

Form PF Insights on Private Equity Funds and Their Portfolio Companies

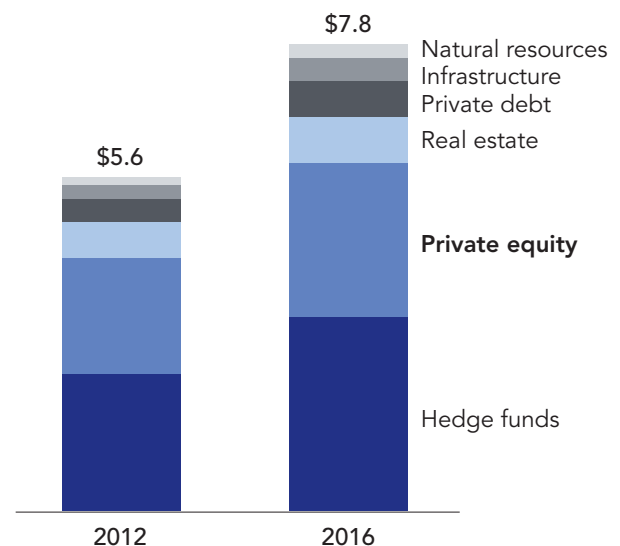
By David C. Johnson and Francis A. Martinez¹

Private equity funds manage more than \$2 trillion in assets and are a key source of capital for U.S. companies. In 2013, private equity advisers began filing detailed, confidential information through the Securities and Exchange Commission’s Form PF. This brief provides more information from Form PF than has previously been published about the companies in which private equity funds invest. It finds that leverage for some companies owned by private equity funds has increased since 2013. At the same time, private equity investments in financial companies have shifted from banks and insurance companies to nonbank financial intermediaries.

In recent years, investor interest in private funds has grown (see **Figure 1**). Private funds are pooled investment vehicles, such as hedge funds and private equity funds, available only to certain types of investors.² Driving their growth has been the expectation of higher returns relative to public markets and the emergence of new investment opportunities.³ Private equity funds raised more than \$450 billion globally in 2017, six times more than in 2013, and currently have more than \$1 trillion of capital available to invest.⁴

Private equity funds play a central role in funding and managing U.S. companies. Leverage is low, generally speaking, because the use of borrowing and derivatives within funds is minimal. Fund managers mainly focus on purchasing companies to enhance value by improving the companies’ finances, operations, or governance. Funds in need of additional capital will typically raise capital from investors rather than borrow from lenders. The risk of investor runs is low

Figure 1. Growth in Private Fund Net Assets (\$ trillions)



Note: Data represent net assets under management and include managers in the United States and overseas.
Source: Preqin

because investors typically commit their capital to a fund for 10 years or more, which is the typical life of a fund.

Still, private equity activities have potential risks. Private equity funds often rely on borrowing by the companies in their portfolios to increase returns.⁵ These obligations connect them to a range of financial intermediaries and can be procyclical (tending to move in the same direction as the overall economy). Controlled portfolio companies (CPCs) with significant debt may have trouble making debt payments when financial markets are under stress or the economy slows.⁶ (A CPC is a portfolio company in which the fund holds a stake of at least 25 percent.) In such cases, stress at CPCs could create risks for their counterparties, with spillover effects on financial markets and the economy.

Until five years ago, U.S. regulators had limited data about private equity funds and the companies in which they invest. Private data sources provided information about company deals and general fund characteristics to subscribers. But little standardized information was available about fund borrowing or CPC debt-to-equity ratios. That changed in 2013, when private equity fund advisers began filing confidential data on the Securities and Exchange Commission's Form PF.⁷

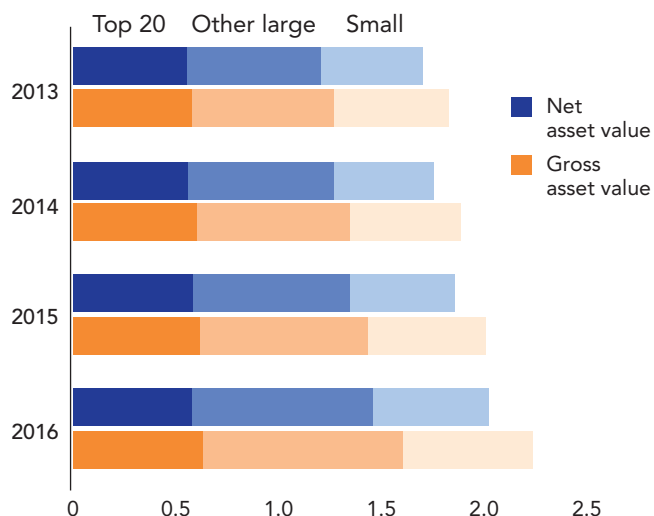
This brief reviews Form PF data, focusing on private equity fund advisers that manage \$2 billion or more in assets.⁸ The first section of the brief describes Form PF data on private equity funds and their investors. The second section describes data on funds' CPCs. All analysis is based on data reported on Form PF from 2013 through 2016.⁹ An OFR brief in 2015 discussed data that private liquidity fund advisers report on Form PF.¹⁰

Private Equity Funds: An Overview

The SEC collected data on more than 10,000 private equity funds on Form PF in 2016.¹¹ The data cover a fund's assets under management, investor composition, returns, borrowing, use of derivatives, and assets and liabilities.

Private equity assets under management grew significantly during 2013-16. Gross asset value (GAV) grew to \$2.2 trillion, and net asset value (NAV) grew to \$2 trillion (see **Figure 2**). The 20 largest advisers managed

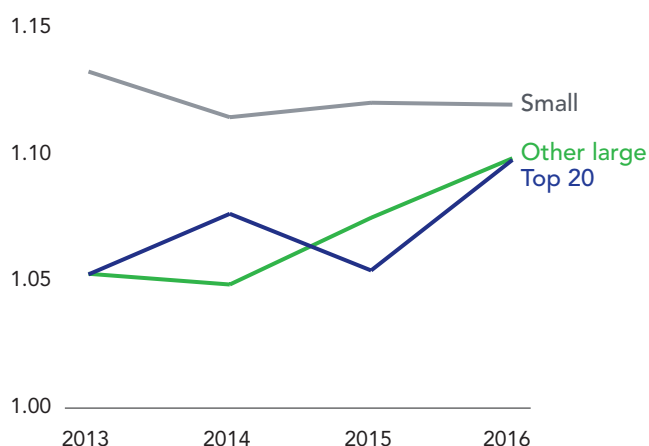
Figure 2. Gross Asset Value and Net Asset Value of Private Equity Funds (\$ trillions)



Note: "Top 20" represents the top 20 private equity advisers by gross private equity assets under management. "Other large" represents advisers with at least \$2 billion in private equity assets under management that do not rank in the top 20. "Small" are all other advisers reporting private equity fund information on Form PF.

Source: Securities and Exchange Commission Form PF

Figure 3. Average Leverage in Private Equity Funds (ratio)



Note: "Top 20" represents the top 20 private equity advisers by gross private equity assets under management. "Other large" represents advisers with at least \$2 billion in private equity assets under management that do not rank in the top 20. "Small" are all other advisers reporting private equity fund information on Form PF.

Source: Securities and Exchange Commission Form PF

more than a quarter of these assets at the end of 2016. (GAV measures the value of all of a fund’s assets. NAV is GAV less outstanding indebtedness or other accrued but unpaid liabilities.)

Compared with other types of private funds, private equity funds generally have low leverage. The average ratio of GAV to NAV — a simple measure of fund leverage — for private equity funds was below 1.2 to 1 at the end of 2016 (see **Figure 3**). For comparison, the average ratio of GAV to NAV for the top 20 hedge funds at the end of 2016 was 9.9 to 1.

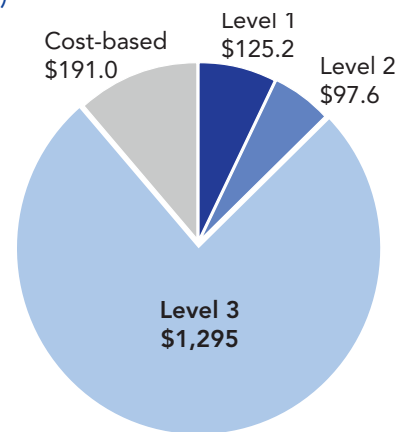
About three-quarters of assets managed in private equity funds are classified as Level 3 under accounting guidelines, meaning they are difficult to value (see **Figure 4**).¹² Although Level 3 assets are often less liquid (not quickly convertible to cash), risks associated with these investments are mitigated because the majority of fund buyout investments are held for more than three years and fund capital is usually locked up for at least 10 years. These durations limit the risk of runs.

Fund borrowing increased during the four-year period studied (see **Figure 5**), but remained significantly less than borrowing by hedge funds. (Qualifying hedge funds, or hedge funds with more than \$500 million in gross assets, had \$2 trillion in borrowing at the end of 2016.¹³) Increased debt in funds could present more of a risk if borrowing were concentrated in a small number of funds or advisers. But although borrowing increased in funds managed by some large private equity advisers, borrowing did not substantially increase in funds managed by the top 20 fund advisers. Also, derivatives use has been concentrated in funds managed by the top 20 advisers, but levels have been low compared with other alternative asset funds. (For context, qualifying hedge funds had \$8 trillion in notional derivatives exposures at the end of 2016.¹⁴)

Investments in other funds

Private equity funds don’t just manage investments in companies. They may also invest in other funds or manage separate accounts with similar strategies to existing funds (known as parallel managed accounts). Fund investments in other funds increased from \$227 billion in 2013 to \$319 billion in 2016, representing

Figure 4. Asset Types in Private Equity Funds (\$ billions)

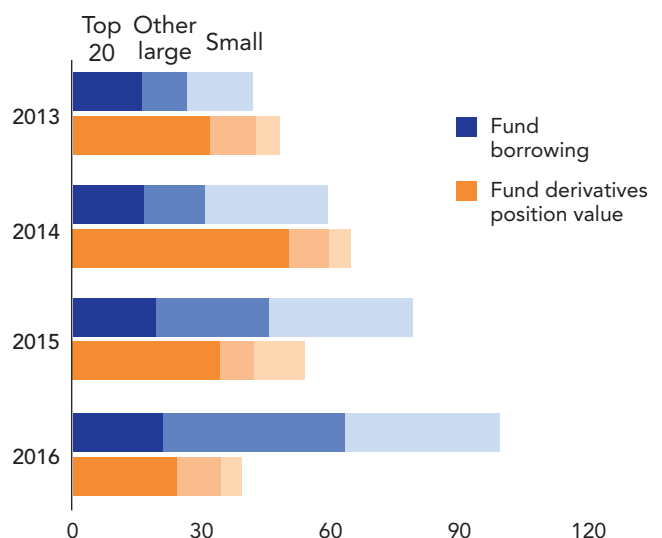


- Level 1 Quoted prices (unadjusted) in active markets for identical assets or liabilities
- Level 2 Other than quoted prices included within Level 1 that are observable for the asset or liability, either directly or indirectly
- Level 3 Unobservable inputs such as the adviser’s assumptions or the fund’s assumptions used to determine the fair value of the asset or liability
- Cost-based A measurement attribute other than fair value, and for which the adviser is not required to determine fair value in order to report

Note: Distribution of asset types is among all private equity funds filed on Form PF as of December 2016.

Source: Securities and Exchange Commission Form PF

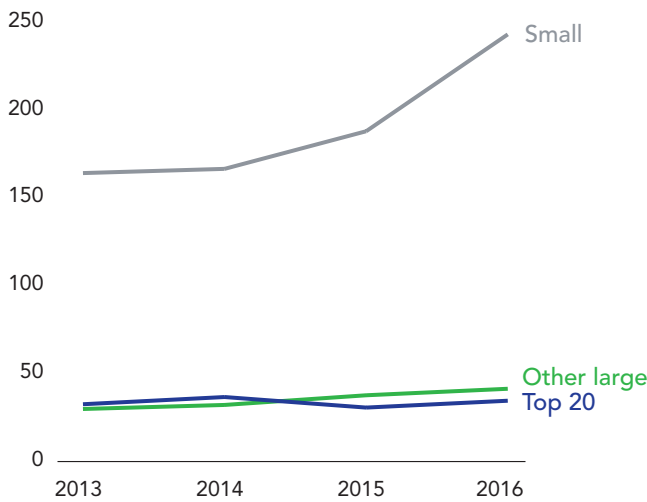
Figure 5. Borrowing and Derivatives Use by Private Equity Funds (\$ billions)



Note: “Top 20” represents the top 20 private equity advisers by gross private equity assets under management. “Other large” represents advisers with at least \$2 billion in private equity assets under management that do not rank in the top 20. “Small” are all other advisers reporting private equity fund information on Form PF.

Source: Securities and Exchange Commission Form PF

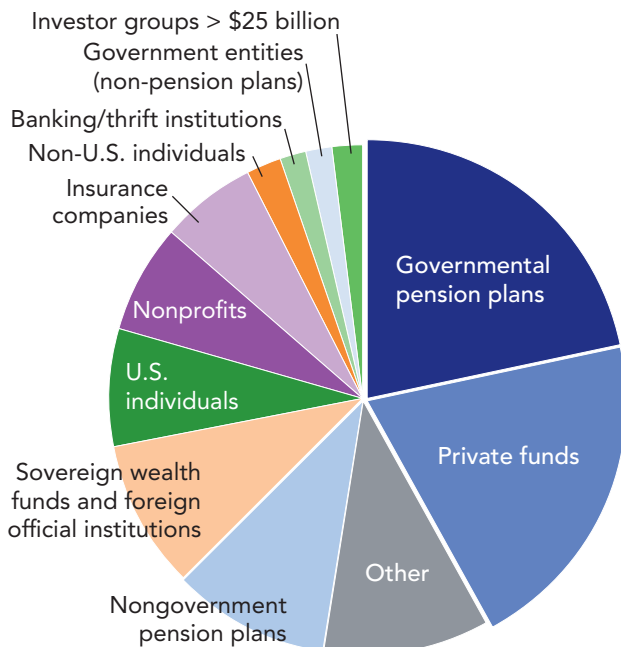
Figure 6. Private Equity Funds' Investments in Other Funds (\$ billions)



Note: "Top 20" represents the top 20 private equity advisers by gross private equity assets under management. "Other large" represents advisers with at least \$2 billion in private equity assets under management that do not rank in the top 20. "Small" are all other advisers reporting private equity fund information on Form PF.

Source: Securities and Exchange Commission Form PF

Figure 7. Snapshot of Investors in Private Equity Funds (percent)



Note: Distribution of investors among all funds reported by private equity advisers. Investor groups with less than \$25 billion in private equity investments represent investment companies, broker-dealers, and unknown non-U.S. investors. Data as of Dec. 31, 2016.

Source: Securities and Exchange Commission Form PF

increasing interest by smaller investors in fund-of-fund strategies (see **Figure 6**). Assets in parallel managed accounts were only \$28 billion among all advisers in 2016.¹⁵

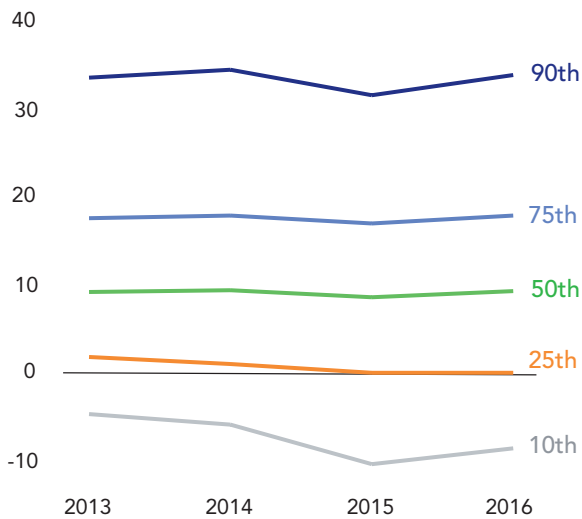
Distribution of fund investors

A broad range of investors invest in private equity funds. The distribution of fund investors has remained fairly stable since 2013, reflecting investors' long commitment terms. The largest investors in 2016 were pension funds (32 percent) and other private funds (20.3 percent), followed by "other," foreign institutions, and U.S. persons (see **Figure 7**). Banking institutions reduced their investments in private equity funds by \$17 billion between 2013 and 2016. The decline in bank investment may stem from recent regulatory restrictions on their proprietary investments. Changes in the private equity industry could affect different types of investors in different ways, depending on the composition of their portfolios. For example, rising interest rates may have an impact on private equity buyout opportunities in the near term, with varying effects on pension funds and insurance companies that have different time horizons for their investments.

Private equity fund returns

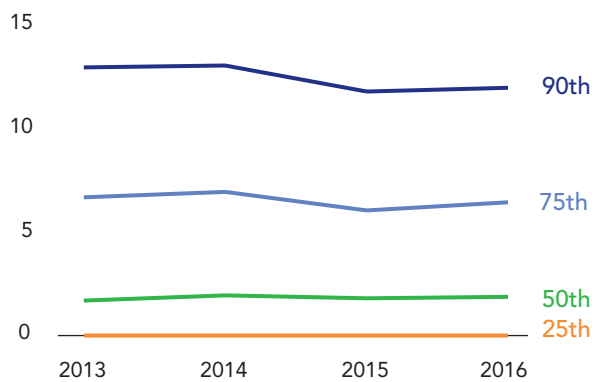
Returns by funds vary considerably. To analyze them, we divided funds into percentile groups. For example, a fund in the 90th percentile for returns has higher returns than 90 percent of all funds. The median or 50th percentile gross return was 12.1 percent at the end of the four-year period. However, the 10th percentile return was -3.5 percent, and the 90th percentile return was 41.4 percent. Net returns — gross returns minus the fees paid to fund advisers — show the same dispersion (see **Figure 8**). The median difference between a fund's annual gross and net returns, which is an estimate of fee levels, was 1.9 percent. Those differences increased to 6 percent and 12 percent at the 75th and 90th percentiles, respectively (see **Figure 9**).¹⁶ More than 25 percent of funds reported no difference between gross and net returns. The number of funds reporting net losses increased from about 700 in 2013 to 1,000 in 2016.

Figure 8. Percentiles of Net Annual Fund Returns (percent)



Note: Data as of Dec. 31, 2016. Includes data filed by all reporting private equity advisers.
Source: Securities and Exchange Commission Form PF

Figure 9. Difference between Gross and Net Annual Returns (percent)



Note: Data as of Dec. 31, 2016. Includes data filed by all reporting private equity advisers.
Source: Securities and Exchange Commission Form PF

Key Findings about Controlled Portfolio Companies

The findings of research on the potential systemic risks posed by controlled portfolio companies are mixed. Some researchers have found that companies controlled by private equity funds have lower bankruptcy rates than comparable firms with other ownership structures.¹⁷ Others have found that CPC borrowing can be procyclical, increasing contagion risks during periods of economic weakness.¹⁸ During such periods, defaults by CPCs that borrowed heavily when credit was readily available could affect banks, other financial firms, and financial markets more broadly.

Federal regulators have taken steps to reduce banks' exposure to such defaults. They issued joint guidance in 2013 and 2014 discouraging banks from financing transactions with debt-to-EBITDA levels of more than six-to-one. (EBITDA — earnings before interest, tax, depreciation, and amortization — is a common earnings measure.) The guidance covered loans to highly leveraged companies, some of which private equity funds control.¹⁹

Form PF gives insights into the industry composition of CPC investments, CPC debt-to-equity levels, and borrowings. Advisers that manage \$2 billion or more in private equity assets are required to submit detailed information about their CPCs on Section 4 of the form. Advisers are also required to file additional information about CPCs that engage in financial activities.

Industry composition of CPC investments

Private equity funds invest in a wide range of industries. As categorized by the North American Industry Classification System, manufacturing, information, and finance and insurance were the largest sectors, accounting for more than 40 percent of the total in 2016 (see **Figure 10**). Investments increased during 2013-16 in information and professional, scientific, and technical services and decreased in manufacturing and retail trade.

The share of investments managed by the top 20 advisers varied across the 10 largest invested industries. In 2016, the top 20 advisers managed between 30 percent and 40 percent of CPC assets in the five

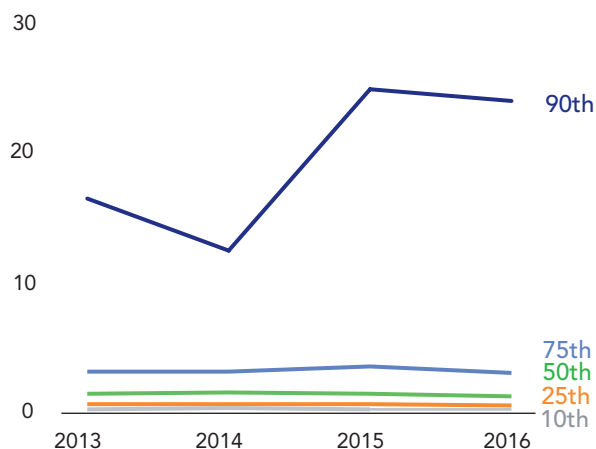
Figure 10. Fund Investments by Industry (percent of total)

| Industry (NAICS) | 2013 | 2014 | 2015 | 2016 |
|--|------|------|------|------|
| Manufacturing (31 – 33) | 16.9 | 16.5 | 17.1 | 15.2 |
| Information (51) | 11.7 | 12.3 | 13.1 | 13.8 |
| Finance and Insurance (52) | 11.8 | 11.3 | 11.4 | 11.2 |
| Mining (21) | 9.6 | 8.9 | 7.0 | 9.2 |
| Professional, Scientific, and Technical Services (54) | 5.9 | 6.4 | 7.4 | 7.9 |
| Transportation and Warehousing (48 – 49) | 6.6 | 7.3 | 7.5 | 6.9 |
| Retail Trade (44 – 45) | 7.2 | 7.8 | 6.3 | 5.9 |
| Utilities (22) | 4.1 | 4.4 | 4.6 | 5.0 |
| Administrative, Waste Management and Remediation Services (56) | 3.4 | 3.2 | 3.5 | 4.1 |
| Wholesale Trade (42) | 3.9 | 3.9 | 3.8 | 3.8 |
| Health Care and Social Assistance (62) | 4.4 | 3.5 | 3.7 | 3.6 |
| Real Estate Rental and Leasing (53) | 2.7 | 2.5 | 2.9 | 2.9 |
| Construction (23) | 2.7 | 2.7 | 2.5 | 2.5 |
| Accommodation and Food Services (72) | 4.4 | 4.3 | 4.3 | 2.2 |
| Other | 4.7 | 5.0 | 4.9 | 5.8 |

Note: Includes data filed by private equity advisers with at least \$2 billion in assets under management. "Other" represents North American Industry Classification System category codes for education (61), arts (71), other services (81), agriculture (11), management of companies (55), and NA (Not Applicable). Percentages were calculated by weighting reported fund investment percentages in CPCs by the total amount of assets categorized as Level 1, Level 2, Level 3, or cost-based. These figures are estimates of invested industry percentages.

Source: Securities and Exchange Commission Form PF

Figure 11. Distribution of Weighted Average Debt-to-Equity Ratios among Controlled Portfolio Companies



Note: Includes data filed by private equity advisers with at least \$2 billion in private equity assets under management. Data represent funds that reported total borrowing more than zero.

Source: Securities and Exchange Commission Form PF

largest industries, slightly higher than their share of total invested gross assets. This higher share reflects investment by larger funds in these sectors.

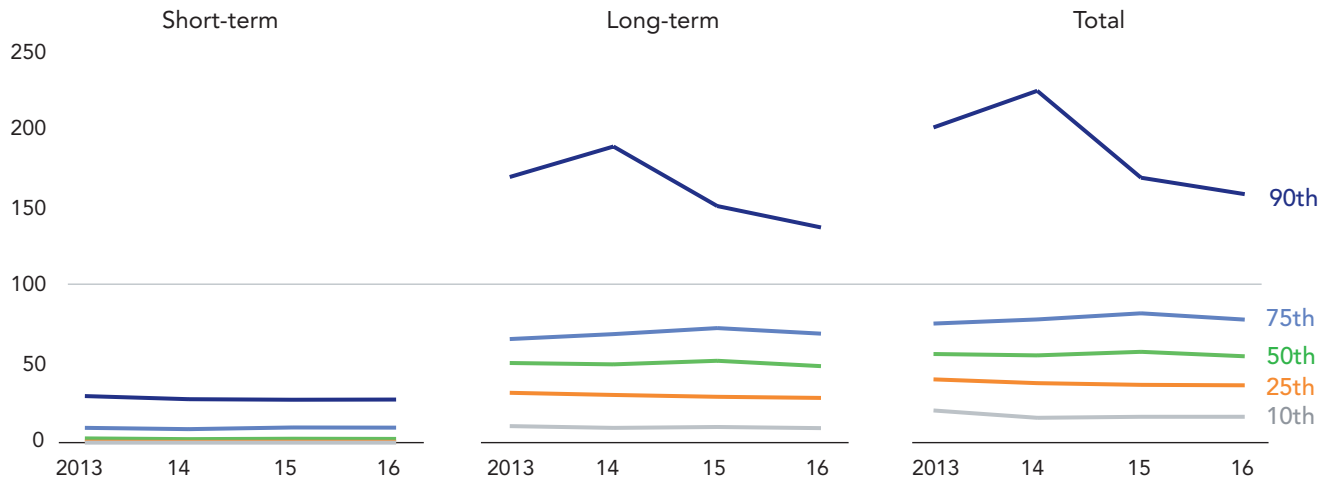
Less diversified portfolios could pose more risks for investors. On average, the top 20 advisers managed more diversified portfolios than other large advisers.

CPC leverage

Form PF collects portfolio-level data on CPC debt-to-equity ratios, total borrowing, and GAV, permitting evaluation of CPC leverage levels. (The fund-level CPC debt-to-equity ratios reported on Form PF constitute a weighted average of debt-to-equity ratios among the CPCs in a fund.) Higher leverage levels could suggest higher likelihood of CPC defaults during periods of economic weakness. For large private equity advisers, the debt-to-equity ratios of fund CPCs vary considerably (see **Figure 11**).²⁰ Although measures of the debt-to-equity ratio generally have been stable among fund CPCs at around 1.5 to 1, the 90th percentile debt-to-equity ratio increased from 16.5 to 1 in 2013 to 24 to 1 in 2016. This increase may indicate rising leverage among some CPCs.

Form PF requires funds to report aggregate CPC current and long-term liabilities. More reliance on short-term borrowing could increase the likelihood of

Figure 12. Controlled Portfolio Company Borrowing to Gross Asset Value (percent)



Note: Includes data filed by private equity advisers with at least \$2 billion in private equity assets under management. Data represent funds that reported total borrowing more than zero.

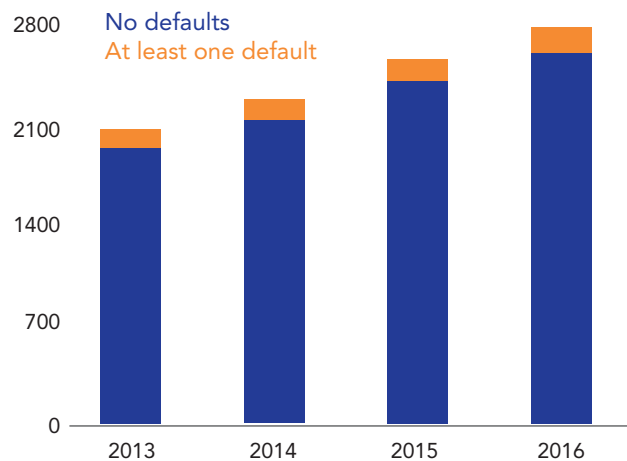
Source: Securities and Exchange Commission Form PF

CPCs facing funding constraints during market stress, when credit becomes less available. Significant short-term borrowing could cause stress within CPCs if resources potentially used for operations and investing are needed instead to repay debt. Form PF data show a number of funds have ratios of CPC current borrowing to gross assets of more than 25 percent (see **Figure 12**). However, most CPC borrowing is composed of long-term liabilities. For three quarters of funds, 80 percent or more of their borrowing is long-term. Ratios of total borrowing to gross assets for the top 10 percent of funds are well above 100 percent, suggesting some CPCs in these funds may have negative equity — borrowing that exceeds the value of their assets. The median ratio of CPC borrowing to gross assets is just under 60 percent and appears relatively stable.

CPCs that borrow heavily may be more likely to default. The number of funds with one or more portfolio companies that had a default increased between 2013 and 2016 (see **Figure 13**).²¹ Still, only six percent of funds had a CPC default in 2016.

One reporting shortfall of Form PF is that advisers are required to report only aggregate borrowing for CPCs in their funds. As a result, the total amount of CPC borrowing is difficult to determine because more than one fund may invest in any CPC. As a result, fully evaluating risks associated with CPC borrowing is difficult.

Figure 13. Number of Funds with Controlled Portfolio Company Defaults



Note: Includes data filed by large private equity advisers with at least \$2 billion in private equity assets under management.

Source: Securities and Exchange Commission Form PF

CPCs that engage in financial activities

Form PF collects more granular data about financial CPCs than other CPCs, including borrowing by individual companies. This information offers insights into how the financial system is evolving and where risks may be emerging. About a tenth of large advisers' private equity funds have investments in financial CPCs.

The market value of financial CPCs owned at least in part by a private equity fund fell significantly during 2013-15, but increased in 2016 (see **Figure 14**). Increases in 2016 were most notable in nonbank firms and activities related to credit intermediation (receiving and extending credit), mirroring broader shifts in financial intermediation from banks to nonbanks.²² The value of CPCs engaged in depository credit intermediation decreased in 2013-15.

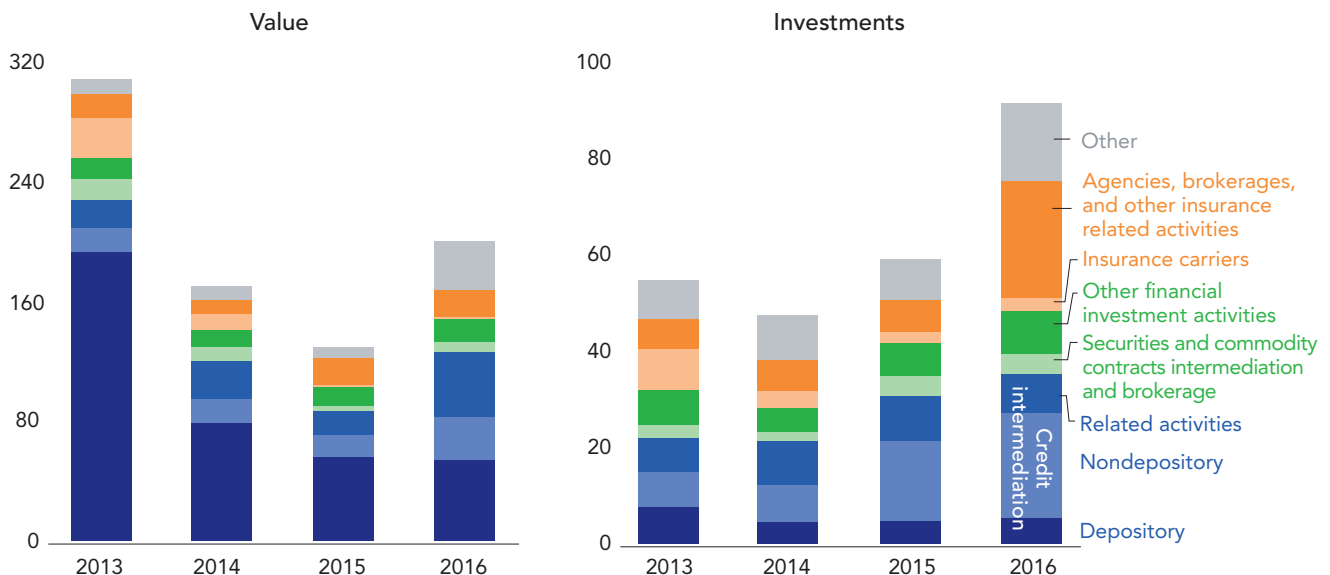
Total fund dollars invested in financial CPCs (see **Figure 14**) increased during the four-year period to \$91 billion. Of that amount, 59 percent was from the top 20 private equity advisers. In 2013-16, these investments appear to have migrated from banks and insurance companies to nonbanks, such as nondepository credit providers, investment advisers, and brokerages. These shifts may have contributed to the

growth in nonbank financial credit intermediation in the U.S. economy. Investments in financial CPCs more than doubled among funds managed by the top 20 advisers, reaching \$54 billion in 2016. Large private equity advisers must also report data on financial CPCs' gross asset value and debt-to-equity ratios. Gross asset values for financial CPCs declined moderately from \$452 billion to \$412 billion in 2013-16. Although financial CPC debt-to-equity ratios increased slightly at the 90th percentile, the level at the 90th percentile remains significantly lower than for the full set of CPCs (see **Figures 11 and 15**). (For example, the 90th percentile financial CPC debt-to-equity ratio was less than 7 to 1 at the end of 2016, compared to 24 to 1 for all CPCs). These ratios suggest leverage levels in financial CPCs have been fairly stable and financial CPCs are not as leveraged as other CPCs. Lower leverage levels may mean less impact to counterparties from a company default.

Other CPC data on Form PF

Funds could have exposures to CPCs through guarantees, but Form PF reporting shows that relatively few funds (less than 10 percent of Section 4 filers) provide guarantees or are otherwise required to satisfy obligations of their portfolio companies.

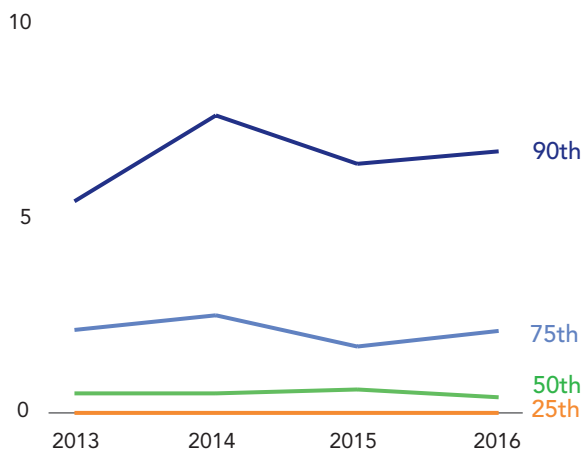
Figure 14. Value and Investments in Financial Controlled Portfolio Companies (\$ billions)



Note: Includes data filed by large private equity advisers with at least \$2 billion in private equity assets under management.

Source: Securities and Exchange Commission Form PF

Figure 15. Debt-to-Equity Ratios in Financial CPCs



Note: Includes data filed by large private equity advisers with at least \$2 billion in private equity assets under management.
Source: Securities and Exchange Commission Form PF

During the financial crisis, a number of banks were exposed to private equity funds through bridge loans and commitments for deals. As of 2016, relatively few funds had CPCs with bridge loans, or commitments for bridge loans, in place: total drawn and undrawn amounts were just \$4 billion in 2016.

Form PF also collects information on CPC investments by region and country. Most investments are in North America, Europe and Asia, with the greatest focus on the United States. Additional information on these breakdowns is in the SEC's Private Funds Statistics quarterly report, available on the SEC website.²³

Conclusion

Form PF data provide insights not previously available about the activities of private equity funds. The data allow regulators to monitor trends such as increased borrowing by CPCs or shifts in funds' investments. Such trends may signal broader changes in the financial system.

Default rates for CPCs have remained low in recent years. But this brief shows an increase in CPC borrowing and leverage in 2013-16. Higher leverage levels could signal an increased likelihood of default, particularly if financing is short term or based on floating interest rates at a time when interest rates may rise.

In 2016, most CPC debt was long term. Long-term debt aligns with funds' longer-term investment horizons, which reduces risks. However, some CPCs had significant short-term debt exposures. These exposures should continue to be monitored.

Form PF data also show that financial CPC investments have shifted from banks and insurance companies to nonbank entities providing credit intermediation. This shift mirrors broader trends in U.S. markets. Given restrictions on banking activities, monitoring the growth of nonbank financial activities is important to better understand if risks are migrating into less-regulated markets. Mitigating those concerns, Form PF data show that debt-to-equity ratios are generally lower at financial CPCs than other CPCs.

Form PF is not a perfect tool for monitoring trends in the private equity industry. The data collection lacks a long history, and reporting errors persist. Still, the analysis in this brief illustrates that Form PF data can be useful for monitoring basic fund characteristics, investment trends, and leverage levels in CPCs, providing insight into potential risks in financial markets.

Endnotes

- ¹ David Johnson, Senior Researcher (david.johnson@ofr.treasury.gov), and Francis Martinez, Research Analyst (francis.martinez@ofr.treasury.gov). The authors thank Jill Cetina, Greg Feldberg, Laurel Hammond, and Julie Vorman for their comments and suggestions.
- ² The SEC's Form ADV defines a private equity fund as a private fund that is not a hedge fund, liquidity fund, real estate fund, securitized asset fund, or venture capital fund and does not provide investors with redemption rights in the ordinary course.
- ³ See McKinsey & Company, *The rise and rise of private markets, McKinsey Global Private Markets Review 2018* (available at www.mckinsey.com/industries/private-equity-and-principal-investors/our-insights/the-rise-and-rise-of-private-equity), accessed April 20, 2018).
- ⁴ See Preqin, "2018 Preqin Global Private Equity & Venture Capital Report Sample Pages" (available at docs.preqin.com/reports/2018-Preqin-Global-Private-Equity-Report-Sample-Pages.pdf), accessed March 16, 2018).
- ⁵ Funds and invested portfolio companies are separate legal entities.
- ⁶ A Controlled Portfolio Company is defined on Form PF as "a portfolio company that is controlled by the private equity fund, either alone or together with the private equity fund's affiliates or other persons that are, as of the data reporting date, part of a club or consortium including the private equity fund." Form PF is available at www.sec.gov/rules/final/2011/ia-3308-formpf.pdf (accessed Feb. 26, 2018).
- ⁷ Private equity funds with U.S. fund investors and at least \$150 million in private fund assets are required to file. The data filed on Form PF are confidential and strictly limited in use. Form PF information provided in this brief are aggregated and rounded to avoid potential disclosure of proprietary information of individual Form PF filers.
- ⁸ Section 1(b) of the form must be filled out by all private funds required to file. Section 4 of the form is focused on private equity funds of large private equity advisers.
- ⁹ Private equity advisers submit Form PF annually. Information in this brief references data through the end of 2016.
- ¹⁰ See David C. Johnson, "Private Fund Data Shed Light on Liquidity Funds," OFR Brief no. 15-05, July 9, 2015 (available at www.financialresearch.gov/briefs/files/OFRbr-2015-05-Private-Fund-Data-Shed-Light-on-Liquidity-Funds.pdf), accessed Feb. 26, 2018).
- ¹¹ This discussion is based on Section 1.b of Form PF. Funds with zero values for gross or net assets are excluded from this analysis.
- ¹² Level 3 assets, defined under the Financial Accounting Standards Board's Statement of Financial Accounting Standards 157, are assets whose fair value cannot be determined from available market prices. Assets are generally valued using models or other techniques. For private equity funds, equity investments in private companies would generally be considered Level 3 assets.
- ¹³ See Securities and Exchange Commission, "SEC Private Fund Statistics: Second Calendar Quarter 2017," Jan. 17, 2018 (available at www.sec.gov/divisions/investment/private-funds-statistics/private-funds-statistics-2017-q2-accessible.pdf), accessed Feb. 26, 2018).
- ¹⁴ See SEC (2018).
- ¹⁵ Parallel managed accounts are managed accounts or other pools of assets that pursue substantially the same investment objectives and strategies and invest side-by-side in substantially the same positions as a private fund. The amount of separate account investments in private equity is probably underreported on Securities Exchange Commission's Form PF, because separate accounts falling outside the definition of a parallel managed account are not required to be reported on the form.
- ¹⁶ Private equity funds often charge investors a fee based on two components: (1) a fixed management fee based on fund assets under management and (2) a fee calculated as a percentage of fund returns. This model is often characterized as a "2-and-20" fee structure, with a 2 percent management fee and 20 percent performance fee.
- ¹⁷ See Tereza Tykova and Mariela Borell, "Do Private Equity Owners Increase Risk of Financial Distress and Bankruptcy?" *Journal of Corporate Finance* 18 (2012), 138-150 (available at <http://isiarticles.com/bundles/Article/pre/pdf/48344.pdf>), accessed Feb. 26, 2018).
- ¹⁸ See Ulf Axelson, Tim Jenkinson, Per Stromberg and Michael Weisbach, "Borrow Cheap, Buy High? The Determinants of Leverage and Pricing in Buyouts," *Journal of Finance* 68 (2013), 2223-2267 (available at <https://cpb-us-west-2-juc1ugur1qwqqq4.stackpathdns.com/u.osu.edu/dist/8/7843/files/2015/01/AJSWJF2013-16cl5uj.pdf>), accessed Feb. 26, 2018).
- ¹⁹ See Board of Governors of the Federal Reserve System, Federal Deposit Insurance Corporation, and Office of the Comptroller of the Currency, "Interagency Guidance on Leveraged Lending," March 21, 2013 (available at www.federalreserve.gov/supervisionreg/srletters/sr1303a1.pdf), accessed June 4, 2018).
- ²⁰ This analysis reflects funds that reported CPCs with weighted average debt-to-equity ratios of more than zero. In 2016, about 400 funds reported negative portfolio weighted average debt-to-equity ratios. Whether these reports resulted from filer errors or simply reflected fund investment in CPCs with negative equity is unclear.
- ²¹ Form PF does not require private equity funds to detail the circumstances of a default by a portfolio company. The form asks: "Did the reporting fund or any of its CPCs experience an event of default under any of its indentures, loan agreements or other instruments evidencing obligations for borrowed money?" Funds may respond Yes, No, or Null if not applicable to the fund.
- ²² See OFR, 2016 Financial Stability Report and 2017 Financial Stability Report (available at www.financialresearch.gov/reports/), accessed Feb. 26, 2018).
- ²³ The SEC's quarterly private funds statistics are at sec.gov/divisions/investment/private-funds-statistics.shtml (accessed Feb. 26, 2018).