

ARTICLES

1 Why US Long-Term Inflation May Be Higher Than 2 Percent

John S. Hekman, PhD

2 Economic Research and Federal Trade Commission's Proposed Rule Banning Non-Compete Agreements

*James Langenfeld, PhD, Chris Ring,
and Mary Wilson Grist*



Volume 10

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Letter from the Editor

Welcome to Volume 10 of the [BRG Review](#), an official publication of Berkeley Research Group, LLC. The Review publishes peer-reviewed scholarship by BRG experts and staff around the world. Our experts comprise academics and private-sector professionals in fields including economics, finance, healthcare, and data analytics. BRG has over 1,400 professionals in more than forty offices worldwide who apply innovative methodologies and analyses to complex problems in the business and legal arenas.

In our first paper, John Hekman, PhD, discusses how capital markets are reacting to the magnitude and duration of the Federal Reserve's battle with the recent surge in inflation. After several decades of long-term stable inflation rates around 2%, the summer of 2022 saw year-over-year inflation measured by the CPI exceed 8%. With the growing realization that this increase was not temporary, it was generally accepted that the Fed would need be aggressive with monetary policy. Dr. Hekman demonstrates that there is a major problem with achieving the 2% inflation target; the Fed has far less control over the money supply and inflation than it did before 2008—the main drivers of inflation today are the liquidity in the banking system and the federal budget deficit.

In our second paper, James Langenfeld, PhD, Chris Ring, and Mary Wilson Grist discuss a notice of proposed rulemaking (NPRM) recently issued by the Federal Trade Commission (FTC) banning all non-compete clauses in employment contracts. Such a rule could have a substantial impact on how labor markets operate. The authors consider the current literature on this topic, the research provided by the FTC in the NPRM and other related research, and whether the balance of the research supports the rule proposed by the FTC.

To our readers, we hope these papers stimulate discussion and discourse and deepen our relationships with fellow professionals, academics, clients, government representatives, attorneys, and other interested individuals across the world.

Regards,

A handwritten signature in black ink, appearing to read "C. Paul Wazzan". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

C. Paul Wazzan, PhD
Editor-in-Chief

Why US Long-Term Inflation May Be Higher Than 2 Percent

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JUNE 2023

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Abstract

Capital markets are currently struggling to account for the magnitude and duration of the Federal Reserve's battle with the unexpected surge in inflation. Less has been written about the prospects for the long-term inflation rate if and when the current battle is successful. For the US economy, long-term inflation has not been a hot issue over the last two decades or more because of the low level and low variance of inflation. Assuming future inflation to be 2% was defensible from the 1990s to 2019. Beginning in 2021, however, there has been a major departure from this long-term stable rate. By the summer of 2022, year-over-year inflation measured by the CPI exceeded 8%, and the initial belief that the price increases were merely temporary effects of the pandemic gave way to the realization that US monetary policy would need to be brought to bear in a major way to bring inflation back down to the Fed's 2% target. There is a major problem with achieving this 2% target. The Fed has far less control over the money supply and inflation than it did before 2008. The main drivers of inflation today are the liquidity in the banking system and the federal budget deficit.

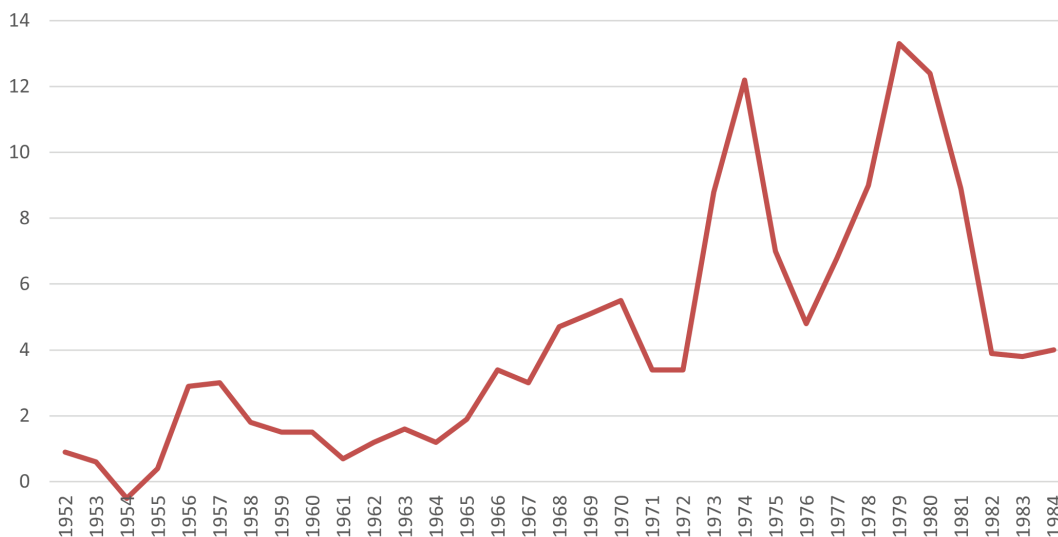
Long-term US inflation may be closer to the ratio of the budget deficit to GDP—5% or more—than to the Fed’s 2% target, even if monetary policy is not expansionary.

Section I of the paper reviews the inflation experience of the 1970s and subsequent changes in monetary policy beginning in the 1980s. Section II describes the changes to bank balance sheets since 2008 and the Fed’s consequent loss of control over monetary policy. Section III analyzes the current situation in light of the changes to monetary policy that came out of the 2008 crisis. Section IV offers concluding remarks.

The 1970s Inflation Experience and the Changes It Produced

After several decades of low inflation, the US began to see steadily rising prices in the late 1960s and throughout the 1970s.

Figure 1. US Consumer Price Inflation 1952–1984



Sources: *Changes in Consumer Price Indexes, Economic Report of the President, 1985, Table B-56. The data start in 1952, after the Korean War inflation of 1950–1951, and end in 1984, after the 1970s inflation cycle was broken.*

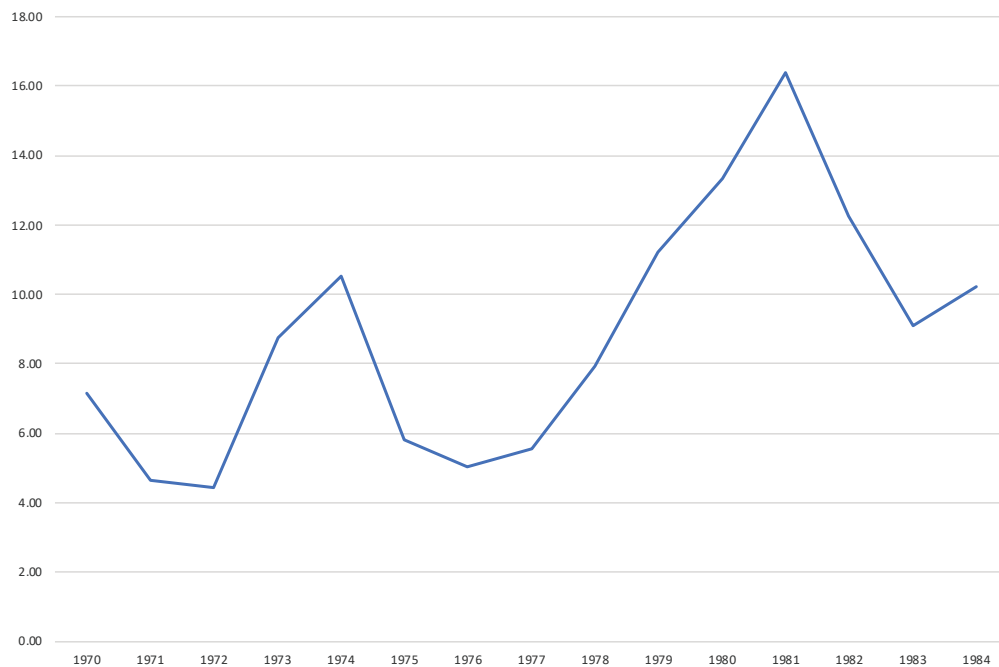
Initially, the problem was seen as an overheated economy due to spending on the Vietnam War. Higher prices from this spending reduced the real income of workers. Workers’ demand for higher wages increased employers’ costs, which led to further increases in prices. The interaction of these forces was seen as producing a wage-price spiral in which demands for higher wages resulted in higher costs for employers, who then raised retail prices to restore profit levels. The higher retail prices then reduced workers’ purchasing power, and a new round of wage demands was created.

The belief that inflation was a problem of controlling cost increases resulted in the passage of the Economic Stabilization Act of 1970.¹ By this measure, Congress gave the President the power to “stabilize” prices, wages, interest rates, and similar measures. From 1971 to 1974, the Nixon price controls used several phases of this act to reduce inflation. Price controls resulted in shortages of many goods. Crude oil and gasoline were singled out for price regulation, and shortages began to cause problems in 1973, even before the Arab Oil Embargo of October 1973 that is often remembered as the cause of the oil crisis.² Price controls were abandoned in 1974 following intense public unhappiness. The overall conclusion of the price-control approach to reducing inflation is that controls caused shortages and huge complications in the economy and merely postponed the price increases that were in the system.

As inflation continued to be a rising problem in the 1970s, market interest rates rose to compensate for rising prices. The Federal Reserve maintained a policy that attempted to control market interest rates within a range. When rates rose above this range, the Fed attempted to reduce rates by buying Treasury securities. The Fed purchased increasing amounts of Treasury securities to raise their prices and thus reduce yields (interest rates). The purchases increased reserves and liquidity in the financial system, resulting in increased spending and more inflation. This became a self-sustaining cycle.

The cycle of interest rates chasing inflation and vice versa ended in 1980 when the Fed, under chairman Paul Volcker, ended the policy of targeting interest rates. Interest rates were allowed to find their own free-market level. A period of instability followed, with interest rates soaring. The Fed funds rate reached as high as 22% in 1981.

Figure 2: Federal Funds Rate (percentage, 1970–1984)



Sources: Fed Funds rate 1970-1984: Federal Funds Effective Rate, Annual, Not Seasonally Adjusted, Federal Reserve Bank of St. Louis.

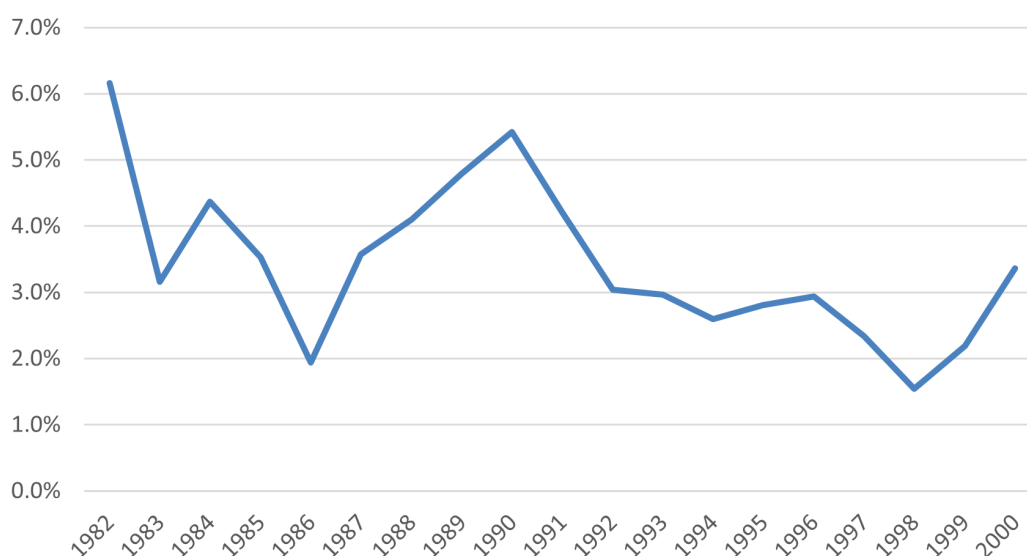
¹ Economic Stabilization Act of 1970; Title II of Public Law 91-379.

² Robert L. Bradley Jr., “Energy Infamy: Nixon’s 1971 Price Controls Turn 50,” American Institute for Economic Research (August 14, 2021).

The result of the Fed's abandonment of its attempt to reduce interest rates and the sky-high rates that followed was a severe recession that sent the unemployment rate to 10% and broke the inflationary spiral. Interest rates and inflation plunged (figure 2). After the recession, the economy experienced strong growth with low inflation. In the 1980s and 1990s, the Fed followed a fundamentally different monetary policy. Instead of trying to lower interest rates when rates rose with inflation, the policy was to raise rates even further to make borrowing more expensive and rein in an overheated economy. Higher rates are achieved by selling Treasury securities in the market, reducing their prices. These sales remove purchasing power from the economy when the buyer of the securities pays the Fed. The payment results in the removal of that amount from the money supply. The Fed's actions to raise interest rates and reduce the money supply thus work in the same direction, as sales of securities both raise rates and reduce the supply of money.

Although it was never explicitly stated by the Fed during the 1980s and 1990s, monetary policy was focused on, first, using interest rates to stabilize the economy by raising rates when inflation began to increase and lowering rates when the economy weakened. Secondly, the Fed monitored the growth of the money supply to guard against a new inflationary spiral.³ This policy contributed to a period of low inflation (figure 3), healthy economic growth, and relatively full employment, helped by the absence of wars or energy crises and the remarkable movement in the late 1990s to a fiscal budget surplus.

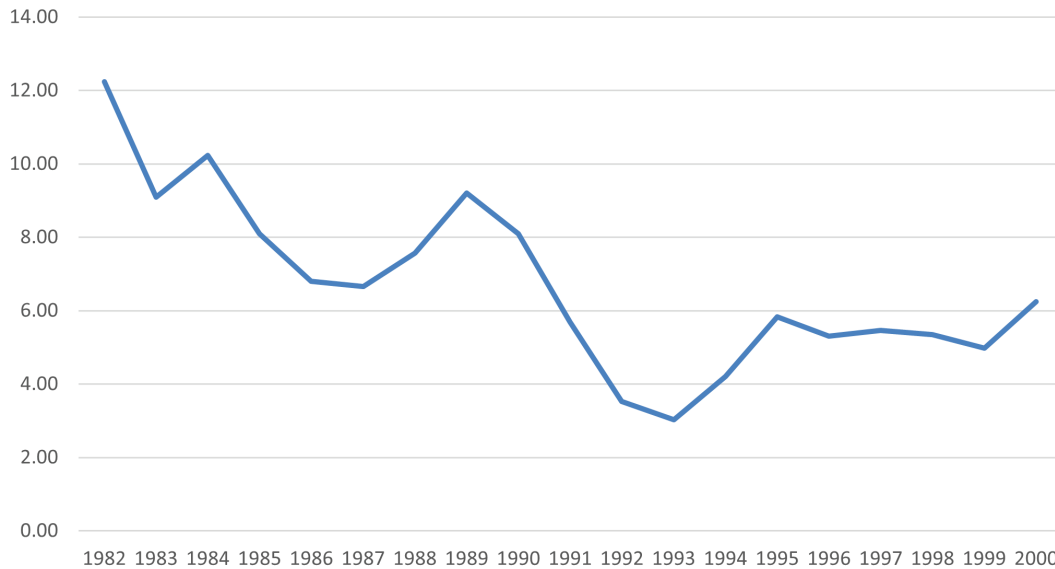
Figure 3. Consumer Price Inflation 1982–2000



Sources: Consumer Price Index for All Urban Consumers, Federal Reserve Bank of St. Louis.

Along with the low inflation of the 1990s, the Fed funds rate was quite stable, staying in a range of 4 to 6% (figure 4). With inflation under control at 2 to 3%, a Fed funds rate of 4 to 6% implies that the inflation-adjusted or “real” interest rate was about 2%. Note that in 2023 a Fed funds rate of 4 to 6% is expected to be able to put the brakes on inflation and even cause a mild recession, whereas that interest rate level in the 1990s did not slow the economy but rather allowed healthy growth.

3 N. Gregory Mankiw, *US Monetary Policy During the 1990s*, Working Paper 8471, National Bureau of Economic Research (2001).

Figure 4. Federal Funds Rate (percentage 1982–2000)

Sources: *Fed Funds Rate 1982-2000. Federal Funds Effective Rate, Annual, Not Seasonally Adjusted, Federal Reserve Bank of St. Louis.*

Monetary Policy Since the Advent of Quantitative Easing

Inflation is ultimately a monetary phenomenon, usually caused by monetary policy. Modern governments do not literally “print money,” but they can use government-controlled central banks to buy the debt that is used to cover government budget deficits, in the process creating bank credit that expands the money supply. This “monetizing of the deficit” occurs most often in countries like Argentina that have weak capital markets that are unable to absorb government debt. In these cases, the budget deficit results in money and credit creation, which causes inflation. The increase in prices will be proportional to the increase in the money supply, at least over some period of time. A rough estimate of the future inflation rate is the budget deficit as a percentage of gross domestic product (GDP).

The Federal Reserve attempts to avoid monetizing the US deficit in “normal” times. The Fed buys government debt—Treasury securities—to expand the money supply only in proportion to real economic growth, not in response to financing the deficit. Economic theory used to teach that when the government borrows more, the competition for funds in the capital markets will “crowd out” private borrowing. But this relies on the assumption that the money supply is under the control of the Fed and cannot expand independently of the Fed to accommodate the increased federal deficit.⁴ However, the money supply does not increase only as a result of the Fed’s actions. If banks have excess reserves, they can expand the money supply by increased lending to individuals and businesses. This makes the money supply “endogenous” (i.e., it is partly controlled by demand and supply in the economy, not just by the Fed). Private borrowing will not necessarily be “crowded out” by government borrowing if banks have the ability to expand their lending to accommodate both private and public borrowing.

⁴ M2, the most commonly used definition of the money supply, includes currency, checking accounts at commercial banks, and CDs of less than \$100,000.

In the US, the degree to which the money supply is endogenous has increased greatly since the Global Financial Crisis (GFC) of 2008. Before the GFC, banks had required reserves that limited their ability to expand their lending and thus the money supply. The level of excess available to lend out was small enough that it was more or less under the control of the Fed. When the economy became overheated during the 1990s, the Fed could rein it in by selling securities, which soaked up the limited supply of excess reserves in the banking system.

The new era of monetary policy began with the invention of “Quantitative Easing.” In the financial collapse of October 2008, the market for asset-backed securities froze, because investors were uncertain of the value of the underlying assets. The Fed introduced QE1 in November 2008. Over \$1 trillion of mortgage-backed securities and Treasuries was purchased in a year’s time, helping to stabilize the capital markets. These purchases also resulted in an increase in excess reserves in the banking system of over \$1 trillion.

After the crisis, the Fed was hesitant to sell securities to drain that \$1 trillion of liquidity out of the credit markets for fear of creating a credit crunch. It took several years for the economy and unemployment to recover from the crisis. By 2013 the recovery was complete, yet the banking system still sat on \$1 trillion of reserves. This held the potential for an enormous inflationary expansion of lending. Rather than returning to the status quo pre-2008 by selling securities to remove these excess reserves, the Fed’s net asset holdings were held steady from 2014 to early 2020. This was the primary difference in the structure of monetary policy in the new post-2008 world.

The second difference in monetary policy in the new era is the Fed’s payment of interest on reserve balances that commercial banks hold at the Fed. Until 2008 banks earned nothing on the reserves, whether in their own vaults or held as deposits at the Fed. This provided a strong incentive for them to lend or invest all of the reserves that were not required—that is, to hold zero excess reserves. But beginning in 2008, interest has been paid on reserve deposits at the Fed. Because QE1 created over \$1 trillion of new reserves, the payment of interest on these reserves removes at least a part of the incentive to increase lending, which could be inflationary. As long as the interest paid on reserves is attractive to banks, they will not aggressively lend out reserves.

The third difference in monetary policy is that banks no longer have required reserves. From the inception of the Federal Reserve System until 2008, banks were required to hold cash reserves against their deposits. Cash reserves did not generate any income. Because banks were increasingly competing against other lenders that did not have this disadvantage, and because banks can obtain cash instantly in the overnight market, the Fed dropped the last of its reserve requirements in 2020. This frees up more reserves for banks to lend and removes one of the monetary control levers that could be used to constrain bank lending.

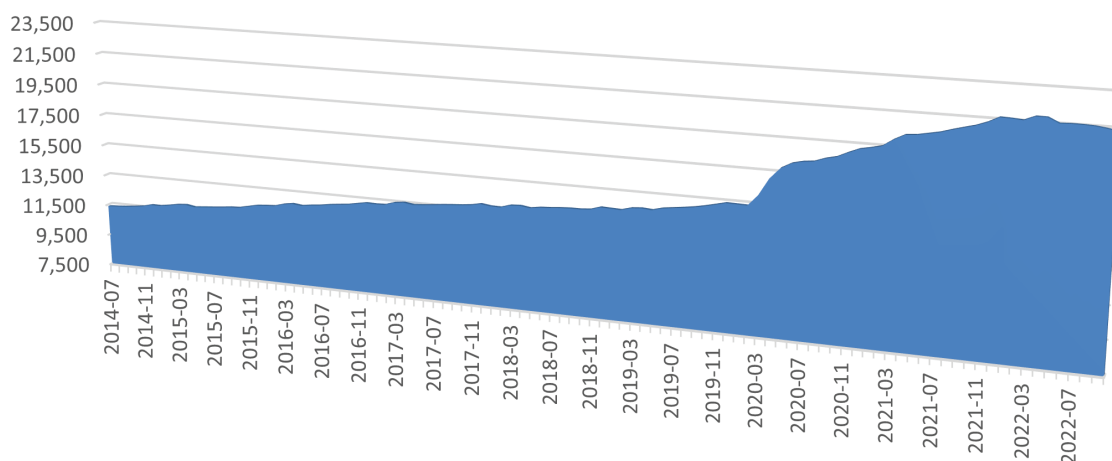
The new structure of monetary policy, including QE, interest on deposits, and zero reserve requirements, has resulted in a new monetary regime in which the Fed’s control over the expansion of money and credit is weaker than in the past. As mentioned previously, banks had over \$1 trillion of reserves after the economy had recovered from the GFC. From 2014 until the pandemic in early 2020, the Fed used its open market activity to raise interest rates when the economy was perceived to be overheating. But unlike in the past, raising interest rates by selling securities had only a marginal effect on bank reserves and thus credit availability. During this period, the total holdings of securities on the Fed’s balance sheet did not increase to accommodate economic growth as in the past. Rather, the growth of the money supply, about 5.2% annually, is explained by banks’ ability to use their reserves to increase lending, leading to growth in the money supply. In other words, the money supply was endogenous, rising and falling with the growth of demand for credit in the economy, not because of actions by the Fed.

The Present Inflation Cycle and New Monetary Structure

The Fed began discount rate increases in 2022, when the discount rate was 0%. The increases are expected to continue in 2023 until the rate is 5% or more and are intended to slow the economy and reduce inflation. The hoped-for result of the Fed's actions is that the economy will not go into recession or that any recession will be brief and mild. It is also hoped that this slowdown will cause the inflation rate to settle back down to 2% or less. Thereafter, the economy is expected to return to its normal pattern of 2 to 3% real growth and 2% inflation (i.e., the status quo that existed before the pandemic). When the economy returns to growth and full employment, the Fed expects to control inflation with a discount rate of perhaps 2.5 to 3.5%. This interest rate range is consistent with a growing economy and low inflation in the 1990s, as discussed above.

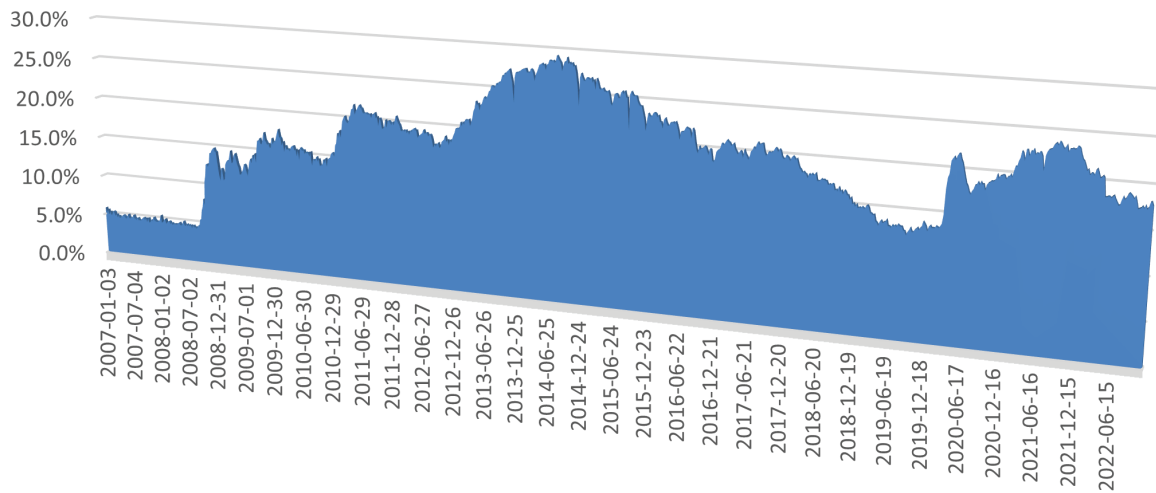
Figure 5 shows the growth of the money supply (M2) from 2014 to 2022. From 2014 to 2019, M2 grew 5.2% annually without the Fed creating new reserves. Banks used their excess reserves from the GFC to expand M2 as the economy grew. During the pandemic, the Fed facilitated an enormous growth of bank reserves, and M2 grew from \$15.4 trillion in February 2020 to \$21.8 trillion in April of 2022, an increase of 42%, after which the Fed's course reversal began.

Figure 5. M2 Money Supply July 2014–October 2022 (\$billions)



Source: M2 Money Supply, July 2014–October 2022: Federal Reserve Release H.6: Money Stock Measures (February 28, 2023). <https://www.federalreserve.gov/releases/h6/>

The increased money supply has fueled the increase in inflation since 2021. Beginning in 2023 and most likely for years to come, banks will have the liquidity to increase the money supply far more than what we have seen to date. Banks have more free reserves relative to their deposit balances than before the pandemic, in spite of a slight decline since the Fed's tightening began. The reserve/deposit ratio, which is an indicator of how much capacity banks have to expand the money supply, went from 5% in 2008 before the GFC to a peak of almost 30% in 2013. The ratio never returned to its pre-GFC level; it had declined to 13% in 2019 but soared again with the new quantitative easing during the pandemic. Reserves were still 18% of deposits at the end of November 2022.

Figure 6. Reserve–Deposit Ratio US Commercial Banks 2007–2022

Source: Reserve Deposit Ratio, US Commercial Banks. Federal Reserve Release H.8: Assets and Liabilities of Commercial Banks in the United States, and author's calculations. <https://www.federalreserve.gov/releases/h8/>

This means that banks have the capacity to expand their lending, which expands the money supply. The trillion-dollar deficits in the coming years constitute a demand for funds of about 5% of GDP on top of the private-sector equilibrium, which may result in at least a 5% inflation rate.

As of the end of 2022, commercial banks had reserve balances in the Federal Reserve System of \$3 trillion. In contrast, bank reserves at the Fed in September 2008 were only \$10 billion. At that time the Fed did not pay interest on bank reserves, so banks kept their money working elsewhere. But since October 2011, banks have been able to earn interest (currently 4.65%) on their reserves.⁵ This reduces the incentive to lend out the reserves and expand the money supply. The rate paid on reserves, which the Fed terms IORB (Interest on Reserve Balances), is adjusted frequently. As of March 7, 2023, the IORB rate was 4.65%. By comparison, the market rate on one-month commercial paper was 4.55%; the rate on one-month Treasury bills was 4.63%; and the bank prime rate was 7.75%.⁶ The Fed appears to be paying interest on reserves that is keeping up with other risk-free short-term rates (but not with the riskier prime rate).

5 Federal Reserve, "Interest on Reserve Balances" (last updated March 13, 2023). <https://www.federalreserve.gov/monetarypolicy/reserve-balances.htm>

6 Federal Reserve, "Selected Interest Rates (Daily) - H.15" (release of March 8, 2023). <https://www.federalreserve.gov/releases/h15/>

Conclusion

When the expected economic downturn of 2023–2024 is over, economic growth will resume. Banks will have enormous reserve balances to finance that growth and, possibly, inflation. The Fed’s monetary policy is commonly viewed as the control of short-term interest rates to control economic activity. This paper has argued that more attention should be paid to the level of bank reserves available to finance expended credit, the level of the federal budget deficit, and the actions of the Fed to “contain” bank reserves by raising the interest paid on those reserves. The current cycle of monetary tightening by raising market interest rates will come to an end. After that, the banking system will share control with the Fed over the future of inflation.

Economic Research and Federal Trade Commission's Proposed Rule Banning Non-Compete Agreements

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Abstract

The Federal Trade Commission (FTC) recently issued a notice of proposed rulemaking (NPRM) on non-compete agreements. In effect, the proposed rule would ban all non-compete clauses in employment contracts. As a result, such a rule could have a substantial impact on how labor markets operate. The NPRM describes the existing literature on the effects of non-compete clauses, evaluates the research's reliability, and estimates the costs and benefits of the proposed rule. We review the research discussed in the NPRM and other related research, providing comments and conclusions that can be derived from the research as a whole. In particular, we focus on whether the balance of the research supports the type of rule proposed by the FTC, a rule focused on low-income workers, or no rule at all.

Introduction

In January 2023, the Federal Trade Commission (FTC) issued a notice of proposed rulemaking (NPRM) on non-compete agreements,¹ which in effect would ban all non-compete clauses in employment contracts. The NPRM provides a detailed description of research on the effects of non-compete clauses,² evaluating the research's reliability and estimating costs and benefits of the proposed rule. Such a rule could have a substantial impact on how labor markets operate, so the FTC apparently recognizes the importance of considering relevant economic research related to its proposed rule.

In this article, we review the research discussed in the NPRM and other related research, and we provide comments on the existing research and conclusions that can be drawn from it. In particular, we focus on whether the balance of the research supports the type of rule proposed by the FTC, a rule focused on low-income workers, or no rule at all.

The NPRM's Review of the Literature on Non-Compete Agreements

The NPRM categorizes its descriptions and analysis of the evidence relating to the labor market into five areas: estimates of non-compete clause use, earnings-effects on workers across the labor force, earnings-effects on workers not covered by non-compete clauses, earnings-distributional effects, and job creation. The NPRM also discusses and evaluates research on the impact of non-compete clauses on product and service markets, separately discussing research on non-compete clauses on consumer prices and concentration, foreclosing competitors' ability to access talent, new business formation, innovation, and training and other investment.

The NPRM cites over forty studies in forming its conclusions. The studies relied on by the NPRM touch on a variety of potential effects of non-compete clauses, including wage effects (comparing locations with and without enforceable non-competes) and non-wage effects such as job mobility. The article relied on most heavily by the FTC appears to be Starr, Prescott, and Bishara's "Noncompete Agreements in the US Labor Force" in the *Journal of Law and Economics* (2021),³ which the FTC cites eight times in support of the idea that non-competes are common for low-wage or hourly workers, are not typically bargained over, and are not associated with extra training or the sharing of trade secrets.⁴ Our review evaluates the literature considered in the NPRM as well as thirteen other relevant studies (including four listed in Commissioner Wilson's dissent).⁵

In general, the NPRM's descriptions are representative of the existing research. Virtually all research indicates that non-compete clauses reduce labor mobility and job turnover. With a few exceptions, the research supports the FTC's conclusions that non-compete clauses lower wages and earnings. Most research finds that non-compete clauses increase employee training and investment.⁶ Relatively little of the empirical research systematically evaluates how non-competes affect low- versus high-wage workers, and no research directly measures the impact of non-competes on product or service markets.

1 FTC, "Non-Compete Clause Rule," 88 Fed. Reg. 3482 (to be codified at 16 CFR Part 910) (January 19, 2023). <https://www.govinfo.gov/content/pkg/FR-2023-01-19/pdf/2023-00414.pdf> (hereafter, "NPRM").

2 See NPRM, Section II.B.

3 Evan P. Starr, James J. Prescott, & Norman D. Bishara, "Noncompete Agreements in the US Labor Force," 64 *J. L. & Econ.* 1, 53 (2021). <https://www.journals.uchicago.edu/doi/10.1086/712206>

4 NPRM, pp. 3485, 3486, 3493. At least some of these results appear to be stronger for low-wage workers. For example, Starr, Prescott, & Bishara (2021) find that "negotiation is twice as likely for those with a bachelor's degree relative to those without" (at 72). The study also finds a positive wage association with non-competes, but the FTC "does not believe that studies examining the association between non-compete clause use – rather than enforceability- and earnings are sufficiently probative of the effects of non-compete clauses on earnings" because of potentially confounding effects in the studies. NPRM, p. 3487.

5 Dissenting Statement of Commissioner Christine S. Wilson Regarding the Notice of Proposed Rulemaking for the Non-Compete Clause Rule, Commission File No. P201200-1, January 5, 2023.

6 The NPRM has specifically requested more information on this impact, at 3493.

Prevalence of Non-Compete Clauses

The NPRM cites to a set of papers in which the authors analyze survey data on the prevalence of non-competes.⁷ Most of these studies relate to both low- and high-wage workers. The FTC broadly concludes that about one in five workers is bound by a non-compete, which is consistent with the articles reviewed.⁸ One study cited by the NPRM relies on a survey by the Bureau of Labor Statistics (BLS) and estimates the overall prevalence of non-compete agreements to be 18%.⁹ Another article heavily cited by the FTC relies on a survey from 2014 that estimated the incidence of non-competes across demographic groups and states.¹⁰ The survey also found on average 18% of labor force participants were bound by non-competes; however, incidence was not associated with a state's level of non-compete enforceability.¹¹

The research cited in the NPRM shows that non-competes are more common than average among some of the high-wage occupations studied, including chief executive officers (CEOs), physicians, and electronic engineers.¹² Other survey studies show the prevalence of non-compete agreements for specific occupational groups, including physicians and other medical professionals, hair stylists, electrical and electronic engineers, and executives. For example, one survey cited by the FTC finds 62% of CEOs between 1992 and 2014 worked under a non-compete clause, while another survey shows 30% of hair stylists worked under a non-compete clause.¹³

Impact on Worker Earnings

The NPRM closely examines the research on the impact of non-compete clauses on worker earnings, concluding that non-competes generally “reduce the earnings of workers”¹⁴ and that the reduction of earnings extends to workers not subject to non-competes.¹⁵ The literature is largely consistent with these conclusions.¹⁶ Starr and Lipsitz (2020) look specifically at hourly and low-wage workers by comparing variation over time in policies allowing non-compete clauses. They find that wages of hourly and low-wage workers rise 2% to 3% when non-compete clauses for that group are banned; and the effect on the workers actually bound by such agreements may be 14% to 21% since only a subset of hourly workers are actually bound by non-competes.¹⁷

7 See NPRM Section 1.A.

8 NPRM, pp. 3485, 3501.

9 Donna S. Rothstein & Evan P. Starr, *Mobility Restrictions, Bargaining, and Wages: Evidence from the National Longitudinal Survey of Youth 1997* (November 30, 2021), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3974897. The survey also shows 53% of workers who are covered by non-compete clauses are hourly workers. Michael Lipsitz & Evan Starr, “Low-Wage Workers and the Enforceability of Noncompete Agreements,” 68 *Mgmt. Sci.* 143, 144 (April 5, 2021), analyzing data from the Starr, Prescott, & Bishara survey, <https://pubsonline.informs.org/doi/abs/10.1287/mnsc.2020.3918>. However, according to BLS, hourly workers made up about 55% of all workers in 2021. BLS, *Characteristics of minimum wage workers, 2021*, Report 1098 (April 2022), <https://www.bls.gov/opub/reports/minimum-wage/2021/pdf/home.pdf>. Thus, non-competes do not appear to be more common among hourly workers.

10 Starr, Prescott, & Bishara (2021).

11 This analysis of non-compete enforceability and incidence is also done in a previous paper by the same authors, relying on the same 2014 survey data. See J.J. Prescott, Norman D. Bishara, and Evan Starr, “Understanding Noncompetition Agreements: The 2014 Noncompete Survey Project,” *Michigan State Law Review* 2016:2 (June 2016): 369–464. <https://ssrn.com/abstract=2799961>. This suggests a disconnect between actual enforceability and perceived enforceability on behalf of employees.

12 NPRM, p. 3486.

13 Omesh Kini et al., “CEO Noncompete Agreements, Job Risk, and Compensation,” 34 *Rev. Financ. Stud.* 10 (September 21, 2020), 4701–4744. <https://doi.org/10.1093/rfs/hhaa103>; and Matthew S. Johnson & Michael Lipsitz, “Why Are Low-Wage Workers Signing Noncompete Agreements?,” 57 *J. Hum. Res.* 3 (2022), 689, 700. <http://jhr.uwpress.org/content/57/3/689.refs>.

14 NPRM, Section II.B.1.b.

15 NPRM, Section II.B.1.c.

16 For at least some of the studies, the NPRM acknowledges and the literature explains that the correlation between non-compete clauses and lower earnings does not necessarily imply a causal effect. NPRM, p. 3487.

17 Lipsitz & Starr (2021).

Some studies focus on the wage effects of non-compete clauses for low- versus high-wage workers by studying specific types of workers. The NPRM cites a study that examines workers earning an hourly wage, in which a switch from no enforcement of non-competes to enforcement was associated with a 4% decrease in wages.¹⁸ On the other end of the wage spectrum, the FTC cites a study that finds that non-competes increase the earnings of CEOs.¹⁹ Another study cited in the NPRM finds that non-competes increase the wages of primary care physicians.²⁰ Balan (2021)²¹ and Balasubramanian (2021)²² explain in studies not cited in the NPRM that it is empirically difficult to disentangle the effects of non-competes from other arrangements like non-solicitation agreements, and the NPRM also recognizes this potential problem in some of the studies it discusses.²³

The NPRM also concludes that noncompete agreements “increase racial and gender wage gaps by disproportionately reducing the wages of women and non-white workers[,]”²⁴ although the NPRM cites only one study to support this conclusion.

Another study cited in the NPRM evaluates non-competes for low-wage workers in terms of costs and benefits. Using a survey related to low-wage workers in the salon industry, Johnson and Lipsitz (2022) find that:

employers leverage weak labor markets to use NCAs to extract additional utility from workers, even if workers incur a cost greater than the benefit that accrues to the employer. At the same time, even within a narrowly defined industry, we find NCAs are actually beneficial contracts for a subset of firms [i.e., for some firms, the benefits of NCAs exceed the cost to employees]. Furthermore, our analysis suggests that making NCAs available can mitigate the extent to which a minimum wage reduces employment.²⁵

Other studies focus on whether the enforceability of non-competes affects wages. The NPRM cites a study that compares wages of workers bound by non-competes with workers not bound (not specific to low- or high-wage workers), and finds 9.7% higher wages for workers informed of the non-compete before accepting their job.²⁶ Another study found that non-compete clauses add friction in the labor market even for employees who are not explicitly constrained by such an agreement. Starr, Frake, and Agarwal (2018) found that all workers, including workers not constrained by non-competes, receive “relatively fewer job offers, have reduced mobility, and experience lower wages” in industries with a higher incidence and enforceability of non-competes.²⁷

18 Evan Starr, “Consider This: Training, Wages, and the Enforceability of Non-Compete Clauses,” 72 *I.L.R.Rev.* (2019), 783, 799.

19 Kini et al. (2020).

20 Kurt J. Lavetti et al., “The Impacts of Restricting Mobility of Skilled Service Workers: Evidence from Physicians,” 55 *J. Hum. Res.* (2020), 1025–1067.

21 David J. Balan, “Labor Noncompete Agreements: Tool for Economic Efficiency or Means to Extract Value from Workers?” 66 *The Antitrust Bulletin* 4 (2021), 593–608.

22 Nataraja Balasubramanian et al., *Bundling Postemployment Restrictive Covenants: When, Why, and How It Matters*, unpublished manuscript (2021).

23 NPRM, p. 3487.

24 NPRM, pp. 3488–3489.

25 Johnson & Lipsitz (2022), 689–724, at 692.

26 Starr, Prescott, & Bishara (2021); Alexander J.S. Colvin & Heidi Shierholz, *Noncompete Agreements*, Econ. Policy Inst. (2019).

27 Evan Starr, Justin Frake, & Rajshree Agarwal, “Mobility Constraint Externalities,” 30 *Org. Sci.* (2019), 961, 6.

Impact on Employment

The NPRM concludes that the literature is not clear on whether non-competes increase or decrease the overall number of jobs,²⁸ which is consistent with the literature. As the NPRM notes, job creation at individual firms may be positively associated with non-compete enforceability.²⁹ However, non-competes may reduce entrepreneurship, as discussed below, which could limit firm creation and, in turn, could suppress the overall number of jobs.

Impact on Worker Mobility

In an article not cited by the NPRM, Balan (2020) explains that non-compete agreements can limit the worker's ability to reaccess the competitive labor market, essentially distancing workers from the "opportunity to participate in competitive labor markets."³⁰ Consistent with this statement, a 2020 study cited in the NPRM relies on nationally representative survey data and states that 40% of workers with non-compete clauses recall declining offers from competitors due to their non-compete (even if the non-compete is unenforceable).³¹ Evidence also shows that workers with non-competes remain in their jobs longer. One study not cited in the NPRM associated non-competes with an 11% longer job tenure for all workers.³²

Many of the studies cited in the NPRM support the claim that non-competes diminish job mobility by analyzing high-wage earners in technology-related industries. For example, one study finds job-hopping rates for college-educated men are higher in Silicon Valley and other areas in California.³³ The authors attribute this difference to the features of California law making non-compete agreements unenforceable compared to other states, but the authors also find that mobility rates in other industries are no higher in California than elsewhere. Similarly, a cited study found that Michigan's reversal of its non-compete enforcement policy reduced job mobility based on an analysis of job turnover for inventors.³⁴ A study not cited in the NPRM finds inventors are 25% more likely to change industry when enforceability of non-compete clauses increases because non-competes limit their choice set.³⁵ In another cited study, a survey completed by 52 randomly sampled patent holders and 1,029 engineers found that these employees were likely to switch careers altogether to avoid potential non-compete lawsuits from ex-employers.³⁶ The NPRM also discusses a study that found a ban on non-competes among Hawaiian technology workers (i.e., high-wage workers)

28 NPRM, Section II.B.1.e.

29 NPRM, Section II.B.1.e; Gerald A. Carlino, *Do Non-Compete Covenants Influence State Startup Activity? Evidence from the Michigan Experiment*, Fed. Reserve Bank of Phila. Working Paper 21-26 (2021), 16.

30 David J. Balan, "Labor Practices Can Be an Antitrust Problem Even When Labor Markets Are Competitive," *CPI Antitrust Chronicle* (June 2020).

31 Evan Starr, James J. Prescott, & Norman D. Bishara, "The Behavioral Effects of [Unenforceable] Contracts," 36 *J. L., Econ., & Org.* (2020), 633, 652.

32 Balan (2021), citing Evan Starr, *The Use, Abuse, and Enforceability of Non-Compete and No-Poach Agreements: A Brief Review of the Theory, Evidence, and Recent Reform Efforts*, Econ. Innovation Grp. Issue Brief (2019); and Evan Starr, "Are Noncompetes Holding Down Wages?" in Sharon Block & Benjamin H. Harris (eds.), *Inequality and the Labor Market: The Case for Greater Competition*, Brookings Institution Press (2021), 127–49; and John M. McAdams, *Non-Compete Agreements: A Review of the Literature*, unpublished manuscript (hereafter, "Balan, citing Starr and McAdams").

33 Bruce Fallick, Charles A. Fleischman, & James B. Rebitzer, "Job-Hopping in Silicon Valley: Some Evidence Concerning the Microfoundations of a High-Technology Cluster," 88 *Rev. Econ. & Statistics* (2006), 472, 477.

34 Matt Marx, Deborah Strumsky, & Lee Fleming, "Mobility, Skills, and the Michigan Non-Compete Experiment," 55 *Mgmt. Sci.* (2009), 875, 884.

35 Clemens Mueller, *Non-Compete Agreements and Labor Allocation Across Product Markets* (November 18, 2022). Available at SSRN: <https://ssrn.com/abstract=4283878>.

36 Matt Marx, "The Firm Strikes Back: Non-Compete Agreements and the Mobility of Technical Professionals," 76 *Am. Socio. Rev.* (2011), 695, 702.

increased job mobility in the high-tech sector by 12.5%,³⁷ and a study using LinkedIn data that found the enforcement of non-compete agreements was associated with a large reduction in employee departure in knowledge-intensive jobs (i.e., high-wage jobs).³⁸

Other studies not cited in the NPRM have found that workers with non-competes more often change industries, and that technology workers and patent holders more often leave states that enforce such agreements.³⁹ One study not cited in the NPRM found an increase of one standard deviation in non-compete enforceability is associated with an additional 0.23 months of job tenure for employees in business and science, technology, engineering, and math (STEM) occupations in the for-profit sector.⁴⁰

A few studies measure non-competes' effects on job mobility for low-income workers. The NPRM cites a study that found an Oregon ban on non-competes was associated with a 12% to 18% increase in job mobility for hourly workers.⁴¹ Similarly, a study not cited in the NPRM examines the effect of Austria's ban on noncompete agreements for low-wage workers and finds the ban increased workers' annual job-to-job transition rate by 2%.⁴²

Impact on Entrepreneurship

Several studies discussed in the NPRM analyze the impact of non-compete clauses on entrepreneurship, and the FTC concludes these clauses may reduce the creation of new competitive firms. For example, Jeffers (2019) uses state law changes to examine the rate of new firm entry when non-compete clauses are more enforceable. She finds that higher levels of enforceability are associated with a 10% decrease in the entry rate of firms into the technology, professional, scientific, and service sectors.⁴³ Another study cited in the NPRM found that rates of entrepreneurship, patenting, and employment growth slow when non-compete clauses are more enforceable.⁴⁴

In a study not cited in the NPRM, Starr, Ganco, and Campbell (2018) highlight two types of labor market friction: cross-industry mobility frictions (e.g., non-transferable skills) and within-industry mobility frictions (e.g., non-compete enforceability).⁴⁵ The existence of within-industry mobility friction in the form of non-compete agreements prohibits individuals from leaving firms to establish new businesses to compete in the same industry.⁴⁶ Investigating effects on levels of entrepreneurship, in another study not discussed in the NPRM, Can and Fossen (2022) analyze decreases in the enforceability of non-competes in Massachusetts and Utah and conclude that policy change increased entrepreneurial activity among low-wage workers.⁴⁷

37 Natarajan Balasubramanian, Jin Woo Chang, Mariko Sakakibara, Jagadeesh Sivadasan, & Evan Starr, "Locked In? The Enforceability of Covenants Not to Compete and the Careers of High-Tech Workers," *J. Hum. Res.* (May 12, 2020).

38 Jessica Jeffers, *The Impact of Restricting Labor Mobility on Corporate Investment and Entrepreneurship* (2022), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3040393

39 Balan, citing Starr and McAdams, p. 595.

40 Evan Starr, Marin Ganco, & Benjamin A. Campbell, *Strategic Human Capital Management in the Context of Cross-Industry and Within-Industry Mobility Frictions* (March 22, 2018). *Strategic Management Journal*, Robert H. Smith School Research Paper No. RHS 2753720, available at SSRN: <https://ssrn.com/abstract=2753720> or <http://dx.doi.org/10.2139/ssrn.2753720>.

41 Lipsitz & Starr (2021), analyzing data from the Starr, Prescott, & Bishara survey.

42 Samuel G. Young, *Noncompete clauses, job mobility, and job quality: Evidence from a low-earning noncompete ban in Austria* (July 5, 2021).

43 Jeffers (2022).

44 Sampsa Samila & Olav Sorenson, "Noncompete Covenants: Incentives to Innovate or Impediments to Growth," 57 *Mgmt. Sci.* (2011), 425, 432.

45 Starr, Ganco, & Campbell (2018), p. 2.

46 Matt Marx, "Employee Non-compete Agreements, Gender, and Entrepreneurship," 33 *Org. Sci.* 5 (2021); Sampsa & Sorenson (2011).

47 Ege Can & Frank M. Fossen, "The enforceability of non-compete agreements and different types of entrepreneurship: evidence from Utah and Massachusetts," *Journal of Entrepreneurship and Public Policy* (2022).

Impact on Product and Service Markets

The NPRM broadly concludes that “the use of non-compete clauses interferes with competitive conditions in product and service markets.”⁴⁸ Supporting this conclusion, the NPRM finds that non-compete agreements reduce job mobility and new business formation, and so reduce access to workers that enable businesses to compete and innovate.⁴⁹ As discussed above, the research indicates that non-compete agreements do reduce job mobility and may limit new business formation in some industries. However, neither the NPRM nor our research has been able to identify any studies that directly test whether non-compete agreements adversely affect downstream product and service markets.

Impact on Training and Investment

The NPRM also reports on studies analyzing the effect of non-compete clauses on training of workers and investment. The NPRM appears to find these studies largely inconclusive on whether non-compete clauses or other factors result in increased training or investment, and the FTC seeks additional comments on the point.⁵⁰ The literature is consistent with a conclusion that non-compete agreements are associated with increases in training, at least for high-wage workers. For example, in a study cited in the NPRM, Starr (2019) finds that an increase in non-compete enforceability is associated with a 14% increase in firm-sponsored training.⁵¹ In another cited study, Johnson and Lipsitz (2022) examine investments in training for low-wage workers in the hair salon industry. They find that firms that use non-compete agreements increase training rates by 11%,⁵² although the authors warn that these results do not necessarily indicate a causal relationship.⁵³

Balan (2021) summarizes some of the literature’s findings on investment and innovation:

The enforceability of noncompetes is associated with more firm-sponsored training of workers, increases in net capital investment rates, the exploration of new fields, and the creation of riskier patents. However, the mobility-inhibiting effects of noncompete enforceability also dampen knowledge flows and make venture capital less effective in spurring the creation of new patents and employment.⁵⁴

⁴⁸ NPRM, p. 3489.

⁴⁹ NPRM, Section II.B.2.a-2.d.

⁵⁰ NPRM, Section II.B.2.e.

⁵¹ Starr (2019), 783, 799.

⁵² Johnson & Lipsitz (2022), 689, 700.

⁵³ Johnson & Lipsitz (2022), 711.

⁵⁴ Balan, citing Starr and McAdams, p. 595.

The FTC's Estimate of Costs and Benefits of the Proposed Rule

The NPRM attempts to quantify the costs and benefits of the proposed rule, while acknowledging that some of the costs and benefits that it identifies are either not monetizable or not quantifiable.⁵⁵ Overall, the FTC finds that with the proposed rule:

workers' earnings would likely increase by \$250-\$296 billion annually (though some portion of this represents an economic transfer from firms to workers), new firm formation and competition would increase, health care prices would fall (and prices in other markets may fall), and innovation would increase, though several of these benefits overlap (e.g., increases in competition may fully or in part drive decreases in prices and increases in innovation). The Commission also finds some costs of the proposed rule: direct compliance and contract updating would result in \$1.02 to \$1.77 billion in one-time costs, and firm investment in worker training and capital assets would fall.⁵⁶

The NPRM, however, does not provide a calculation of the net benefit of the proposed rule. While it believes the net benefit would be positive, the NPRM concludes that such a calculation would overlook many nuances of the rule's costs and benefits, and some items reflect transfers rather than net benefits.⁵⁷

The NPRM's calculation of increased worker earnings from eliminating non-competes is based on first taking an estimate of general wage effects in percentage terms found in the studies it reviewed, and then multiplying this percentage by the total wage earnings for private employers in the US.⁵⁸ The FTC then provides estimated percentage wage increases for specific classes of workers.⁵⁹ The FTC also provides other calculations, including: (1) "a partial sensitivity analysis which answers the question: for a given level of costs, what percentage of the earnings increases would offset those costs?" and (2) estimated benefits to markets for products and services.⁶⁰ The NPRM also attempts to estimate compliance costs, costs of updating contractual practices, and effects on firm investment. It also discusses the inconclusive effects on job creation and notes that the proposed rule may affect litigation costs, but that no literature attempts to quantify this.⁶¹

⁵⁵ NPRM, pp. 3521–3522.

⁵⁶ NPRM, p. 3522.

⁵⁷ NPRM, p. 3522.

⁵⁸ NPRM, p. 3522.

⁵⁹ NPRM, pp. 3523–3525.

⁶⁰ NPRM, pp. 3525–3526.

⁶¹ NPRM, pp. 3528–3530.

The Literature on Non-Competes and the FTC's NPRM

In general, the NPRM's descriptions of the research are representative of the existing research. Our review finds that virtually all research indicates non-compete clauses reduce labor mobility and job turnover. With a few exceptions, the research supports the NPRM's conclusions that non-compete clauses result in lower wages and earnings. Most research finds that non-compete clauses increase employee training and investment.⁶²

At least some of the conclusions that the NPRM draws from the existing research might be questioned. First, for example, the FTC asserts that it “does not view reduced labor mobility from non-compete clauses – in and of itself – as evidence non-compete clauses negatively affect competition in product and services markets,”⁶³ but it still concludes:

The weight of the evidence indicates non-compete clauses decrease innovation. Innovation may directly improve economic outcomes by increasing product quality or decreasing prices, or may promote competition because successful new products and services force competing firms to improve their own products and services.⁶⁴

In addition, only two of the five innovation studies the FTC cites conclude that the enforceability of non-competes negatively effects innovation.⁶⁵

Second, the FTC concludes that “non-compete clauses increase employee training and other forms of investment.” But in its cost-benefit analysis, the FTC does not attempt to quantify these investments nor weigh them against the potential reduction of wages from allowing non-competes.⁶⁶

Third, the NPRM quantifies the benefits of eliminating non-competes by multiplying a 3.3% wage effect from one study by the entire annual earnings in the US from private employers.⁶⁷ Clearly this is an oversimplification of the true effects of eliminating non-competes. Applying an estimated percentage effect to the entire country's private employer earnings does not account for how effects might vary by geographic location, by worker class for classes not specifically described in the NPRM, or by other demographic factors. Studies cited in the NPRM show, for example, CEOs experience a 9.1% increase in wages due to non-competes, while other workers experience decreases in wages.⁶⁸ Given the state of the literature on which these calculations are based, the quantification of costs and benefits should be considered suggestive about whether the benefits of the proposed rule offset its costs, rather than an exact calculus.

The FTC's NPRM reflects a significant effort to review the existing literature on the impact of non-compete agreements. Rulemakings in general should have a strong basis in facts. Economic rulemakings, such as the FTC's, should be based on the best economic evidence available. This NPRM appears to be a serious effort to do that, even if one might question some of its conclusions or the overall desirability of the proposed rule.

⁶² The NPRM has specifically requested more information on this impact, at 3493.

⁶³ NPRM, p. 3490.

⁶⁴ NPRM, p. 3492.

⁶⁵ NPRM, p. 3492; Zhaozhao He, *Motivating Inventors: Non-Competes, Innovation Value and Efficiency*, 21 (2021). <https://ssrn.com/abstract=3846964>; and Samila & Sorenson (2011).

⁶⁶ NPRM, pp. 3502, 3529.

⁶⁷ NPRM, p. 3522.

⁶⁸ NPRM, p. 3524.

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