

Ownership, Concentration, and Investment[†]

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We argue that changes in firm governance have contributed to the weakness of corporate investment in recent years. Our initial motivation comes from four trends affecting the US corporate sector during the 2000s:

- (i) Concentration and profits have increased in most industries (Furman 2015; Grullon, Larkin, and Michaely 2016; Barkai 2017).
- (ii) Business investment has been weak relative to profitability, funding costs, and market values (Gutiérrez and Philippon 2017b).
- (iii) Payout rates of US-incorporated public firms, including buybacks, have increased markedly, as shown in Figure 1, panel A.
- (iv) The fraction of the equity market owned by institutional investors, quasi-indexers in particular, has increased, as shown in Figure 1, panel B.¹

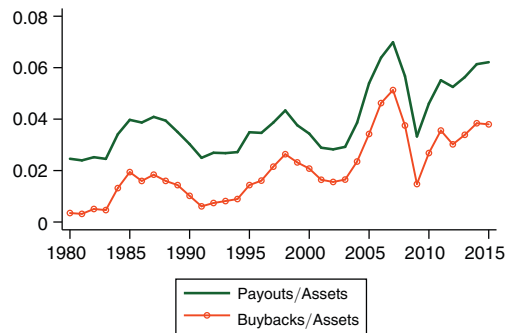
Two main explanations have been proposed for the joint evolution of concentration and investment: intangible capital (Alexander and Eberly

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¹Investor classification based on Bushee (2001). Dedicated institutions have large, long-term holdings in a small number of firms. Quasi-indexers have diversified holdings and low portfolio turnover consistent with a passive, buy-and-hold strategy of investing portfolio funds in a broad set of firms. Transient owners have high diversification and high portfolio turnover.

Panel A. Share buybacks and payouts



Panel B. Average share of institutional ownership, by type

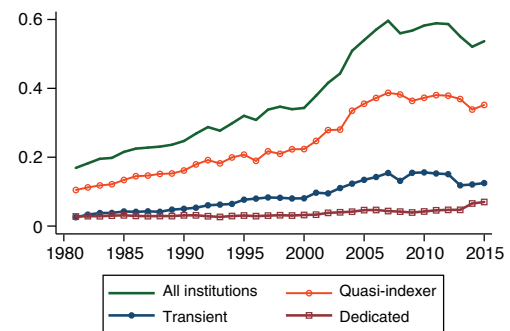


FIGURE 1. PAYOUTS AND INSTITUTIONAL OWNERSHIP

Notes: Panel A shows the aggregate ratio of payouts and buybacks to assets. Panel B shows the average percent institutional ownership by ownership type. Firm financials from Compustat; ownership from Thomson Reuters and Brian Bushee's website. Includes only US-incorporated firms.

2016; Crouzet and Eberly 2018) and increased market power (Gutiérrez and Philippon 2017a). These two explanations do not account for the entire investment gap, and we study the role of corporate governance.

Firms must continuously choose what fraction of earnings to retain, invest, and pay out. Shareholders and managers often disagree about these choices. A large literature in corporate finance argues that managers have a tendency

to prefer larger firms. One can also argue that equity markets put excessive emphasis on quarterly earnings. Almeida, Fos, and Kronlund (2016) show that the probability of share repurchases is sharply higher for firms that would have just missed the earnings per share forecast in the absence of a repurchase. Terry (2017) shows that firms just meeting Wall Street forecasts have lower research and development growth. Managers can also be shortsighted, however, and Kaplan (2017) argues against the idea that markets have a short-term bias. The nature of the potential bias, if any, is therefore an empirical question.

The joint evolution of investment, payouts, and market value can help us understand these governance issues. Suppose that managers' incentives become more aligned with shareholders' preferences. Market values unambiguously increase. Payouts to shareholders increase at some horizon. And, if managers prefer larger firms, and if the change in governance is correctly identified, investment decreases. A shift in governance can therefore account for the gap between Tobin's Q and investment documented in Gutiérrez and Philippon (2017b). Consistent with this idea, Figure 2 shows that buybacks increased faster for firms with high quasi-indexer ownership.² In the remainder of the paper we test more formally this hypothesis.

I. Ownership and Investment

We first want to test whether high institutional ownership, particularly quasi-indexer ownership, leads to higher payouts and lower investment. The assumption is that quasi-indexers affect governance and therefore investment. The literature has argued that quasi-indexers affect governance through voice (Appel, Gormley, and Keim 2016a), cooperation with activists (Appel, Gormley, and Keim 2016b) and, to a lesser extent, rebalancing (Wurgler 2011). The

²It is worth noting that tighter governance moves firms toward the (firm-level) shareholder value optimum. This firm-level optimum may not coincide with the social optimum if other markets are imperfect (e.g., a pro-investment bias can be socially optimal under imperfect competition). Throughout this paper, we use the dataset of Gutiérrez and Philippon (2017a). It includes all US incorporated firms in Compustat except FIRE and Utilities. We focus on buybacks given the larger variation, but confirm conclusions are generally robust to using payouts.

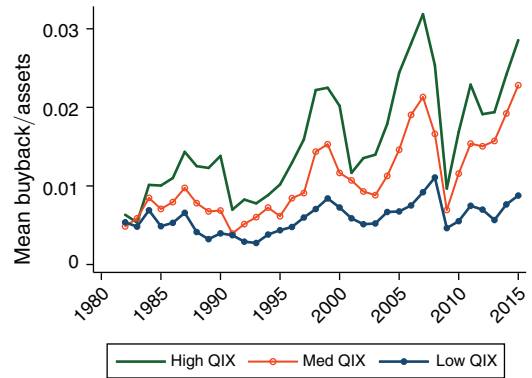


FIGURE 2. MEAN BUYBACK RATE BY QUASI-INDEXER OWNERSHIP

Notes: Annual data for all US incorporated firms in our Compustat sample. To ensure a constant industry mix, we first compute mean buyback rates within industries and QIX terciles, and then average them across industries.

identification issue is that ownership, payouts, and investment are jointly endogenous.

One possible identification strategy relies on the reconstitution of Russell indices. These indices are re-constituted annually and result in differential weights for firms around the 1,000/2,000 cutoff. In 2005, for example, the ten smallest firms in the Russell 1,000 had a combined index weight of 0.004 percent, and the next ten largest firms were in the Russell 2,000 with a combined index weight of 2.3 percent (Crane, Michenaud, and Weston 2016). The differential weights lead to sharp exogenous variation in institutional ownership. Crane, Michenaud, and Weston (2016) use a regression discontinuity (RD) design to show that an increase in institutional ownership causes an increase in payouts.³

³This specification and some of the results are controversial. Wei and Young (2017) document pre-existing trends that challenge the use of RD. Appel, Gormley, and Keim (2016a) propose an instrumental variables specification and argue that passive investors improve governance and exert influence through their large voting blocs. Schmidt and Fahlenbrach (2016), on the other hand, find negative effects on some governance measures. We note that the controversy centers around specific governance outcomes that are not central to our analysis of investment. Our results are consistent with the literature on the effects of institutional ownership on investment. Aghion, Van Reenen, and Zingales (2013) find that greater transient and dedicated ownership increase R&D investment, which implies that a shift toward quasi-indexer ownership decreases it. Harford, Kecskés, and

They find that the elasticity of log-payouts to percentage point changes in ownership is 4.57 (Crane, Michenaud, and Weston 2016, Table 3). When we run a simple OLS regression of log-payouts on lagged ownership we obtain a coefficient of 3.05. We are thus confident that we are not over estimating the impact of ownership. More importantly, we find that investment decreases with rising payouts.

The index-recomposition identification is appealing but too local given our goal to explain broad trends in payouts and investment. To be able to consider a large panel of firms, we use pre-2000 quasi-indexer ownership as an instrument for post-2000 buybacks and investment, controlling for initial firm characteristics. This approach is supported by two facts. Firstly, firm ownership is highly persistent within quasi-indexer institutions: a regression of ownership at t on ownership five years prior yields a coefficient above 0.8, even after controlling for firm characteristics such as market capitalization. Secondly, activism—one of the primary mechanisms through which quasi-indexer ownership affects buybacks—increases only after 2004. For this governance impact, pre-2000 ownership is therefore a valid instrument in the sense of Bartik (1991).

Columns 1 and 2 of Table 1 present our base results. We include industry and year fixed effects and a wide range of pre-2000 firm-level controls (e.g., size, market capitalization, etc.). We instrument buybacks with pre-2000 quasi-indexer ownership, and then use the portion of buybacks that is explained by ownership to predict investment. We also instrument firm Q with its industry average to mitigate measurement error (unreported). We find that higher pre-2000 quasi-indexer ownership appears to cause higher buybacks and lower investment.⁴ In unreported tests, we interact pre-2000 quasi-indexer ownership with the aggregate buyback-to-assets ratio and include firm as well as year fixed effects. We find that firms with higher quasi-indexer ownership are more sensitive to aggregate buyback trends.

II. Interaction between Competition and Ownership

The welfare consequences of stronger governance depend crucially on the degree of competition in the goods market. In noncompetitive industries, an increase in firm value can come from an increase in markups, and shareholders are likely to favor inefficiently low levels of investment. Under perfect competition, by contrast, shareholder value and social welfare are more likely to be aligned. Moreover, an important paper by Giroud and Mueller (2011) shows that governance is primarily an issue for firms in noncompetitive industries. Managers of firms in highly competitive industries are under constant pressure to innovate. We therefore focus on the interaction between governance, concentration, and investment. We measure concentration in the product market and in the asset management industry. We define the modified Herfindahl as $MHHI = HHI + CO$, where HHI denotes the import-adjusted Herfindahl constructed in Gutiérrez and Philippon (2017a) and CO accounts for anti-competitive effects of common ownership following Schmalz (2018).⁵

Columns 3 and 4 of Table 1 show that governance affects firm investment primarily in noncompetitive industries. The interaction of the pre-2000 quasi-indexer ownership with the modified Herfindahl is positive and significant. More importantly, the R^2 of the second stage doubles, showing that it is economically important to take into account the interaction of governance and concentration.

Columns 5 and 6 show that the data agrees with the basic specification of $MHHI$. If we enter the traditional measure HHI and the common ownership adjustment CO separately in our interaction regression, we find that their coefficients are both significant and of similar magnitude.

Table 2 focuses on a different source of variation, closer to Bartik (1991). Recall from

Mansi (2017) study a broad set of firm policies and find that “exogenous” long term institutional ownership increases payouts and decreases investment.

⁴Note that we regress $\log(1 + BB)$ to include firms with zero buybacks, as opposed to $\log(BB)$ as in Crane, Michenaud, and Weston (2016). The latter specification yields a higher coefficient for $\log(BB)$ on pre-2000 ownership, closer to Crane, Michenaud, and Weston (2016).

⁵Formally, $HHI = \sum_j s_j^2$ and $CO = \sum_j \sum_{k \neq j} s_j s_k \times \frac{\sum_i \beta_{ij} \beta_{ik}}{\sum_i \beta_{ij}^2}$, where s_j denotes the share of sales for firms j in a given industry; and β_{ij} denotes the ownership share of investor i in firm j . Ownership data is from Thomson-Reuters Institutional Holdings. See Gutiérrez and Philippon (2017b) for details.

TABLE 1—IMPACT OF OWNERSHIP AND COMPETITION ON INVESTMENT

	Ownership		Ownership and competition			
	1st stage	2nd stage	1st stage	2nd stage	1st stage	2nd stage
	$\log BB_{i,t}$	$\frac{I_{i,t}}{K_{i,t}}$	$\log BB_{i,t}$	$\frac{I_{i,t}}{K_{i,t}}$	$\log BB_{i,t}$	$\frac{I_{i,t}}{K_{i,t}}$
	(1)	(2)	(3)	(4)	(5)	(6)
Industry mean Q_{t-1}	-0.010 [0.027]		-0.043 [0.027]		-0.043 [0.027]	
$QIX_i^{96,99}$	0.751 [0.137]		-1.547 [0.239]		-1.56 [0.243]	
$MHHI_{t-1}$			-0.624 [0.239]			
$QIX_i^{96,99} \times MHHI_{t-1}$			6.271 [0.534]			
HHI_{t-1}					-0.585 [0.710]	
$QIX_i^{96,99} \times HHI_{t-1}$					7.330 [1.806]	
CO_{t-1}					-0.646 [0.259]	
$QIX_i^{96,99} \times CO_{t-1}$					6.167 [0.587]	
$Q_{i,t-1}$		0.101 [0.01]		0.101 [0.01]		0.102 [0.01]
$BB_{i,t}/AT_{i,t}$		-0.081 [0.03]		-0.025 [0.01]		-0.025 [0.01]
Firm-level controls (96–99)		Yes		Yes		Yes
Year fixed effects		Yes		Yes		Yes
Industry fixed effects		Yes		Yes		Yes
Firm fixed effects		No		No		No
Observations		27,788		27,788		27,788
2nd stage between/overall R^2		6.5 percent/2.9 percent		11.9 percent/5.8 percent		11.8 percent/5.8 percent

Notes: Table shows the results of firm-level 2SLS random effects models of net I/K over the 2000–2016 period. Q instrumented by mean industry Q (first stage omitted); and log-Buybacks (denoted as $\log BB = \log(1+BB)$) instrumented by pre-2000 quasi-indexer ownership. Lagged firm age, log-assets, log-market capitalization, and five-year sales volatility as of 1999 and average Q , Operating Surplus/Capital (OS/K), dividend/assets, cash-flow/assets, R&D/assets, annual sales growth, and book leverage from 1996 to 1999 included as controls. Standard errors in brackets. Data primarily from Compustat.

Figure 1, panel A, that aggregate buybacks increase sharply in the mid 2000s. The regressions show that firms with high quasi-indexer ownership respond more to aggregate buyback trends, and this effect is even stronger in less competitive industries. Our dependent variable is the ratio of buybacks to assets to be consistent with the aggregate series. Our results, labeled BB/AT , show that quasi-indexer ownership pushes firms to pay out more and invest less, and that this effect is stronger in noncompetitive industries.

To conclude, let us return to the aggregate investment gap, i.e., the gap between actual

and predicted investment based on Tobin’s Q . We decompose the various explanations with a series of panel regressions across years (t) and industries (i):⁶

$$\frac{I_{i,t}}{K_{i,t}} = \alpha_t^{(h)} + \beta Q_{i,t-1} + X_{i,t-1}^{(h)} + u_i + \varepsilon_{i,t},$$

⁶We use BEA investment series so we follow the BEA classification, which has about 43 industries and is comparable to NAICS-3. See Gutiérrez and Philippon (2017b) for details on the construction of all the variables.

TABLE 2—REGRESSION RESULTS

	“Bartik”	
	1st st. $\frac{BB_{i,t}}{AT_{i,t}}$ (1)	2nd st. $\frac{I_{i,t}}{K_{i,t}}$ (2)
Industry mean Q_{t-1}	-0.000 [0.0005]	
$MHHI_{t-1}$	0.003 [0.004]	
$QIX_i^{96,99} \times \overline{BB/AT}$	0.786 [0.181]	
$QIX_i^{96,99} \times \overline{BB/AT} \times MHHI_{t-1}$	1.24 [0.396]	
$Q_{i,t-1}$		0.141 [0.01]
$BB_{i,t}/AT_{i,t}$		-1.941 [0.72]
Firm-level controls (96–99)		No
Year and firm fixed effect		Yes
Observations		35,244
2nd stage between/overall R^2	22.8 percent/13.6 percent	

Notes: Table shows the results of firm-level 2SLS fixed effects model of net I/K over the 2000–2016 period. Q instrumented by mean industry Q (first stage omitted); and BB/AT instrumented by pre-2000 quasi-indexer ownership interacted with aggregate BB/AT and $MHHI$. Firm log-age included as control. Standard errors in brackets, clustered at the firm level. Data primarily from Compustat. F -stat for regression is 43.85.

where $I_{i,t}$ is net investment, $K_{i,t}$ is capital (tangible plus intangible), and u_i are fixed effects. We focus on how the (unexplained) fixed effects $\alpha_t^{(h)}$ depend on the set of controls $X_{i,t-1}^{(h)}$ in specification h , which always include the (log of) average age of firms in the industry. With no other control, the sequence of $\alpha_t^{(h)}$ imply that the capital stock is about 10 percent lower than expected by 2015. When we control for intangible intensity, the gap shrinks by about 3 percentage points. This is why we argue that rising intangibles accounts for a quarter to a third of the gap. When we control for competition, the gap shrinks by about four points. Finally, when we control for governance, we can explain the entire gap.⁷

⁷One obvious caveat is that this is a statistical decomposition, in the sense that the year-fixed-effects become insignificant. We check that the order of inclusion does not affect the portion of the investment gap explained, because, once

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