

Chicago Fed Letter

Reinvesting after the crisis: Changes in the fixed-income portfolios of life insurers

by Andy Polacek, senior research analyst

The years following the Great Recession presented a unique set of challenges for life insurers even as the U.S. economic recovery began to gain momentum. Between the financial crisis in 2008 and the end of 2016, life insurers' policyholder liabilities grew 25%, from \$2.6 trillion to \$3.2 trillion, while their preferred investment habitat, the fixed-income securities market (excluding Treasury securities), grew by only 3%, from \$22.0 trillion to \$22.1 trillion.¹

This was the only period since 1960 when the rate of growth in life insurers' policyholder liabilities, and in turn their desire to increase holdings of fixed-income securities, exceeded the growth rate of the fixed-income market.² Compounding the supply problem was the fact that other institutional investors, including pension funds, mutual funds, and bond exchange-traded funds (ETFs), increased their fixed-income holdings by 40%, a combined \$1.7 trillion, over the same period.³ The Federal Reserve's low interest rate policy and related quantitative easing (QE) bond-buying program added to these supply and demand pressures, helping to push down investment-grade corporate bond yields from 7.2% in 2008 to 3.5% in 2016, near their lowest levels in decades.⁴ This dynamic put life insurers in the difficult position of having to invest their increasing reserves into a slow-growing and competitive market.

The asset mix of a life insurer's investment portfolio is generally guided by a strategy of asset–liability matching, in which fixed-income securities play an important role.

Life insurers generally responded to this challenge by buying into fixed-income markets that experienced increases in new issuance and decreasing their holdings in shrinking markets, while taking into consideration credit and regulatory changes in the different fixed-income subsectors: private mortgage-

backed and asset-backed securities (MBS/ABS), agency MBS, nonfinancial corporate bonds, financial corporate bonds, and municipal bonds. This *Chicago Fed Letter* explains the investment strategy of life insurers and how insurers have responded to the changes in fixed-income markets.

How insurers invest

Like all insurance providers, life insurers receive premiums from policyholders in exchange for the promise to pay out some benefit at a future date. Life insurance pays a benefit in the event of death or, in the case of annuities, provides a guaranteed income stream. Insurers invest the premiums received into a mix of assets, primarily fixed-income securities, and derive revenue from the spread between their investment return and the benefits they pay to policyholders.

The asset mix of a life insurer's investment portfolio is generally guided by a strategy of asset-liability matching, in which fixed-income securities play an important role. Asset-liability matching is an immunization strategy that protects insurers against interest rate changes by matching the duration of their portfolio's assets to the duration of their liabilities.

Fixed-income securities possess two characteristics that make them particularly well suited to this investment strategy. First, fixed-income securities provide a predictable rate of return and timing of payouts. Second, many fixed-income securities offer a long duration that matches up with the typically long duration of life insurance and annuity contracts. Combined, these characteristics help insurers ensure they are able to meet future expected payouts to their policyholders.

At the end of 2008, fixed-income securities, including ABS and MBS, comprised 63% (\$2,002 billion) of life insurers' assets.⁵ In addition, life insurers held 10% (\$328 billion) of their assets in whole-loan mortgages, which possess similar characteristics to fixed-income securities.

How fixed-income markets have changed

This analysis compares the composition of life insurance year-end fixed income holdings and the composition of the fixed income market at two points in time, 2008 and 2016. This is done because insurers hold a significant share of the fixed-income securities market, so changes in the composition of insurers' holdings will be driven in part by changes in the composition of the market. Thus, to determine whether changes in the composition of insurers' fixed-income holdings are relatively small or large, they must be compared to the change in the composition of the fixed-income market.

Three events in the fixed-income market may have led insurers to decrease their holdings of private MBS/ABS and agency MBS and limit their holdings of financial corporate bonds. First, decreases in the net issuance of both agency MBS and private MBS/ABS led insurers to decrease their holdings of asset-backed securities. Additionally, Federal Reserve purchases of agency MBS further decreased buying opportunities for life insurers. Finally, the financial bond sector was hit with a systematic wave of downgrades in 2008, 2009, and 2011 that made financial bonds less attractive to insurers.

At the same time, two distinct changes likely drove insurers to increase their purchases of non-financial corporate and municipal bonds. First, nonfinancial bonds experienced a historic surge in issuance propelled by low interest rates. Second, the creation of the Build America Bonds program brought life insurers into the municipal bond market by increasing the supply of taxable municipal bonds, which are more attractive to life insurers than traditional tax-exempt municipal bonds (munis), because insurers are often unable to benefit from a bond's tax-exempt status.

So, what was the impact of these changes on life insurers' fixed-income investment portfolios?

Private MBS/ABS

After deteriorating housing prices and the fallout from the subprime housing market caused issuance to dry up, life insurers' private MBS/ABS holdings as a share of their fixed-income portfolios fell from 23.8% to 17.3% from 2008 to 2016 (figure 1). Private MBS are securitized products backed by bundles of residential or commercial mortgages, while private ABS are backed by bundles of consumer debt, such as credit cards and auto loans, issued by private financial institutions. In the years preceding the financial crisis, residential MBS made up the majority of privately issued securitized products and were attractive to insurers because of their relatively high credit ratings, and because the securities could be designed to meet investor needs for duration and interest rate sensitivity.

But near the end of 2007, a surge of foreclosures in the growing subprime housing market led to defaults on subprime mortgages and their underlying MBS, which spearheaded a sharp decline in

1. Market comparison: Life insurance industry fixed-income holdings

	Life insurance fixed-income portfolio composition			Fixed-income market composition			Life insurers' share of fixed-income market		
	2008	2016	% Δ 2008–16	2008	2016	% Δ 2008–16	2008	2016	% Δ 2008–16
Nonfinancial bonds	37.0%	44.4%	19.8%	18.5%	33.0%	78.5%	18.2%	14.3%	–21.2%
Financial bonds	23.5	23.7	0.8	11.1	15.1	36.6	19.4	16.8	–13.3
Insurance	2.7	3.0	11.0	–	–	–	–	–	–
Banking and other	20.8	20.7	–0.5	–	–	–	–	–	–
Private MBS/ABS	23.8	17.3	–27.4	16.7	5.1	–69.5	13.0	36.4	179.5
Agency MBS (excl. Fed QE holdings)	13.6	8.6	–36.9	37.1	29.9	–19.5	3.3	3.1	–7.9
Municipal bonds	2.0	6.0	197.4	16.6	16.9	1.6	1.1	3.8	243.7
Total fixed-income securities (\$ billions or %, as indicated)	\$2,002	\$2,612	33.2%	\$22,005	\$22,704	3.2%	9.1%	11.5%	26.4%
Total assets (\$ billions)	3,179	3,912	23.1%	–	–	–	–	–	–

NOTES: Excludes U.S. Treasury securities, Federal Reserve QE purchases of agency MBS, and affiliated investments. Nonfinancial corporate bonds include foreign bonds held in the U.S. MBS indicates mortgage-backed securities. ABS indicates asset-backed securities.

SOURCES: SNL Financial; Mergent Fixed Income Securities Database; Thomson Reuters; Board of Governors of the Federal Reserve System, flow of funds accounts; and author's calculations.

prices across all housing markets. As the housing market collapsed, so did new issuance of private MBS. From 2005 to 2007, nonagency residential mortgage-backed securities (RMBS) issuance averaged \$1.1 trillion. In 2008, that number plummeted to just over \$50 billion.⁶ By 2016, housing prices had mostly recovered and other securitized products had seen issuance return to pre-crisis levels; however, there has been little recovery to date in the RMBS market.

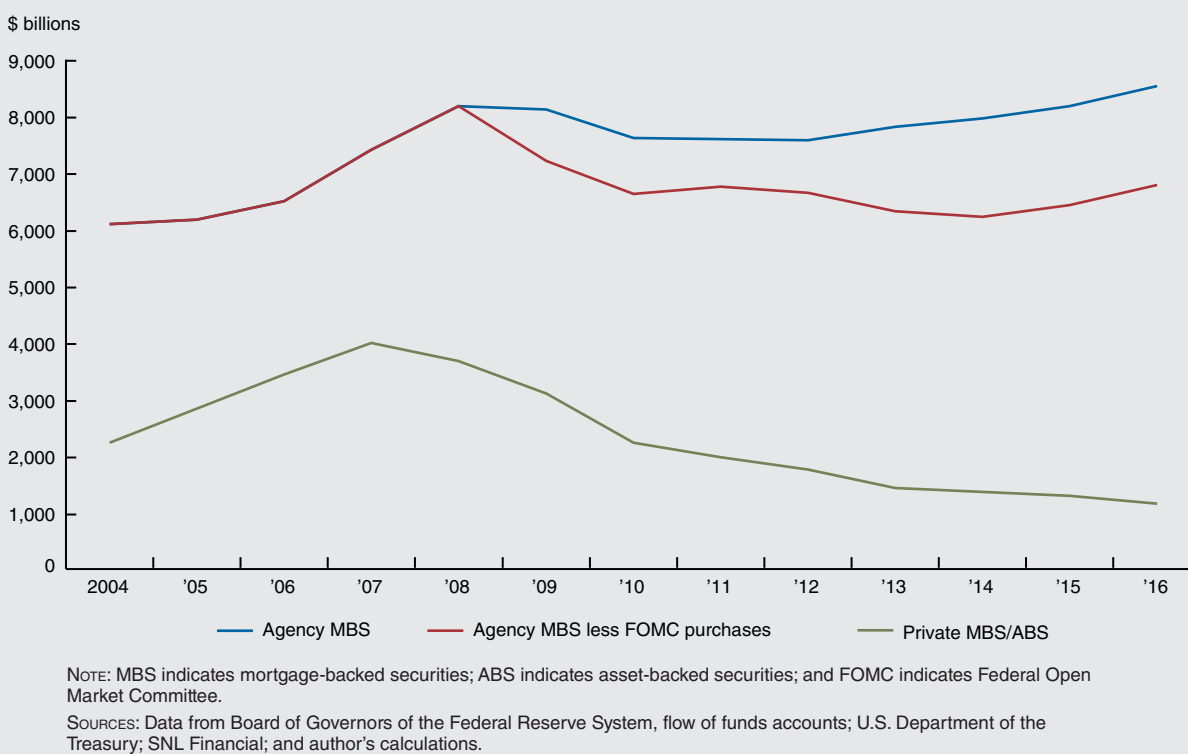
Even as the amount of outstanding private MBS/ABS decreased by \$2.5 trillion from 2008 to 2016, the level of insurers' investment in this market remained steady.⁷ Life insurers' holdings declined marginally from \$477 billion to \$451 billion between 2008 and 2016. They maintained their holdings by shifting a greater percentage of their investments into ABS, which grew by \$16 billion and increased as a share of life insurers' private MBS/ABS holdings from 43% to 49%.⁸ Additionally, because the decline in life insurers' private MBS/ABS holdings occurred at a much slower pace than the decrease in the amount outstanding in the market, their share of the private MBS/ABS market grew substantially—from 13% to 36%—between 2008 and 2016.⁹

Over this period, life insurers also gained additional exposure to mortgage markets by increasing their holdings of whole-loan residential and commercial mortgages by \$109 billion.¹⁰

Agency MBS

Insurers also invest in the U.S. mortgage market through agency MBS, which offer them relatively safe investments with long maturities and interest and duration features tailored to the needs of their portfolios. But the supply of agency MBS also shrank in the post-crisis years, which limited insurers' ability to invest. Agency MBS are securitized residential mortgage loans issued by either Ginnie Mae, a wholly owned government corporation, or one of two government-sponsored entities (GSEs), Freddie Mac and Fannie Mae. Similar to U.S. Treasury securities, agency MBS carry an explicit

2. Outstanding private MBS/ABS and agency MBS



or implicit government guarantee. In the case of Ginnie Mae, this guarantee is explicit; for the GSEs, it is implicit—based on the expectation that the federal government will intercede in the event of a failure. This implicit guarantee was tested during the financial crisis after the GSEs suffered a combined \$14.2 billion in losses, which raised concerns about their solvency. The U.S. Department of the Treasury responded by placing both Fannie Mae and Freddie Mac into receivership, with an initial commitment to invest up to \$200 billion in preferred stock to ensure their continued operation.¹¹

This injection of cash allowed the GSEs to continue issuing new securities and grow the amount of outstanding agency MBS just above its 2008 peak of \$8.5 trillion by the end of 2016. However, because of Federal Reserve purchases, the actual supply of agency MBS available for purchase by private investors, including insurers, shrank during the post-crisis years (see figure 2). In December 2008, the Federal Open Market Committee began purchasing agency MBS as part of its program to drive down long-term interest rates. This reduced the available supply of agency MBS by approximately 20% during the post-crisis period (see figure 2). Before subtracting Federal Reserve purchases, the amount of agency MBS outstanding had grown slightly from \$8.2 trillion to \$8.5 trillion; but after those purchases, the amount of agency MBS available for purchase by others had declined to \$6.8 trillion.¹²

Since 2008, life insurance ownership of agency MBS has fallen in conjunction with the decline in the quantity of agency MBS available for purchase by private investors. Life insurers' holdings of agency MBS decreased from \$271 billion to \$223 billion, a decline of 36.9% as a percentage of their fixed-income portfolio (see figure 1).

Financial corporate bonds

Life insurers' decision to keep their holdings of financial corporate bonds relatively constant as a share of their total fixed-income portfolio between 2008 and 2016 may have been driven by two countervailing trends in the financial corporate bond market.

On one hand, the financial bond sector expanded by nearly \$1 trillion on net between 2008 and 2016, and was one of the few fixed-income markets to grow over this period.¹³ But on the other hand, a wave of credit rating downgrades hit the financial corporate bond market in 2008, 2009, and 2011, and made financial bonds more expensive for life insurers to hold due to increased capital charges.

The 2011 downgrades produced the largest migration of financial bonds from an A rating (NAIC 1) into BBB (NAIC 2) territory, where insurers are required to hold additional capital.¹⁴ The 2011 downgrades by Moody's and Standard and Poor's (S&P) were a response to the changes in the post-crisis financial landscape and affected much of the global financial sector, including the largest U.S. and European financial companies. Both agencies changed their rating methodologies to incorporate the health of the country's banking industry and cited the improbability of another government bailout as a contributing factor to the sector-wide downgrades.¹⁵

The downgrades of financial corporate bonds, coupled with new issuance, lowered the overall credit quality of the corporate financial bond market, reducing the percentage of NAIC 1 financial bonds from 84% to 48% of the market.¹⁶ As the credit quality of the market declined, life insurers' holdings of NAIC 1 bonds declined as a percentage of their financial corporate bond portfolio at a marginally slower rate than the market, dropping from 71% to 51% between 2008 and 2016. This increased life insurers' share of NAIC 1 corporate financial bonds from 16% to 19% of the market.¹⁷

In total, life insurers' holdings of financial bonds increased slightly from 23.5% to 23.7% of their bond portfolio from 2008 to 2016. But the entirety of this increase came from increased holdings of other insurance company bonds, which grew from 2.7% to 3.0% of insurers' total fixed-income portfolio, while their holdings of bank and other financial institution bonds decreased slightly (figure 1).

Nonfinancial corporate bonds

U.S. nonfinancial corporate bond issuance hit record highs in the post-crisis period, with \$6.8 trillion in gross and \$2.1 trillion in net issuance providing a familiar arena for insurers to invest in.¹⁸ Re-leveraging by nonfinancial firms and pressure from shareholders to increase returns during the low interest rate period through stock dividends and buybacks drove this surge in nonfinancial corporate bond issuance.¹⁹ New issuance increased nonfinancial corporate debt by 70% and accounted for 66% of all new outstanding corporate debt.²⁰ Life insurers were active buyers, increasing their nonfinancial corporate bond holdings by \$417 billion, which accounted for more than half of their total fixed-income portfolio growth between 2008 and 2016.²¹

However, while life insurers significantly expanded their holdings of nonfinancial bonds, the increase was small relative to the increase in the nonfinancial bond sector's share of the fixed-income market. Between the end of 2008 and 2016, life insurers increased their holdings of nonfinancial bonds by 19.8% as a share of their bond portfolio, compared with 78.5% for the bond market as a whole (figure 1). This caused life insurers' share of nonfinancial bonds to drop from 18.2% to 14.3% of the market, as pension funds, mutual funds, and bond ETFs increased their holdings.²²

Municipal bonds

Life insurers' increased involvement in the municipal bond market began with the creation of the Build America Bonds (BABs) program in April 2009, which drastically increased the supply of taxable municipal bonds. Most municipal bonds are tax exempt, meaning interest derived from them is exempt from federal and some state income taxes. However, accounting and tax rules prevent life insurers from receiving the full exemption, and insurers' generally low taxable income makes tax-exempt bonds less attractive for them to hold than higher-yielding taxable bonds.²³

Under BABs, which lasted until December 31, 2010, municipalities could issue taxable bonds with coupon payments subsidized 35% by the Treasury.²⁴ Additionally, unlike traditional taxable municipal bonds that can be issued to fund public/private partnerships such as sports stadiums, BABs could only be issued for general obligation infrastructure projects. The BABs program led to increased funding for state and local infrastructure and investment projects and added \$188 billion in taxable bonds to the municipal bond market. Life insurers were very active in the market, purchasing \$67 billion of the \$188 billion in BABs issuance.²⁵

Since the BABs program ended, life insurers' involvement in the municipal bond market has continued to grow for a number of reasons. First, the BABs program familiarized life insurance companies with the municipal bond market. Second and most importantly, the issuance of taxable munis grew after the BABs program, increasing the supply of highly rated and long-duration bonds.²⁶ Finally, municipal bond defaults are generally uncorrelated with corporate bond defaults, as they are related closely to the financial conditions of the municipality in which the bonds were issued and less tied to the business cycle than corporate bonds. This has allowed life insurers to further diversify their fixed-income holdings.²⁷

Conclusion

Following the Great Recession, insurers had to adapt to a challenging bond market in which many of their traditional investment spaces experienced slow or negative growth and degraded credit quality even as financial markets recovered. For the most part, changes in insurers' portfolios during this period reflect changes in the market supply, especially in the case of nonfinancial corporate bonds and in markets that shrank, such as private and agency MBS/ABS. However, insurers also altered their fixed-income portfolios in ways that went against market trends. For example, life insurers sold off financial bonds due to credit concerns even as that market grew; they also took advantage of the BAB program to more than triple their municipal bond holdings, even as the relative size of the municipal bond market shrank.

¹ For the purposes of this *Chicago Fed Letter*, fixed-income securities include financial and nonfinancial corporate bonds, foreign bonds held in the U.S., agency mortgage-backed securities (MBS), private asset-backed securities and mortgage-backed securities (ABS/MBS), and municipal bonds. This number excludes U.S. Treasury bonds, which are generally used by life insurers for liquidity purposes and not as long-term investments, and agency MBS held by the Federal Reserve. Affiliated investments, such as investments in subsidiaries or in the life insurer's holding company, are also excluded from our analysis.

² Data from Board of Governors of the Federal Reserve System, flow of funds accounts; and author's calculations. (Since 2012, the flow of funds accounts have been officially referred to as the *Financial Accounts of the United States*. They are also referred to as the Federal Reserve's Z.1 statistical release, available online, <https://www.federalreserve.gov/releases/z1/>.)

³ Data from Board of Governors of the Federal Reserve System, flow of funds accounts; and author's calculations.

⁴ Data from Bank of America Merrill Lynch seven- to ten-year investment-grade corporate bond effective yield.

⁵ Excludes affiliated investments and U.S. Treasury securities.

⁶ Data on RMBS issuance provided by the Securities Industry and Financial Markets Association (SIFMA).

⁷ Data from Board of Governors of the Federal Reserve System, flow of funds accounts.

⁸ Data from SNL Financial; and author's calculations.

⁹ Data from SNL Financial; Board of Governors of the Federal Reserve System, flow of funds accounts; and author's calculations.

¹⁰Data from SNL Financial.

- ¹¹W. Scott Frame, Andreas Fuster, Joseph Tracy, and James Vickery, 2015, "The rescue of Fannie Mae and Freddie Mac," Federal Reserve Bank of New York, staff report, No. 719, March, available online, https://www.newyorkfed.org/medialibrary/media/research/staff_reports/sr719.pdf.
- ¹²Data from Board of Governors of the Federal Reserve System, flow of funds accounts; U.S. Department of the Treasury; and author's calculations.
- ¹³Data from Board of Governors of the Federal Reserve System, flow of funds accounts.
- ¹⁴See Tom McCartan, 2015, "A tale of two recessions: The effect of credit migration on liability-driven investment portfolios," *Pramerica Fixed Income Perspectives*, July, available online, <https://www.pramericafi.com/pramerica/fi/pdf/pramerica-fixed-income-tale-of-two-recessions-0715.pdf>. The NAIC (National Association of Insurance Commissioners) groups investments into classes based on their rating with lower-rated investments given a higher capital charge. NAIC 1: securities rated AAA to A with 0.40% capital charge; NAIC 2: securities rated BBB+ to BBB with 1.30% capital charge; and NAIC 3: securities rated BB+ to BB with 4.60% capital charge.
- ¹⁵David Henry, 2011, "S&P cuts ratings on big banks after criteria change," *Reuters Business News*, November 29, available online, <https://www.reuters.com/article/us-sp-ratings/sp-cuts-ratings-on-big-banks-after-criteria-change-idUSTRE7AS2R420111130>.
- ¹⁶Data from SNL Financial; Mergent Fixed Income Securities Database; Thomson Reuters; and author's calculations.
- ¹⁷Data from SNL Financial; and author's calculations.
- ¹⁸Gross issuance numbers from SIFMA; and net issuance from Board of Governors of the Federal Reserve System, flow of funds accounts.
- ¹⁹John Authers, 2016, "Alarm over corporate debt and stalled earnings," *Financial Times*, April 27, available online, <https://www.ft.com/content/92efa126-0ba4-11e6-b0f1-61f222853ff3>.
- ²⁰Data from SIFMA; SNL Financial; Board of Governors of the Federal Reserve System, flow of funds accounts; Mergent Fixed Income Securities Database; and author's calculations.
- ²¹Data from SNL Financial; and author's calculations.
- ²²Data from SNL Financial; Board of Governors of the Federal Reserve System, flow of funds accounts; and author's calculations.
- ²³Life insurers and property and casualty insurers do receive favorable tax treatment, but the Tax Reform Act of 1986 subjects 15% of their tax-exempt income to the 35% general corporate rate, creating a 5.25% effective tax rate on tax-exempt municipal bonds.
- ²⁴The tax subsidy functions differently depending on whether the bond was issued as a tax credit or direct pay BABs. In the case of tax credit BABs, the bondholder received a tax-credit equivalent to 35% of the interest received. In the case of direct pay BABs, the issuer received a refundable tax credit equivalent to 35% of the interest paid to the bondholder.
- ²⁵Data from SNL Financial; U.S. Department of the Treasury; and author's calculations.
- ²⁶James Ramage, 2013, "Life insurers' holdings of munis triple since 2007," *The Bond Buyer*, June 19, available online, <https://www.bondbuyer.com/news/life-insurers-holdings-of-munis-triple-since-2007>.
- ²⁷Jason Appleson, Eric Parsons, and Andrew Haughwout, 2012, "The untold story of municipal bond defaults," *Liberty Street Economics*, Federal Reserve Bank of New York, August 15, available online, <http://libertystreeteconomics.newyorkfed.org/2012/08/the-untold-story-of-municipal-bond-defaults.html?cid=6a01348793456c970c017744262fc9970d>.

Charles L. Evans, *President*; Daniel G. Sullivan, *Executive Vice President and Director of Research*; Anna L. Paulson, *Senior Vice President and Associate Director of Research*; Spencer Krane, *Senior Vice President and Senior Research Advisor*; Daniel Aaronson, *Vice President, microeconomic policy research*; Jonas D. M. Fisher, *Vice President, macroeconomic policy research*; Robert Cox, *Vice President, markets team*; Gene Amromin, *Vice President, finance team*; William A. Testa, *Vice President, regional programs, and Economics Editor*; Helen Koshy and Han Y. Choi, *Editors*; Julia Baker, *Production Editor*; Sheila A. Mangler, *Editorial Assistant*.

Chicago Fed Letter is published by the Economic Research Department of the Federal Reserve Bank of Chicago. The views expressed are the authors' and do not

necessarily reflect the views of the Federal Reserve Bank of Chicago or the Federal Reserve System.

© 2018 Federal Reserve Bank of Chicago
Chicago Fed Letter articles may be reproduced in whole or in part, provided the articles are not reproduced or distributed for commercial gain and provided the source is appropriately credited. Prior written permission must be obtained for any other reproduction, distribution, republication, or creation of derivative works of *Chicago Fed Letter* articles. To request permission, please contact Helen Koshy, senior editor, at 312-322-5830 or email Helen.Koshy@chi.frb.org. *Chicago Fed Letter* and other Bank publications are available at <https://www.chicagofed.org>.

ISSN 0895-0164