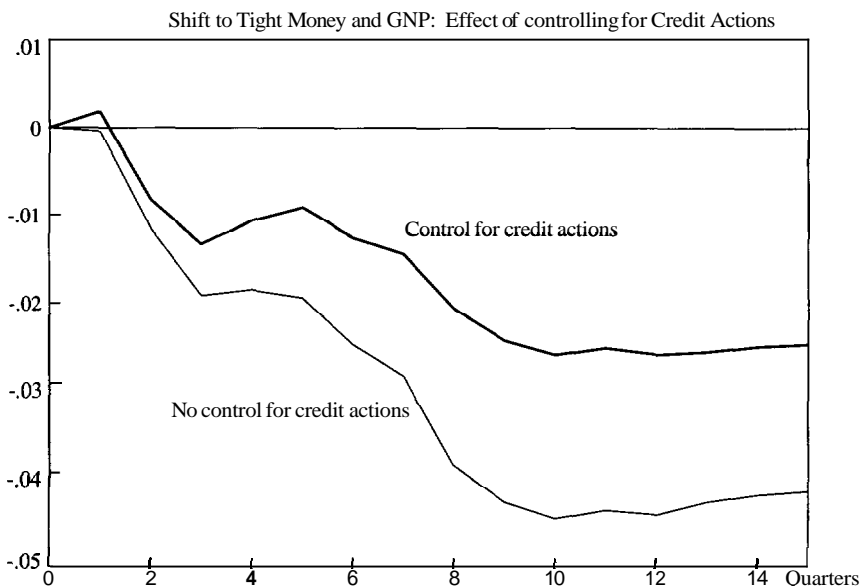
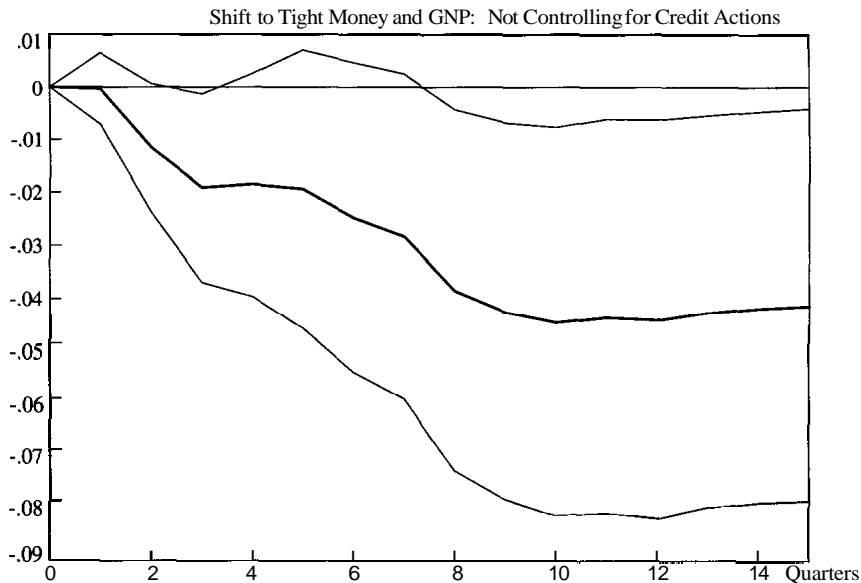
### Chart 2 (cont.)

## Impact of a Rise in the Federal Funds Rate on Credit Market Variables: The Influence of the Credit Action Variable



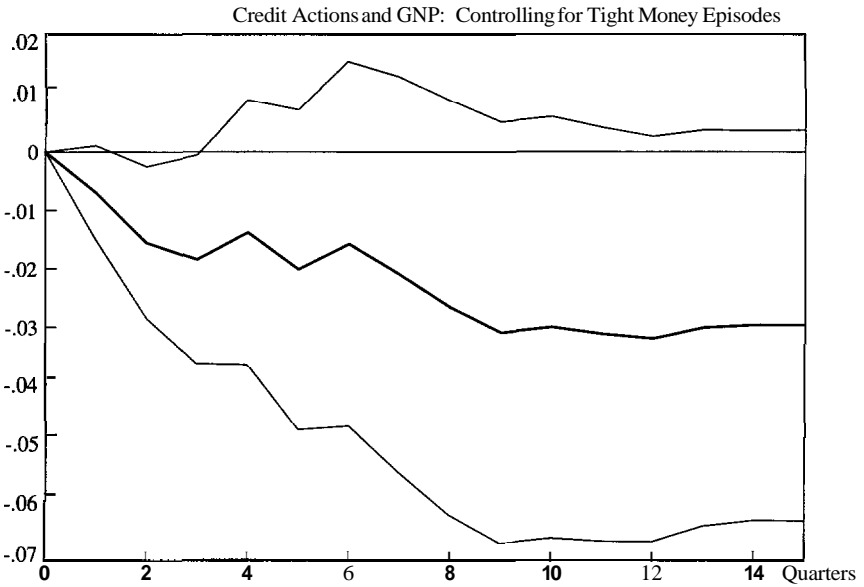
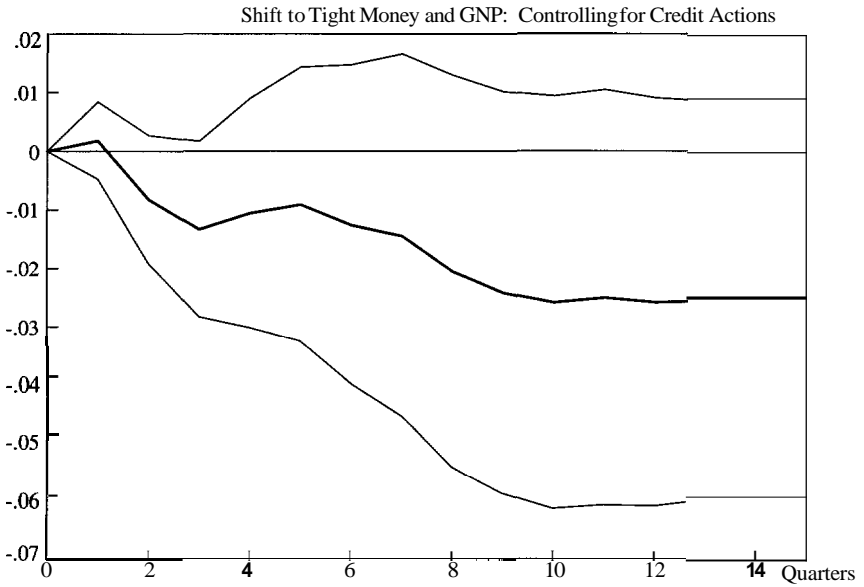
### Chart 3

## The Response of GNP to the Tight Money Indicator and Credit Actions



Notes: Each box plots the cumulative percentage change in GNP after a policy shock in quarter 0. The bands represent 95 percent confidence intervals. The responses of GNP are calculated from two types or regressions. (i) Regressions not controlling for credit actions: GNP growth on 8 lags of GNP growth and 8 lags of the Romer indicator for tight money. (ii) Regressions that control for credit actions: 3 lags of the credit action dummy are added to (i). The sample is 1962:Q1 - 1992:Q1.

### Chart 3 (cont.) The Response of GNP to the Tight Money Indicator and Credit Actions



Let's now turn to the issue of how the credit channel of monetary policy may operate: that is, the issue of distinguishing the reserve requirement mechanism from the balance sheet mechanism. Here I want to present some evidence that suggests the balance sheet mechanism may be at work. The balance sheet mechanism predicts that, after tight money, credit flows to small firms should contract relative to credit flows to large firms, given that smaller firms more likely have imperfect access to credit markets. To explore this possibility, I construct another financial indicator: the ratio of short-term credit to small firms to short-term credit to large firms. For small firms, short-term credit consists mainly of bank loans. In particular, these firms do not have access to the commercial paper market. For large firms, short-term credit is divided about equally between commercial paper and bank loans. The data are from the manufacturing sector only. In the top left panel of Chart 4, I plot the average cumulative response of the logarithm of the ratio of small firm to large firm credit following each Romer episode of tight money. The pictures indicate clearly that after tight money, credit flows to small firms contract relative to credit flows to large firms. For comparison, I plot the corresponding response of the bank loan/commercial paper mix in the bottom left panel of Chart 4. Clearly, the small firm/large firm mix and the bank loan commercial paper mix behave quite similarly. This makes sense from the standpoint of the balance sheet mechanism. Credit flows to firms which don't use the commercial paper market—small firms—are contracting relative to credit flows to firms that do use the paper market—large firms. I pursue this issue further by examining the last two episodes of monetary tightening. The authors argue that in these last two episodes the Federal Reserve did not conduct complementary credit actions. Under their maintained hypothesis, the reserve requirement mechanism should have been impotent (since regulatory constraints on CD issues were not present). Based on the authors' discussion, I date the first of these episodes at 1980:Q4. This was the quarter the funds rate began to rise after the trough that followed the first Volcker tightening. The second is 1988:Q4, the last Romer episode. The top right panel of Figure 4 plots the cumulative response of the small firm/large firm mix to each of these episodes. The bottom right panel plots the response of the bank loan/commercial paper mix.

Perhaps the first point to note is that the absence of credit actions in the latter two periods did not appreciably alter the impact of tight money on the bank loan/commercial paper mix. If anything, the response was stronger than in the past.<sup>5</sup>

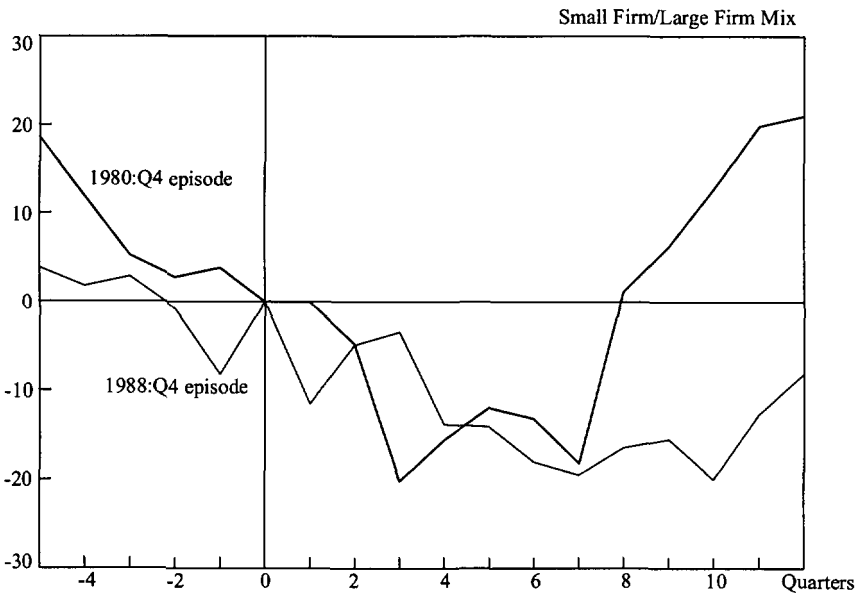
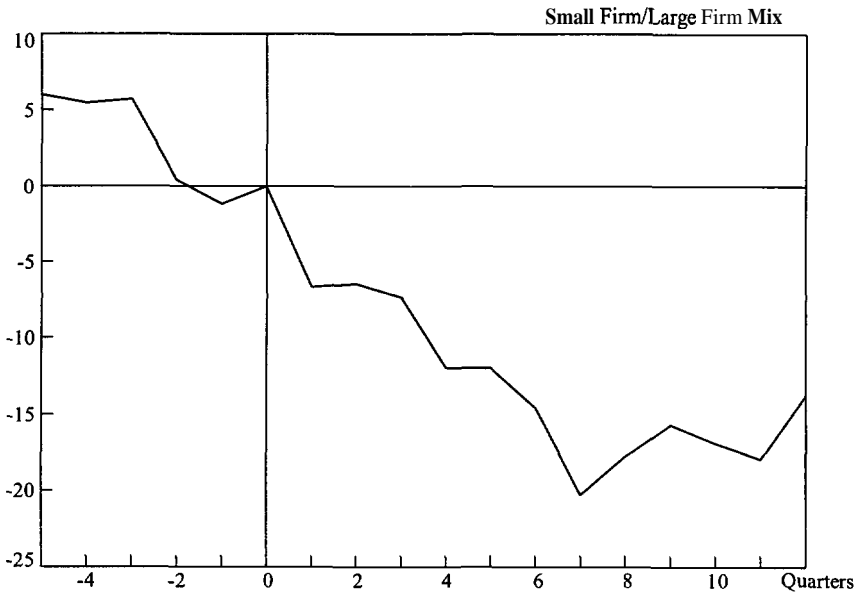
One possibility is that credit actions did occur around these episodes, contrary to the authors' premise. As I mentioned earlier, the Basle Accord fits the broad definition of a credit action. This might explain 1988:Q4. It does not account for 1980:Q4, though.

Another possibility is that the credit channel is driven mainly by the balance sheet mechanism. In this event, as I mentioned earlier, tight money should induce a decline in the bank loan/commercial paper mix, regardless of whether credit actions are accompanying. Again, a manifestation of the balance sheet mechanism is a contraction of credit flows to small firms relative to large firms. Chart 4 shows that in fact this phenomenon occurred in both the 1980:Q4 and the 1988:Q4 episodes.<sup>6</sup>

Let me add several points to the argument: First, the relative decline in loans to small firms is not offset by large firms supplying increased trade credit to small firms. The data indicate that trade credit to small manufacturing firms actually drops.<sup>7</sup> Second, it is of course possible that nonfinancial factors might account for the differences in small and large firm behavior after tight money. But a host of recent research has shown that balance sheet liquidity constrains the spending of smaller firms, particularly around episodes of tight money. And the same is not true for large high-grade companies. All this suggests to me that financial factors are at work.

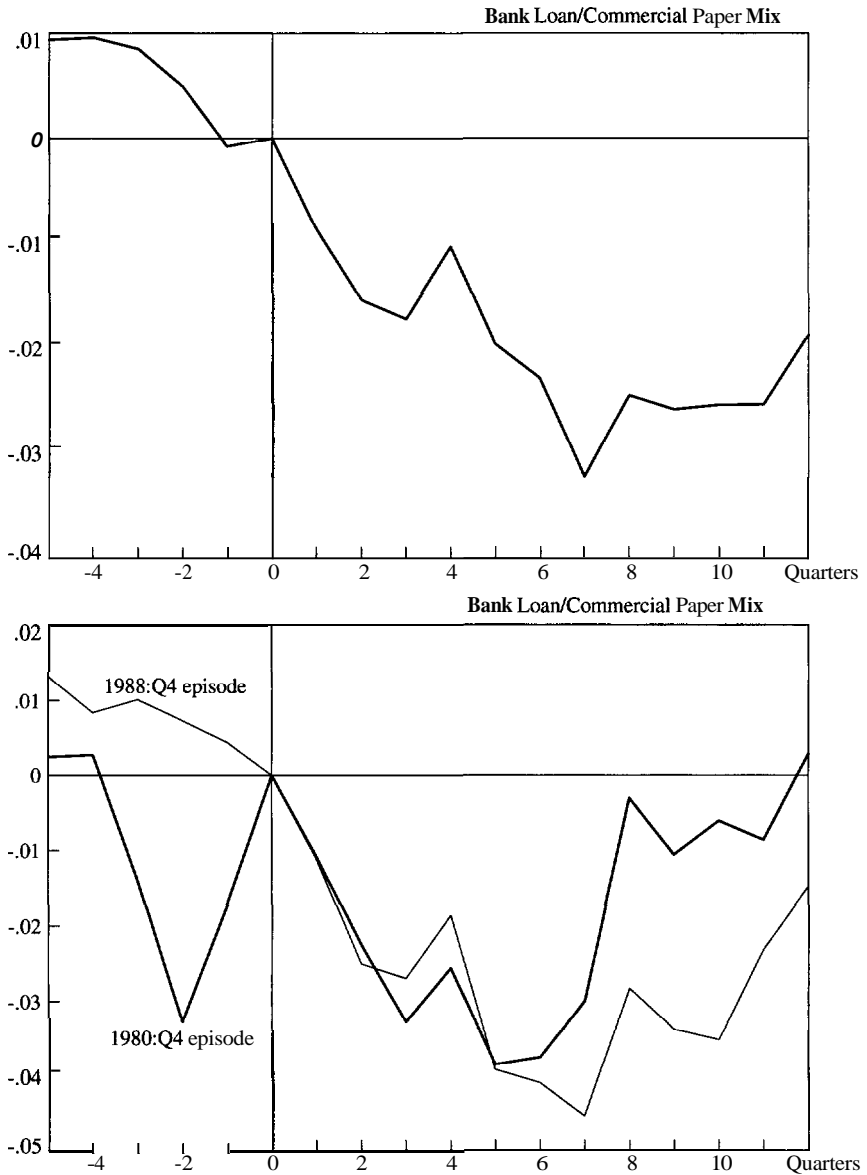
Third, at a time when other financial aggregates aren't doing so well, the quality mix of credit has significant marginal predictive power for GNP. This is true for both the small firm/large firm mix and the bank loan/commercial paper mix. Chart 4 shows, further, that both mixes contracted prior to the 1990 recession. I should also mention work by Donald Morgan of the Federal Reserve Bank of Kansas City—partly to please the home crowd. Nonetheless, Morgan has constructed a quality mix of bank credit that also appears to have useful forecasting power.

**Chart 4**  
**Comparison of the Small/Large Firm Credit Mix and the**  
**Bank Loan/Commercial Paper Mix after Tight Money**



Notes: The two top panels show the mean of the cumulative changes of a credit market variable after the Romer episodes of tight money. The two bottom panels show the cumulative change after 1980:Q4 and 1988:Q4.

**Chart 4 (cont.)**  
**Comparison of the Small/Large Firm Credit Mix and the Bank Loan/Commercial Paper Mix after Tight Money**



In the end, my position may not be that different from the authors. The authors seem to agree that the behavior of the financial indicators reflects not only credit actions, but also relative differences in the influence of monetary policy on credit flows to small versus large firms. In my view, the major source of this differential response across size classes is the balance sheet mechanism, which I interpret as a credit channel.

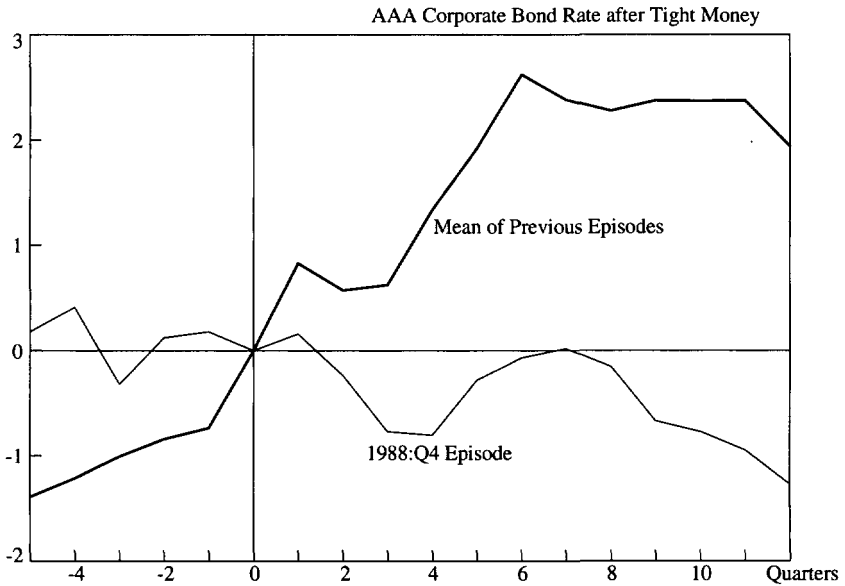
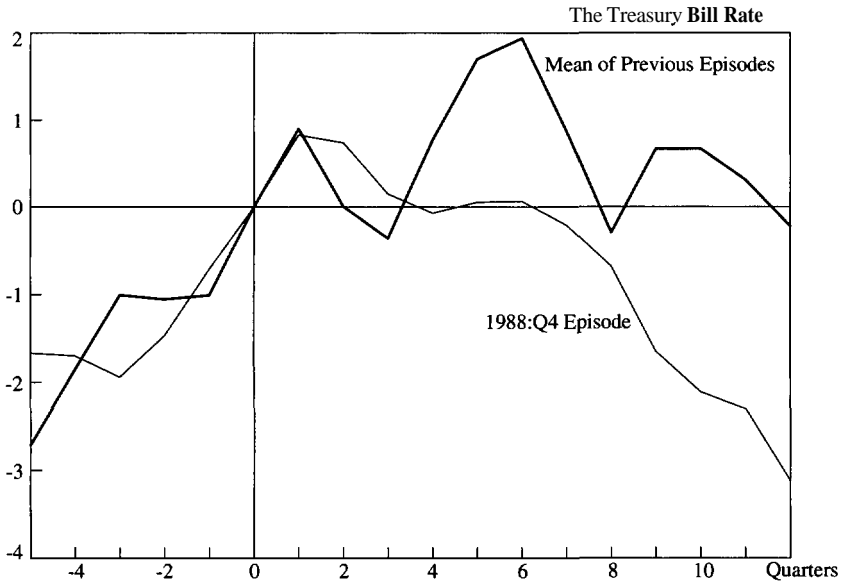
Finally, I want to address the issue of whether financial innovation has influenced the Fed's ability to regulate interest rates. I certainly wouldn't disagree that the Fed can still wiggle the three-month T-bill rate. The interesting question, I think, is whether the Fed may be losing its leverage over longer-term rates. The potency of the pure interest rate channel, I would think, rests also on the Fed's ability to influence rates of maturity longer than three months. I don't know at what maturity I would draw the line. I think this would be a very interesting research topic. In the meantime, it strikes me as a plausible hypothesis that financial innovation—in particular the increased endogeneity of money and the globalization of financial markets—has weakened the Fed's leverage over longer term rates.

To illustrate this issue, in Chart 5, I compare how the response of the AAA corporate bond rate to the 1988:Q4 rate Romer episode compared with the response in the previous episodes. For convenience, I also show the corresponding behavior of the three-month T-bill rate in the bottom panel. While it is true that the three-month rate jumps after 1988:Q4, the AAA rate doesn't budge much at all.<sup>8</sup> These pictures alone surely don't prove that the Fed has lost leverage over the term structure. A host of other factors could be at work. Nonetheless, I think they underscore that more evidence is necessary to evaluate whether or not the pure interest rate channel has changed.

A similar observation could be made about the sharp decline in short-term interest rates. Long-term rates were very slow to drop. And the recovery has been very weak by historical standards. Couldn't one use this evidence to argue that the traditional interest rate channel has weakened? Of course, other factors were at work over this period. But prominent among these factors were two that directly involved credit conditions. One was the bank capital crunch and the other was the



### Chart 5



Notes Each panel shows the mean of the cumulative changes in either the Treasury bill rate (top panel) or the AAA corporate bond rate (bottom panel) after the episodes of tight money until 1979:Q4; and the cumulative change after the 1988:Q4 episode

large overhang of corporate and personal **debt**— the famous 50 mile-an-hour headwind.

So what do we learn from all this? Even in the 1990s we cannot think about the impact of monetary policy independently of credit conditions. The nature of financial institutions will change over time. And so too will the nature of credit market problems and regulatory credit actions. But these factors will remain relevant to the efficacy of monetary policy and the general performance of the economy. Albert Wojnilower made this point many years ago. And he is as right as ever today.

Let me conclude by emphasizing how much I enjoyed reading and **thinking** about this paper. The **kind** of institutionally based research that the authors do is very important to the profession. And I look forward to seeing more of it.

## Endnotes

<sup>1</sup>Another possibly important factor is that many banks, particularly smaller banks, may not have easy access to the CD market.

<sup>2</sup>The non-price terms could also move adversely.

<sup>3</sup>In a new version, the authors show that monetary policy remains significant when monthly industrial production is used instead of quarterly GNP and when the sample is extended back to 1948. Since the results for the financial variables pertain to a shorter sample period and to data available at the quarterly frequency, it still seems reasonable to use the shorter sample and GNP for the purpose of drawing a comparison.

<sup>4</sup>The results are robust to using the longer sample 1954:Q1-1992:Q1. The credit action still has a significant effect on output, but the difference with the effect of monetary policy narrows. Monetary policy is still not statistically significant. In the longer sample, there are five tight money dates and four credit actions.

<sup>5</sup>The behavior of the prime rate/commercial paper rate spread after each of the last two episodes of monetary tightening also resembles its behavior after previous episodes.

<sup>6</sup>A shred of evidence that the reserve requirement mechanism may have also been at work in the 1980:Q4 episode is that the 6-month CDIT-bill spread rose sharply, perhaps reflecting imperfect liquidity in the CD market at the time. Though not as dramatically, the spread also rose after the 1988:Q4 episode.

<sup>7</sup>Receivables drop at about the same pace, so that net trade credit to small firms does not rise either.

<sup>8</sup>The relevant consideration, of course, is whether the long-term real rate changed. My conjecture is that forecasts of long-term inflation did not change much over this period, suggesting that the movement in the nominal rate is a reasonable approximation of the movement in the real rate. It is also instructive that tight money actually raised the long-term nominal rate significantly in previous episodes, but not in the 1988:Q4 episode.