Product Market Threats, Payouts, and Financial Flexibility

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ABSTRACT

We examine how product market threats influence firm payout policy and cash holdings. We develop new measures of competitive threats using firms' product descriptions. Our primary measure, product market fluidity, captures changes in rival firms' products relative to the firm's products. We show that product market fluidity decreases firm propensity to pay dividends and repurchase shares and increases the cash a firm holds. Firms which are likely to have less access to financial markets are also more likely to hold greater amounts of cash when fluidity is high. These results are consistent with firms' financial policies being significantly shaped by product market threats and dynamics.

I Introduction

We examine how the product market threats faced by a firm shape its payout policy and cash holdings. We use computational linguistics to analyze over 42,000 individual firm business descriptions from firm 10-Ks to construct new measures of the structure and evolution of the product space occupied by firms. These measures include product fluidity, a new measure of the competitive threats faced by a firm in its product market, that captures changes in rival firms' products relative to the firm. We use these new text-based measures to test hypotheses about firms' financial policies including the dividend and repurchase payouts to shareholders and the cash balances retained by firms.

Payouts and cash balances are important because U.S. corporations hold and distribute considerable amounts of cash. In 2008, payouts through dividends and repurchases exceeded $450 billion, more than twice their level in 1997. Despite these large payouts, firms' cash balances have increased. Non-farm nonfinancial businesses in the U.S. have doubled their cash balances over our sample period between 1997 and 2008 to $1.3 trillion and these balances continue to grow.[1] Payouts remain significant relative to cash balances. Between 1997 and 2008, annual payouts represent between 25% and 38% of cash on hand. Equivalently, cash balances represent 3-4 years of annual payouts.

Our focus on product market threats to explain payouts and cash balances is motivated by both evidence from the field and received theory. The survey evidence in Brav, Graham, Harvey, and Michaely (2005) indicates that 70% of managers perceive the "... stability and sustainability of future earnings " as being central to

[1] Cash and cash equivalents amount to $1.99 trillion as of the third quarter in 2011. See the Federal Reserve Release B.102.

their choice of payout policy. A stable environment conducive to dividend payouts is less likely when product markets are changing, particularly when changes are due to competitive threats by rival firms. Thus, fluidity should be negatively related to the propensity to pay dividends and positively related to holding higher cash balances. Paying lower dividends and repurchasing fewer shares while retaining cash and liquid assets can provide flexibility to firms in less stable markets, allowing them to react more aggressively to competitive threats when they do materialize.

This role for product market fluidity is also consistent with the industrial organization literature on product life cycle, as in Abernathy and Utterback (1978) or Klepper (1996). Firms should be more willing to make a dividend commitment when their product has reached a stable point and when they foresee fewer competitive threats. Alternatively, DeAngelo, DeAngelo, and Skinner (2009) discuss a life cycle theory with managerial agency in which free cash flow creates a mindset of resource abundance. Payouts prevent managers from wasting cash flow. Payouts may be less necessary when firms are disciplined by competitive threats from product markets. If so, fluidity should be negatively associated with payouts.

We develop a new measure of product market threats, fluidity, using the business descriptions of firms from 10-K's. While we formally define fluidity later, intuitively it measures the change in a firm's product space due to moves made by competitors in a firm's product markets. The focus on rivals is a distinguishing feature of fluidity. For instance, even if a company's current product mix is stable, entry by rivals can pose competitive threats to a firm. Our measure picks up such threats. Further supporting a link to competitive threats, we find that fluidity is positively correlated with the relation between a firm's product descriptions and the business descriptions of entrepreneurial firms receiving venture capital or undertaking IPOs. These findings are relevant for theories that relate strategic interaction and the threat of predation to firm financial policies including Telser (1966) and Bolton and Scharfstein (1990), and as empirically studied by Phillips (1995).

Our central finding is that product market fluidity has an economically significant relation to dividends, repurchases, and cash holdings. Firms facing changes in their product markets have a lower propensity to pay dividends or repurchase shares. These firms also pay lower dividend amounts. These results are most pronounced for dividends, which entail a long-term commitment to pay out cash flows that is not easily reversed. Firms in more fluid markets are also less likely to initiate and more likely to omit dividends. Fluidity is also associated with higher cash balances. Thus firms facing fluid product markets and competitive threats adopt more conservative financial policies.

We emphasize that product market fluidity, which is an ex-ante measure of threats, can be quite different from measured cash flow risk. For instance, firm's managers facing competitive threats may change their products frequently, maintain ex post stable profits, so measured cash flow risk may be low although ex-ante threats are high. For instance, Apple Inc. has changed its product mix frequently over the last decade. It has high profits and low measured cash flow risk - yet pays no dividends. Empirically, product market fluidity and cash flow risk are only moderately correlated and both are independently negatively associated with the likelihood of paying dividends. Echoing the link between competitive threat and both payout and cash policies, a recent article in the Wall Street Journal on Hewlett-Packard (HP) also mentions the link between financial conservatism and product market threats.[2]

[2] In the article, an analyst at Evercore Partners notes that low cash "absolutely limited its options" despite HP's relatively healthy balance sheet. The article goes on to say that this is because "the sector changes more rapidly" than other sectors. See (Worthen (2011))

We conduct extensive robustness tests. We explicitly consider whether our results can be explained by growth options and consider multiple controls including firm market-to-book, asset growth, firm age, R&D expenditure and patenting intensity. We also show that our product fluidity measure is distinct from cash flow risk and that product text descriptions capture changing threats in the product market in unique ways not reflected in firms' financial data. Our results are also robust to many related controls including risk (Hoberg and Prabhala (2009)), firm maturity (DeAngelo, DeAngelo, and Stulz (2006)), and earnings losses (DeAngelo, DeAngelo, and Skinner (1992)). Our results are also robust in a subsample that excludes the largest dividend payers, which have been shown to pay a large fraction of dividends by DeAngelo, DeAngelo, and Skinner (2004). We also support the view of Gaspar and Massa (2006), Hou and Robinson (2006), and Peress (2010) that firms in concentrated industries have more stable cash flows and are hence more likely to make payouts.

Our study is the first to illustrate the extent to which some product markets are highly fluid over time while others are not. Our new text-based measures build upon Hoberg and Phillips (2010a,b), who introduce text based industry classifications, and use them to test theories in corporate finance and industrial organization. We develop this research further by considering the *dynamics* of the product market space. We show how it can be used to construct novel measures of the competitive threats in a firm's product markets. We show that our new threat measure can explain financial policies beyond static cross-sectional measures of competition.[3]

Our study also underlines the advantages of using product text descriptions over and above current methods of classifying firms. Product text contains novel informa-

[3]Studies using text to analyze finance theories include Antweiler and Frank (2004), Boukus and Rosenberg (2006), Li (2006), Tetlock (2007), Tetlock, Saar-Tsechanksy, and Macskassy (2008), Hanley and Hoberg (2010), Loughran and McDonald (2011), Hoberg and Phillips (2010b).

tion about the competitive environment of firms for multiple reasons. First, product descriptions must meet regulatory standards. Item 101 in Regulation S-K specifies that the descriptions must be representative and significant. Thus, product descriptions contain timely information about a firm's products. Second, they improve on SIC codes in that they offer extensive detail regarding firm products that can be compared directly to rival firms allowing continuous measures of pairwise similarity between firms. Third, product descriptions are updated year-by-year, and allow the measurement of how product markets change over time. SIC codes are static over time regarding product location, and firm assignments rarely change.

Our study adds to the existing dividend and repurchase literature. In particular, it is related to Grullon, Michaely, and Swaminathan (2002) and DeAngelo, DeAngelo, and Stulz (2006), who argue that firm maturity is a key determinant of dividends.[4] Our results suggest that firm-level maturity indeed matters, but is only one of two components of maturity. The other is a distinct product market component, which reflects the extent to which a firm's products face competitive threats. Our evidence suggests that both aspects of maturity matter in setting payout policy.

We also contribute to the growing literature on cash holdings (e.g., Bates, Kahle, and Stulz (2009); Lins, Servaes, and Tufano (2010)). In particular, we introduce a new dimension, product market threats, and show that it explains cash holdings.

The remainder of the paper is organized as follows. In Section II, we develop and motivate the testable hypotheses. Section III introduces product market fluidity and provides examples and descriptive statistics that facilitate its interpretation. Section IV discusses our data and methodology. Section V presents the main empirical results, and Section VI concludes.

[4] Related work includes Venkatesh (1989), Chay and Suh (2009), and Fink, Fink, Grullon, and Weston (2010).

II Product Market Threats, Payouts, and Cash

In this section we describe and develop new hypotheses on the role of product market characteristics in cash payout policy and the precautionary cash balances held by firms. Using information from product descriptions contained in firm 10Ks, we measure each firm's product market fluidity. We emphasize that it is a forward looking variable that is likely to have unique information incremental to that in other accounting numbers - such as firm R&D, historical cash flow risk or the negative earnings indicator suggested by DeAngelo, DeAngelo, and Skinner (1992). Because the product descriptions in a firm's 10-Ks are legally required to be accurate and current, they are likely to reflect updated assessments of top management about the opportunities and threats that a firm faces in its product markets. Thus, product descriptions are likely to contain information beyond that in accounting numbers, which tend to be backward looking.

We postulate that product market fluidity, or instability, is important given that a firm's payout policy is based on expectations of the future market for their products. When product markets are changing rapidly, the future is less certain. It is unlikely that such firms would have expectations of the sustainable, stable earnings that 70% of the executives surveyed in Brav, Graham, Harvey, and Michaely (2005) cite as the most critical determinant in making payouts. While stability and risk matter for both repurchases and dividends, they are perhaps more critical for setting dividends whose relative rigidity and inflexibility make managers especially conservative with regard to dividend policy.

The importance of product fluidity is also shown in the literature on product life cycles and the competitive threats that firms face. Prominent work in this area includes Abernathy and Utterback (1978) and Klepper (1996), who suggest that products and their associated industries develop over time. These product changes give rise to a natural life cycle. Relevant to forming our hypotheses, firms selling newer products or products that have more technological risk face more fluid product markets and thus more future competitive threats. In turn, such firms might refrain from making payouts until their product markets mature, as payout conservatism can strengthen the firm's competitive positioning should a threat materialize. As firms' product markets begin to stabilize, they may be more willing to make payouts. We expect a greater willingness to make payouts via repurchases, which entail less of a longer-term commitment. Note that product fluidity may, but need not be, related to firm maturity. For instance, older firms and firms that have retained a large portion of their past earnings might be viewed as mature firms. However, some older firms may face renewed technological change or product innovation or new threats from rival firms, and are thus in less mature product markets. This discussion leads to the first testable hypothesis in our paper.

Hypothesis 1 *Product Market Fluidity and Payout Policy*
Competitive threats as reflected in product market fluidity should be negatively related to the probability of repurchases and the probability of paying dividends.

Our second hypothesis is based on the effect of product market fluidity on a firm's cash balances. There is a large empirical literature on cash.[5] Bates, Kahle, and Stulz (2009) discuss four motives for holding cash: the transaction, agency, tax, and precautionary motives for holding cash. Most relevant for our purpose is the precautionary motive for holding cash, under which firms face uncertain demands for liquidity in the future, and hold cash as a hedge.[6] The importance of the precau-

[5]A partial list of recent work includes Opler, Pinkowitz, Stulz, and Williamson (1999), Faulkender and Wang (2006), Dittmar and Mahrt-Smith (2007), Han and Qiu (2007), Gamba and Triantis (2008), Bates, Kahle, and Stulz (2009), Foley, Hartzell, Titman, and Twite (2007), Riddick and Whited (2009) and Lins, Servaes, and Tufano (2010).

[6]This motive is often attributed to Keynes (1936).

tionary motive is stressed by the recent work of Lins, Servaes, and Tufano (2010), who survey CFOs from 29 countries to understand why they store cash beyond operational needs. They find that cash in excess of operational needs is primarily used to meet unexpected demands for cash in bad times, consistent with the precautionary motive driving the demand for cash.

We add to the cash literature by examining the role played by competitive threats from a firm's product market. While prior work, with the exception of Haushalter, Klasa, and Maxwell (2007) and Fresard (2010), largely ignores the role played by the product market in explaining cash, the relation can be motivated in a straightforward way. The precautionary motive suggests that firms hold cash as a hedge against future adverse cash flow shocks. In our study, product market fluidity is a measure of the competitive threat faced by a firm, which threatens the stability of a company's future cash flows. Thus, firms facing more product market fluidity should hold greater cash balances.

Hypothesis 2 *Product Market Fluidity and Cash Holdings*
Competitive threats facing a firm's products should be positively related to the extent of a firm's cash holdings.

III Understanding Fluidity

In this section, we briefly introduce fluidity, our key measure of product market threats. We describe fluidity and provide examples and statistical evidence to illustrate its intuition and its ability to capture threats from a firm's product market environment. Also, in order to more directly assess the interpretation of fluidity as a measure of competitive threat, we examine the relation between fluidity and the business descriptions of entrepreneurial firms who raise venture capital, and from firms that recently went public through IPOs. These firms represent emerging competitive threats to public firms.

A Definition

Fluidity captures how rivals are changing the product words that overlap with firm i's vocabulary. Fluidity focuses on product space dynamics and changes in products. Thus, it is an entirely new construct relative to the industry definitions and variables used in Hoberg and Phillips (2010a). Specifically, let J_t denote a scalar equal to the number of all unique words used in the product descriptions of all firms in year t. Let W_{it} denote an ordered boolean vector of length J_t identifying which of the J_t words are used by firm i in year t. Element j of W_{it} equals 1 if firm i uses word j in its product description and is zero otherwise. We normalize W_{it} to unit length and define the result as $N_{i,t}$.

To capture the changes in the overall usage of a given word j in year t, we define the aggregate vector $D_{t-1,t}$ as

$$D_{t-1,t} \equiv \left| \sum_{j} (W_{j,t} - W_{j,t-1}) \right| \quad (1)$$

A firm's product market fluidity is simply the dot product between its own word vector N_{it} and normalized $D_{t-1,t}$:

$$\text{Product Market Fluidity}_i \equiv \langle N_{i,t} \cdot \frac{D_{t-1,t}}{\|D_{t-1,t}\|} \rangle \quad (2)$$

Intuitively, fluidity is a "cosine" similarity between a firm's own word usage vector $N_{i,t}$ and the aggregate change vector $D_{t-1,t}$.[7] Quantitatively, the dot product in Eq. (2) measures the cosine of the angle between the two vectors. Because the dot product is based on non-negative vectors, fluidity is thus the cosine between vectors in the first quadrant. Thus fluidity lies in the interval $[0, 1]$.

[7]For a discussion of dot products and cosine similarities in text processing, see Sebastiani (2002).

Fluidity is greater when a firm's words overlap more with $D_{t-1,t}$, the vector that reflects rival actions. Thus it is larger when there is a greater competitive threat. This intuition is illustrated in Appendix 2, where we present an example of a hypothetical market with 3 firms and 7 product words. The example shows the simple but crucial point that fluidity reflects product market threats and instabilities arising out of *competitor actions*, not necessarily own-product instability. The notion that rival threats are important, perhaps even more so than static measures of market share, is consistent with theories of contestable markets in industrial organization (Baumol, Panzar, and Willig (1982)). Fluidity is an empirical construct that captures this intuition.

B Examples

Table I reports specific examples of high and low fluidity firms for two years, 1997 and 2008, the first and last years of our sample.

[**Insert Table I Here**]

In all panels in Table I, firms are sorted from most extreme to least extreme. Panels A and C report firms that have the lowest local product fluidity based on 10-K's in our beginning period, 1997, and our ending period, 2008. Many of these firms are commodity firms as well as department stores. In Panels B and D, we report firms that have the highest local product fluidity.

Communications and media are undergoing competitive changes due to ongoing battles between cable, television, print, and online media. In 1997, a considerable fraction of these firms are in the gaming and communications industries. The high fluidity for the gaming industry may come as a surprise to the reader. However, in 1997 this industry was in a high state of change due to ongoing changes in the competitive landscape. 10-K's reveal that Native American casinos, riverboat casinos, and new casinos in previously disallowed locations came online to challenge existing operations. State laws were also changing, adding yet more uncertainty to expectations of future market structure. In 2008, biotechnology firms faced fluid markets due to changes related to health care regulation and ongoing shocks related to innovation and government approval.

C Dividends, Payouts and Fluidity Transitions

Table II presents payout and cash holdings summary statistics for fluidity quintiles as well as transition matrices showing how fluidity changes over time. We present these statistics to illustrate the economic effects we describe and the interpretation of fluidity in terms of competitive threats and product life cycle.

[**Insert Table II Here**]

Panel A shows that 48.6% of firms with the lowest fluidity pay dividends. In contrast, only 9.1% of firms with the highest fluidity are payers. Dividend yields and repurchases exhibit similar patterns, declining as fluidity increases. Cash holdings also increase substantially from 8.2% of assets for the least fluid quintile to 21.5% for the most fluid quintile.

Panels B to D present transition matrices examining future product market fluidity as a function of initial product market fluidity. Panel B displays one-year transition probabilities, and Panels C and D examine three-year and six-year transition probabilities, based on non-overlapping time periods, respectively. The rows indicate the initial fluidity quintile of the firm and the columns indicate which fluidity quintile the firm is in t years later. The result is a 5×5 grid containing the empirical distribution of transitions. For example, in Panel B, row 1, column 1, 77.8

percent of firms in the most stable product market fluidity quintile remain in this quintile 1 year later.

The results in Panels B to D show that fluidity is persistent. Low fluidity firms are very likely to be low fluidity firms ex-post at one, three, and six year horizons. Interestingly, the persistence seems somewhat lower for high fluidity quintiles. For example a firm in the most fluid quintile remains in this category 71.1% of the time, while firms in the most stable quintile retain this designation 77.8% of the time. The table more generally shows that, over time, firms are more likely to "graduate" to a category with more stable product markets than they are to move to a category with less stability. For example, in panel B, firms with the most stable product market move to quartile 2 with a 16.8% probability, while firms in the highest fluidity category move to a more stable quartile 4 with a 23.7% likelihood. These findings are consistent with product life cycle theories in which fluidity is likely to decrease over time.

D Fluidity: Threats From VC-Backed and IPO Firms

In this section we examine the relation between fluidity and the similarity of a firm's products to the the business descriptions of IPOs and VC backed firms. These tests assess if there is a direct link between fluidity and the competitive threats from entrepreneurial firms. We also examine if such a link to fluidity is distinct from risk variables.

We use VentureXpert to extract all business descriptions for funded ventures in each year of our sample. We then compute the average word usage frequency of venture firms using the same set of words in our 10-K universe. We label the unit-normalized version of this aggregate word-vector in a given year as VC_t, the "venture vocabulary." We measure the degree to which a given public firm is threatened by venture-backed firms as the dot product between a firm's (unit-normed) word description vector and VC_t, which we define as a firm's "VC Score". We compute a similar measure called "IPO Score" based on product descriptions of firms going public in a given year, which is extracted using SDC Platinum. The IPO score measures threats from firms going public.

To examine potential links to competitive threat, we regress fluidity on both VC Score and IPO Score, as well as several controls. A positive coefficient would provide additional evidence that our measure of product market fluidity in Eq. (2) reflects competitive threats. We control for firm size and firm age, which is important because small and young firms may be more similar to VC-backed and IPO firms. We include the Herfindahl index to control for static competition levels, and we also include industry fixed effects. To be conservative, both HHIs and industry controls are based on the text-based industry classifications in Hoberg and Phillips (2010a,b). Of particular interest is the control for risk, as this assesses whether the information in product market fluidity is similar to that of the risk variables. We measure risk using stock-market volatility as in Hoberg and Prabhala (2009). Using cash-flow volatility as in Bates, Kahle, and Stulz (2009) produces similar results.

[**Insert Table III Here**]

Table III shows that product market fluidity is significantly and positively related to both VC Score and IPO Score in all specifications. Fluidity interacted with firm R&D is also negative which is consistent with greater spending on R&D in fluid markets deterring potential entry by VC backed and IPO firms. Interestingly, measured firm risk is insignificant in 3 of the 4 specifications. As all variables are standardized to unit standard deviation, we can compare the coefficients to assess economic magnitude. In all columns, the coefficient for risk is an order of magnitude smaller than the one between VC score and product market fluidity. These results suggest that fluidity is distinct from cash flow risk. Given that IPO firms and VC-backed firms are likely in less mature products, the results are also consistent with the product life cycle interpretation of fluidity, in the spirit of Abernathy and Utterback (1978) or Klepper (1996).

IV Data and Summary Statistics

A Data

We construct our COMPUSTAT-CRSP sample following Fama and French (2001) and Hoberg and Prabhala (2009). We start with 61,136 firm-years from 1997 to 2008 that have adequate COMPUSTAT and CRSP data. The years are chosen based on the availability of our text-based data. We then apply the same screens as Hoberg and Prabhala (2009). After discarding regulated utilities (SIC codes between 4900 and 4949) and financials (SIC codes between 6000 and 6999), we have 48,159 observations. We then screen out observations in which firms have book values of less than $250,000 or assets of less than $500,000. This leaves us with 45,631 observations.

Following Fama and French (2001), we identify companies that are dividend payers if their dividends per share (Compustat annual data item 26) is greater than zero. We identify companies that are share repurchasers in a given year using the method suggested in Grullon and Michaely (2002). In the COMPUSTAT universe, we define stock repurchases as annual data item 115 (purchase of common and preferred stock) less the reduction in the value of any preferred stock outstanding (annual data item 56). We label a firm as a repurchaser of shares if this difference is greater than zero. We also separately analyze firms that repurchase for two consecutive years, and large repurchasing firms, defined as those whose repurchases exceed 1% of total assets. For cash, we compute a firm's cash holdings as cash scaled by assets.

The data to construct the fluidity measure in Equation (2) is derived from business descriptions in annual firm 10-K's. Our sample of 10-K's comes from Hoberg and Phillips (2010a), who extract business descriptions using PERL web crawling scripts, APL programming, and human intervention when documents are non-standard. Our primary sample includes filings associated with firm fiscal years ending in calendar years 1997 to 2008. We also use 1996 data to compute text-based variables requiring lagged data, but do not use 1996 data otherwise.

We merge each firm's text product description to the CRSP/COMPUSTAT database using the central index key (CIK).[8] Of the 45,631 observations available in CRSP and COMPUSTAT database noted above, we are left with 43,904 after requiring that same-year text data is available. The final sample is then 42,999, covering years 1997 to 2008, after requiring that lagged text-based data is also available. As discussed in Hoberg and Phillips (2010a), this text based database generally has uniform coverage of the CRSP and COMPUSTAT sample during these years.

We use the product text description to construct our fluidity measure as in Eq. (2). In addition, for robustness, we consider variations of this fluidity measure based three dictionaries (see Appendix B in Hoberg and Phillips (2010b)): (A) a list of all words; (B) words from firms with a local clustering coefficient in the top two terciles ("local fluidity"), which reflects threats from nearby rivals; (C) words from rivals with a local clustering coefficient in the lowest tercile (the "broad dictionary"). Although we report the results based on the local dictionary because nearby rivals likely pose more serious competitive threats, the results are similar across specifications. We

[8] We thank the Wharton Research Data Service (WRDS) for providing us with an expanded historical mapping of SEC CIK to COMPUSTAT gvkey.

also include self-fluidity, which compares a firm's year t and year $t-1$ products in isolation (without regard to rival products). This variable is simply one minus the cosine similarity between the current and previous years' business descriptions.

In the industrial organization and corporate finance literature, a potential endogeneity issue is that the agents, e.g., senior management, who set the financial policies also choose the product market strategies (see Graham, Harvey, and Rajgopal (2005) for example). This issue is somewhat mitigated in our study. While a firm's own top management certainly sets its payout policies, fluidity reflects moves by *rival* firms competing in a firm's product space. Going further, we also examine robustness to using the broad measure of product fluidity discussed above, which focuses on the broad set of words that all other firms in the Compustat/CRSP universe use. This broad measure is akin to a "market index" whose changes are likely to be exogenous from any one firm's perspective, just as the aggregate stock market return is considered exogenous to any single firm's return. These robustness results are reported in Table 3 of our online appendix.

B Summary Statistics

We relate payout policy and the cash holdings of firms to fluidity and several control variables. The controls include variables suggested by the dividend literature. In addition, we include other controls to capture factors such as growth options and specifications that include industry fixed effects. We describe these variables and their construction in Appendix 1.

Table IV presents summary statistics for the variables. Statistics for payout policy and cash holding variables are reported in Panel A. The table shows that 24.5% of the firms are dividend payers while a larger set of firms, 41.2%, are repurchases. The average firm also holds 20.9% of its assets in cash with a median holding of 10.8%.

[Insert Table IV Here]

Statistics for the text-based variables are presented in Panel B, and key control variables are reported in Panel C. Our fluidity variables are multiplied by 100 for convenience. The statistics for self-fluidity suggest that some firms experience very little change from year to year, whereas others experience substantial changes. The average product market fluidity is 6.93%.

[Insert Table V Here]

Table V reports the Pearson correlations between our variables. Product market fluidity is -30.2% correlated with the static HHI measure using the text-based industry classifications of Hoberg and Phillips (2010a). Firms that are in more competitive industries have rivals that are more likely to change their products, and thus reside in markets with greater fluidity. Product fluidity is also -34.7% correlated with log firm age, so older firms tend to reside in more stable product markets. However, this correlation is far less than 100%, confirming that our product maturity variable is distinct from this measure of firm maturity. For example, older firms might experience technological shocks, bringing their product markets back to a more fluid state. Finally, fluidity is also modestly correlated with research and development (30.6%), consistent with the fact that product market fluidity requires at least some investment. We later show that these modest correlations, while economically sensible, do not explain the links between product market fluidity and dividend or cash policy.

V Payout Policy

A The Propensity to Pay Dividends

In this section we study the relation between fluidity and the payout decisions of firms. We start with the propensity to pay dividends and then examine changes in payout policy including dividend initiations, omissions, increases and decreases. We standardize the independent variables so they have unit standard deviation. This scaling does not effect significance levels or the economic impact of our variables but facilitates the economic interpretation of the results.

Rows (1) to (3) of Panel A of Table VI present the results of estimating a logit model in which the dependent variable is one if the firm pays dividends and zero otherwise. Rows (4) to (6) use a linear probability model. Each specification includes a different set of control variables as noted, and all specifications include time fixed effects and standard errors adjusted for clustering by firm. Panel B estimates panel OLS regressions where the dependent variable in row (7) is the firm's dividend yield - where yield is expressed as dividends divided by fiscal year-end price. Row (8) analogously examines each firm's dividend to assets ratio. As we are interested in examining differences between dividend paying firms in Panel B (Panel A examines the choice to pay or not pay), we restrict attention to the subsample of dividend paying firms in Panel B.

[Insert Table VI Here]

Both panels in Table VI show similar results. Firms in fluid product markets are less likely to pay dividends, pay lower dividend yields, and have lower dividend to assets ratios.[9] This result confirms our first hypothesis that product market threats

[9] As discussed earlier, we base our main results on local product market fluidity, which restricts

matter. Firms facing greater competitive threats in their product markets are less likely to pay dividends. These findings are also robust to including other text-based product market variables and other explanatory variables including firm risk, R&D and firm maturity.

Table VI also shows results for the static HHI measure of competition based on the Hoberg and Phillips (2010b) industry classifications. Industry concentration is positively related to dividend propensity but its economic effects are not large. This result is different from Grullon and Michaely (2007). This is likely because our measure of competition more accurately reflects competition as shown by Hoberg and Phillips (2010b). Additionally, our samples are different: our sample has better cross sectional coverage as Herfindahl measures based on the Census data are only available for manufacturing firms, but is more limited in time series as our sample begins in 1997 due to the required availability of machine readable 10-Ks.

B Economic Significance

To assess the economic significance of fluidity, we conduct a number of tests. We first estimate the propensity to pay dividends for our panel from 1997 to 2008 *including* the base Fama and French (2001) and risk variables but *excluding* our text variables. Holding the propensity to pay constant, we then examine whether the text variables are different for payers and non-payers. We estimate a base specification without the text variables, split firms into propensity to pay quartiles and then compare the mean and median of the text variables within each propensity quartile.

Table VII reports the results. Explanatory variables for the logit include: total risk log firm age, firm size, M/B, asset growth, the negative earnings loss dummy of

10-K words to those that appear in localized product market groups. Our results are robust if we instead use broader words as shown in Table 3 of our online appendix.

DeAngelo, DeAngelo, and Skinner (1992), R&D/Sales and year fixed effects. Within each quartile of the predicted propensity to pay, we report the mean and median of the three text-based product characteristics for payers and non-payers.

[**Insert Table VII Here**]

The results in Table VII show that there are significant differences in our text variables for each propensity quartile. Within all quartiles of predicted dividend propensity, firms that actually pay dividends have significantly lower values of local product market fluidity. The text variables appear to contain additional explanatory power over and above variables that have been shown to affect payout propensity in past studies.[10] DeAngelo, DeAngelo, and Skinner (2004) and DeAngelo, DeAngelo, and Skinner (2009) argue that there are several large companies with long dividend paying histories that continue to pay dividends. Time series variation in dividend paying propensity are thus driven by small to mid-size firms. In unreported tables, we also exclude the beginning of period payers in the top size quartile and find similar results, suggesting that our results are not driven by the very large firms with little variation in their payouts.

Table VIII presents a second set of results to illustrate the economic significance of the results from Table VI for dividend propensity. Each column gives the propensity to pay dividends at the 10th, 25th, 50th, 75th, and 90th percentile of a variable holding the other variables at their median values. We display results for the logit model with and without Hoberg-Phillips FIC-300 industry controls.

[**Insert Table VIII Here**]

Table VIII shows that the propensity to pay dividends has economically mean-

[10] These quartiles represent univariate comparisons between payers and non-payers adjusted only for Fama-French characteristics, so quartiles pick up other factors that are omitted.

ingful sensitivity to local product market fluidity. Varying the local product market fluidity variable from the 50th to the 90th percentile decreases the propensity to pay dividends from 14.9% to 8.3% in Panel A without industry fixed effect controls, and from 14.9% to 8.7% in Panel B with industry fixed effects.

C Dividend Initiations and Omissions

Thus far, our analysis has been cross-sectional. We supplement this with a dynamic analysis that tests whether product characteristics are related to dividend initiations, omissions, increases and decreases. Tables IX reports the results.

[**Insert Table IX Here**]

Panel A of Table IX examines the decision to initiate dividends. We begin with the subsample of firms that were not paying a dividend in the prior year $t-1$. The dependent variable is one if the firm does begin paying dividends in year t, and is zero otherwise. The results show that dividend initiations are less likely in locally fluid product markets. In fact, fluidity is among the most significant variables in the model. Among the other control variables, dividend initiators are more likely to be less risky, older, larger, and more profitable.

Panel B of Table IX examines the decision to omit dividends. Here we begin with the subsample of firms that are paying dividends in year $t-1$. The dependent variable is one if the given firm ceases dividend payments in year t. This is the mirror image of dividend initiators. The table shows that omitters have more fluid products - both local product market fluidity and self fluidity. One interpretation of this result is that these firms might have experienced technological shocks, and their product markets moved from a stable state to a more fluid one. Product life cycle theories (Abernathy and Utterback (1978) and Klepper (1996)) would suggest that such firms face more competitive risk as they restart the search for a dominant design, and hence they might cease dividend payments to preserve cash. Omitters are also riskier and younger firms, and they are more likely to have negative earnings.

Panels C and D of Table IX examine the decision to increase or decrease dividends. In both panels, we limit the subsample to firms that pay dividends in the past year $t-1$. In Panel C, the dependent variable is one if the firm increased its dividend in the year t and is zero otherwise. In Panel D, the dependent variable is one if the firm decreased its dividend in year t, and is zero otherwise. Consistent with our central hypothesis, firms that increase dividends are more likely to have less fluid products. Both local product market fluidity and self fluidity are negative and highly significant. Regarding the control variables, increasers are also less risky, older, profitable, and they are more likely to have high market to book ratios and high asset growth. The results for decreasers in Panel D are insignificant.

The only text-based variable that is highly significant is self product fluidity. Hence, firms that reduce dividends are likely to have products that change relative to the firm itself over time. Such firms might be reacting to technology shocks in their own product offerings. We also observe that firms in concentrated product markets are less likely to decrease dividends.

Overall our results are consistent with the view that firms with greater product market stability are more likely to pay dividends and initiate or increase dividends. These firms likely face fewer competitive threats, and are more willing to make payouts.

D Repurchases

In this section we examine the propensity to repurchase shares using multivariate logit regressions. As before, we include our text-based product characteristic variables in addition to the control variables used in Fama and French (2001) and Hoberg and Prabhala (2009). Table X presents the results of a logit specification where the dependent variable is one if the firm repurchases shares during the year (Panel A), one if a firm repurchases shares at a level that is higher than 1% of its assets (Panel B), and one if a firm is a repurchaser two years in a row (Panel C). As before we estimate the logit regressions using a panel specification with time fixed effects, and standard errors that account for clustering by firm.

[Insert Table X Here]

Panel A displays results for the positive repurchase dummy, and results are similar, but generally weaker than those for dividend propensity presented in Table VI. Firms in more fluid product markets are less likely to repurchase shares. The results in Panel B for aggressive repurchasing and the ones in panel C for two-year repurchasers are similar to those in Panel A. We conclude that the negative relationship between product market fluidity and repurchasing is robust.[11]

E Cash Holdings and Fluidity

We now examine if fluidity is positively related to the cash balances held by firms. Such evidence would suggest that competitive threats measured by fluidity are re-

[11] Table X is based on gross repurchases made by a firm, which is a good approximation to the dollar repurchases disclosed by firms in their 10(b)-18 quarterly disclosures (Banyi, Dyl, and Kahle (2008)). We also experimented with *net* repurchase measures, which subtract share issuances, e.g., those due to option exercises, using the method suggested by DeAngelo, DeAngelo, and Skinner (2008) in their footnote 1 (see also Skinner (2008), footnote 7). Our results are robust to this alternative reported in Table 4 of our online appendix. We also show in Tables 1 and 2 of our online appendix that fluidity also is significant in explaining repurchases by firms that pay no dividends.

lated to firms being more conservative on multiple financial policies - dividends, repurchases and cash holdings.

Our specifications follow the cash literature (e.g., Bates, Kahle, and Stulz (2009)). The dependent variable is cash plus cash equivalents divided by firm assets and control variables include those suggested by the literature. The controls are based on the cash literature. The new controls include include an estimate of the foreign tax burden and industry acquisition intensity. Foreign tax burden equals the maximum of zero or foreign income times a firm's marginal effective tax rate computed as in Graham (1996) minus foreign taxes paid as in Foley et al. (2007). The industry acquisition intensity is the total number of acquisitions divided by the number of firms in a given industry. As in previous tables, independent variables are standardized prior to fitting regressions to permit more intuitive comparisons across variables. All specifications include year fixed effects, while specification 2 includes FIC-300 industry fixed effects. Table XI presents the results.

[**Insert Table XI Here**]

We find that firms with high local product market fluidity maintain higher cash balances. This result is significant at the 1% level in all specifications. We conclude that our results for cash holdings echo the broad theme of financial conservatism observed in our dividend regressions. Firms facing competitive threats in their product markets adopt more conservative financial policies - as they hold higher cash balances in addition to paying lower dividends and repurchasing less.

Following Bates, Kahle, and Stulz (2009) we also construct samples to examine the effect of fluidity on firms that are likely to have less access to external financing. We examine the effect of fluidity on cash holdings by young vs. old firms (columns 1 and 2), loss-making vs. profitable firms (columns 3 and 4) and non-investment grade vs. firms with investment grade bond ratings (columns 5 and 6). All specifications include year and FIC-300 industry fixed effects. Table XII presents the results.

[**Insert Table XII Here**]

We find that fluidity is significantly more important for the holding of cash balances for younger firms, loss-making firms and for non-investment grade firms. These results are consistent with the effects of fluidity being more pronounced when firms with less access to capital markets face competitive threats. More broadly, our results are consistent with firms holding higher precautionary cash balances when they face more competitive threats from rival firms.

VI Conclusions

Our paper examines how product market threats and underlying product dynamics impact firm payout policy and cash holdings. We use computational linguistics of the text in 42,000 firm business descriptions from each 10-K to characterize the competitive threats faced by firms in their product markets. While managers frequently cite stability and risk as the most important determinants of payout policy, our results shed light on the underlying real, product-side mechanisms that cause these factors to affect payout and cash-holding policy.

Our analysis shows two central ways product characteristics affect payout policy and cash balances. First, firms with products under threat from rivals are less likely to pay dividends or repurchase shares. Second, we also show that firms with higher product market fluidity hold higher cash balances. We find that fluidity captures threats to a firm's product market beyond measured risk. We also show that fluidity is significantly related to the text in business descriptions of IPO firms and firms newly raising venture capital - consistent with fluidity capturing forward looking measures of a firm's competitive environment.

These results are consistent with the hypothesis that ongoing competitive threats drive firms' payout and cash holdings decisions and firms with higher competitive threats choose more conservative financial policies. Broadly, the results are consistent with the product life cycle theories of Abernathy and Utterback (1975) and Klepper (1996) and the life cycle perspective of payouts advocated by DeAngelo, DeAngelo, and Skinner (2009).

Our measurement of competitive threats shows that the strategic interaction and the threat of increased competition through product changes impact a firm's financial policy in its payout policy and cash holdings. This evidence adds to the evidence of product market competition on cash by Haushalter, Klasa, and Maxwell (2007) and Fresard (2010) and the interaction with financial policies that is theoretically modeled by Telser (1966) and Bolton and Scharfstein (1990) and empirically studied by Phillips (1995).

Overall our results indicate a strong interaction between product market competition and payout/cash holding policies. Product characteristics affect payout polices and cash holdings along more than one dimension, and they also affect the choice of payout type. Our results also highlight the advantages of using the dynamic aspects of product text to examine interactions between product markets and corporate finance policies. Product text descriptions offer not only a sharper characterization of the competitive structure of product markets but also more timely measures of its dynamics.

Appendix 1

We include controls suggested by the dividend literature in addition to others that could be correlated with our text measures. Following Fama and French (2001), we control for firm size using *NYP (NYSE size percentile)*, which is the fraction of NYSE firms having equal or smaller capitalization than firm i in year t. Other control variables include *Asset growth*, which is the percent growth in assets from year t-1 to year t, and *Earnings/Assets (profitability)*, which is earnings before extraordinary items plus interest expense plus income statement deferred taxes divided by assets.We also control for market to book. *Book Equity (BE)* is Stockholder's Equity minus Preferred Stock plus Balance Sheet Deferred Taxes and Investment Tax Credit minus Post Retirement Asset. If stockholder's equity is not available, it is replaced by either Common Equity plus Preferred Stock Par Value, or Assets - Liabilities. Preferred Stock is Preferred Stock Liquidating Value [or Preferred Stock Redemption Value, or Preferred Stock Par Value. *Market Equity* is the fiscal year closing price times shares outstanding. Following Hoberg and Prabhala (2009), we control for a firm's risk by including the standard deviation of its daily stock returns from CRSP in the given calendar year.

We include additional variables that could be correlated with our product text variables. We control for firm age by including the natural log of one + firm age. We compute age for a given firm in a given year as the current year minus its founding date. For the 15.2% of firms in our sample missing age data, we use the CRSP listing vintage as a substitute for the founding date.[12] We also include a negative earnings dummy in all specifications as DeAngelo, DeAngelo, and Skinner (1992) have shown

[12] Our results are similar if we use listing vintage for all observations instead of the founding date. We thank Gustavo Grullon and James Weston for generously providing us with the data on firm founding dates used to construct this control variable.

this has a large impact on dividend payout. This variable equals one when a firm reports negative earnings in a given year and is zero otherwise. We control for R&D because firms spending more money on R&D may invest more in creating new products. We also consider whether our measure provides any information not already contained in R&D and thus include lagged R&D divided by sales as an additional control.

We also include retained earnings divided by total assets, following DeAngelo, DeAngelo, and Stulz (2006), as this variable is related to firm maturity. This retained earnings variable is just -24.5% correlated with product fluidity, confirming that product market fluidity (related to product life cycles) is indeed distinct. We also include log sales growth of the firm itself from year t-3 to year t. We also consider firm patenting activity, as measured through a combination of two data sources: (A) the NBER patent citations file as extended by Bronwyn Hall and (B) usage of the words {patent, patents} in each firm's product description. The Text + Applied Patents variable is one if the given firm mentions patents in its product description, or if it applied for a patent in the most recent three year window.[13] We also consider a dummy variable indicating whether or not the firm has a credit line (Chava and Roberts (2008)). Firms with credit lines may have better access to external credit and thus might be more willing to pay dividends. We also consider Hoberg and Phillips (2010a) FIC industry fixed effects.

Finally, we account for the current product market competition faced by firms. We consider each firm's HHI (Herfindahl-Hirschman Index) based on the "Textual Network Industry Classification" (TNIC) industries formed using firm-by-firm sim-

[13] Our results change little if we instead use measures based on patent counts instead of a dummy variable, or if we separately control for text-based patent measures, patent applications, or patents granted.

ilarity measures as in Hoberg and Phillips (2010a).[14] These measures are updated each year. Firm i's industry cluster comprises firms j whose product descriptions have similarity to i's products exceeding a threshold, as discussed in Section V.A. of Hoberg and Phillips (2010a). This measure also excludes firm pairs in industries that are more than 1% vertically related based on BEA input-output tables.

[14]This industry classification is constructed to be as coarse as three-digit SIC code industries.

Appendix 2

In this section, we present an example regarding how self fluidity and product market fluidity are computed. Consider an industry with three firms in the portable telephone product market. Suppose the product market vocabulary consists of the following words: telephone, cellular, digital, analog, internet, Iphone, and Android. Further suppose the three firms use the following subsets of this overall vocabulary in years $t-1$ and t, respectively:

Word	Firm 1 Year -1	Firm 1 Year 0	Firm 2 Year $t-1$	Firm 2 Year t	Firm 3 Year $t-1$	Firm 3 Year t
Telephone	Yes	Yes	Yes	Yes	Yes	Yes
Cellular	Yes	Yes	Yes	Yes	Yes	Yes
Digital	No	No	Yes	Yes	No	No
Analog	Yes	Yes	No	No	Yes	Yes
Internet	Yes	Yes	No	Yes	No	Yes
Iphone	No	No	No	Yes	Yes	Yes
Android	Yes	Yes	No	Yes	No	No

To compute firm 1's "self fluidity" in year t, we simply take one minus the cosine similarity of Firm 1's year $t-1$ and year t normalized word vectors. This is equal to $[1-(.447,.447,0,.447,.447,0,.447)\cdot(.447,.447,0,.447,.447,0,.447)]$, which is zero. This example is interesting because we observe that Firm 1 did not change its own products and has zero self fluidity, yet we will soon see that Firm 1's surrounding product market (accounting for the changes of its rivals) has non-trivial fluidity levels. For Firm 2, self fluidity is $[1-(.577,.577,.577,0,0,0,0)\cdot(.408,.408,.408,0,.408,.408,.408)]$, which is 0.293. Hence, Firm 2 has a non-trivial self fluidity.

To compute firm 1's product market fluidity, we first need to compute the overall change of usage vector $D_{t-1,t}$ as in equation (3), as the difference in sums of the non-normalized word vectors. This is a property of all firms in the economy and is:

$$D_{t-1,t} \equiv | \ \ (3,3,1,2,1,1,1) - (3,3,1,2,3,2,2) \ \ | = (0,0,0,0,2,1,1) \tag{3}$$

From equation (4), Firm 1's product market fluidity is thus (where 2.449 is the normalizing content for $D_{t-1,t}$):

$$\text{Product Market Fluidity}_i \ \equiv (.447,.447,0,.447,.447,0,.447) \cdot \frac{(0,0,0,0,2,1,1)}{2.449} = 0.547 \tag{4}$$

We conclude that Firm 1 faces a substantial amount of product market fluidity despite the fact that Firm 1 has not changed any of its own products. The main idea is that the changes in the smart phone vocabulary terms (Internet, Iphone, and Android) generates exposure to rival movements for Firm 1 and the ability of Firm 1's rivals to move in this space can be viewed as a competitive threat to Firm 1.

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Table I:

In Panels A to D, we report firms that score in the lowest 25 or highest 25 based on their local product market fluidity in 1997 or 2008. In these panels, the firms are sorted from most extreme to least extreme. In Panel A, we report firms that have the lowest local product fluidity (firms with stable products) based on their fiscal year 1997 SEC filing. In Panel B, we report firms that have the highest local product fluidity (firms with stable products) based on their fiscal year 1997 SEC filing. In Panel C, we report firms that have the lowest local product fluidity (firms with stable products) based on their fiscal year 2008 SEC filing. In Panel D, we report firms that have the highest local product fluidity (firms with stable products) based on their fiscal year 2008 SEC filing.

Panel A: Firms in 1997 with Low Product Market Fluidity (Stable Products)

WEIS MARKETS, GENLYTE GROUP, ACME ELECTRIC, ALBERTO CULVER, SWANK, PHOENIX FOOTWEAR GROUP, BURKE MILLS, BALDOR ELECTRIC, FRANKLIN ELECTRIC, BUTLER MANUFACTURING, ROYAL APPLIANCE MFG, WYANT, WOLOHAN LUMBER, EASTMAN KODAK, MACYS, GOLD STANDARD, O SULLIVAN, LUFKIN INDUSTRIES, INTERNATIONAL ALUMINUM, MAY DEPARTMENT STORES, HARLAND JOHN H, ILLINOIS TOOL WORKS, NATIONAL SERVICE INDUSTRIES, GENESIS WORLDWIDE, SUPERIOR UNIFORM GROUP

Panel B: Firms in 1997 with High Product Market Fluidity (Fluid Products)

BOYD GAMING, COX COMMUNICATIONS, SHOWBOAT, COMCAST, TRUMP HOTELS & CASINO RESRTS, NEXTEL COMMUNICATIONS, P D L BIOPHARMA, MILLENNIUM PHARMACEUTICALS, ONYX PHARMACEUTICALS, HORIZON C M S HEALTHCARE, HARRAHS ENTERTAINMENT, LIGAND PHARMACEUTICALS, AMERISTAR CASINOS, TRIANGLE PHARMACEUTICALS, I D T, IMMUNE RESPONSE, SUN HEALTHCARE GROUP, HILTON HOTELS, MAGELLAN HEALTH SERVICES, NEXSTAR PHARMACEUTICALS, PLAYERS INTERNATIONAL, NEUREX, AZTAR, CORVAS INTERNATIONAL, MCLEODUSA

Panel C: Firms in 2008 with Low Product Market Fluidity (Stable Products)

SHERWIN WILLIAMS, ALBERTO CULVER, AMPCO PITTSBURGH, SUPERIOR UNIFORM GROUP, CINTAS, U S DATAWORKS, COLGATE PALMOLIVE, LIBERTY GLOBAL, COMPUTER SCIENCES, LAWSON PRODUCTS, VALHI, LIMITED BRANDS, PEPSIAMERICAS, ANIXTER INTERNATIONAL, E D A C TECHNOLOGIES, LANCE, FRIEDMAN INDUSTRIES, DECORATOR INDUSTRIES, MCCORMICK, FLEXSTEEL INDUSTRIES, STEPAN, PACCAR, CASS INFORMATION SYSTEMS, BLYTH, MOD PAC

Panel D: Firms in 2008 with High Product Market Fluidity (Fluid Products)

VICAL, ALTUS PHARMACEUTICALS, ALNYLAM PHARMACEUTICALS, ENZO BIOCHEM, ZYMOGENETICS, CYTOKINETICS, THRESHOLD PHARMACEUTICALS, ICAGEN, ANADYS PHARMACEUTICALS, INHIBITEX, ABRAXIS BIOSCIENCE, EMERGENT BIOSOLUTIONS, RIGEL PHARMACEUTICALS, G T X, OREXIGEN THERAPEUTICS, O S I PHARMACEUTICALS, AMGEN, UNITED THERAPEUTICS, ISIS PHARMACEUTICALS, IVIVI TECHNOLOGIES, BIOCRYST PHARMACEUTICALS, VERTEX PHARMACEUTICALS, ENZON PHARMACEUTICALS, NEUROGESX, I D M PHARMA

Table II: Dividends, Repurchases and Product Market Fluidity

Summary statistics showing how dividends vary with local product market fluidity. Panel A displays summary payout statistics for the firms in each quintile based on local product market fluidity. Panels B to D present transition matrices examining ex post local product market fluidity for firms with varying levels of initial local product market fluidity. In panels B to D, we limit our sample for firms with a track record of at least 3 years as of a given year t (although this condition does not materially affect results). In Panel B, we then examine the distribution of one year transition probabilities. In Panel C and D, we then examine three and six year transition probabilities, respectively. For the three year test, we divide our twelve year sample into four non-overlapping three year intervals. We then examine how product market fluidity changes for firms from one interval to the next. For the six year test, we divide our twelve year sample into two six year non-overlapping intervals and repeat the same test. In each case, we assign firms to quintiles in each ex-ante interval based on the level of ex-ante product market fluidity. Holding breakpoints fixed for each interval, we then group observations into quintiles based on their ex-post product market fluidity. The result is a 5x5 grid, in which we can compute the empirical distribution of transitions.

sample	Most Stable	Quintile 2	Quintile 3	Quintile 4	Most Fluid	Obs.
Panel A: Payout Statistics						
% Dividend Payer	0.487	0.317	0.210	0.145	0.091	42,999
Dividend Yield	0.012	0.006	0.004	0.003	0.002	42,999
Dividend/Assets	0.011	0.006	0.004	0.003	0.002	42,999
% Repurchasers	0.505	0.456	0.415	0.392	0.310	42,999
Cash+Equiv/Assets	0.102	0.139	0.191	0.248	0.375	42,999
Panel B: One-Year Transition Probabilities						
Most Stable Product Markets	0.778	0.168	0.040	0.010	0.005	4691
Quintile 2	0.236	0.506	0.191	0.055	0.013	4698
Quintile 3	0.034	0.268	0.460	0.188	0.050	4697
Quintile 4	0.010	0.050	0.272	0.473	0.194	4698
Most Fluid Product Markets	0.004	0.009	0.039	0.237	0.711	4693
Panel C: Three-Year Transition Probabilities						
Most Stable Product Markets	0.779	0.177	0.032	0.010	0.003	1597
Quintile 2	0.197	0.560	0.205	0.033	0.005	1598
Quintile 3	0.031	0.240	0.506	0.202	0.022	1599
Quintile 4	0.010	0.043	0.258	0.514	0.175	1598
Most Fluid Product Markets	0.001	0.004	0.051	0.223	0.721	1598
Panel D: Six-Year Transition Probabilities						
Most Stable Product Markets	0.745	0.197	0.051	0.005	0.002	589
Quintile 2	0.222	0.503	0.200	0.063	0.012	590
Quintile 3	0.048	0.284	0.448	0.178	0.042	589
Quintile 4	0.005	0.064	0.319	0.429	0.183	590
Most Fluid Product Markets	0.002	0.015	0.075	0.284	0.625	589

Table III: Fluidity and IPO/Venture Capital Product Descriptions

This table examines the effect of fluidity on the relation between a firm's product and the products of subsequent venture capital financed firms and IPO firms. The dependent variable is IPOscore in columns 1 and 2 and VCscore in columns 3 and 4. IPOscore (VCscore) is equal to the average textual similarity between the given firm's 10-K business description in the given year, and the vocabulary of business descriptions extracted from SDC Platinum for firms going public (funded by venture capitalists) in the given year. The independent variables are all lagged and include lagged local product fluidity, total firm risk, the text-based industry Herfindahl, the NYSE size percentile, and log firm age. Please see Table IV for a description of these variables. All independent variables are standardized prior to fitting regressions to permit more intuitive comparisons across variables. Observations are required to be in CRSP, COMPUSTAT, and our 10-K database. All specifications are estimated via OLS with year fixed effects. Specifications 2 and 4 include FIC-300 industry fixed effects. Robust standard errors are adjusted for heteroskedasticity and are clustered by firm. *t*-statistics are in parentheses.

	IPOscore	IPOscore	VCscore	VCscore
	(1)	(2)	(3)	(4)
Total Risk	-0.001	0.002	0.048	0.013
	(-1.249)	(0.224)	(4.506)	(1.520)
Local Product Fluidity	0.200	0.228	0.382	0.432
	(28.715)	(27.583)	(32.998)	(37.516)
R&D/Sales	0.007	0.003	0.097	0.037
	(0.773)	(0.341)	(6.949)	(2.995)
Local Fluidity X R&D/Sales	-0.009	-0.012	-0.029	-0.022
	(-2.227)	(-3.132)	(-4.634)	(-3.991)
NYSE Size %ile	0.066	0.069	0.075	0.083
	(8.769)	(10.253)	(6.159)	(8.564)
Log Firm Age	0.023	0.018	0.020	0.011
	(3.229)	(2.871)	(1.726)	(1.146)
HHI (TNIC)	-0.033	-0.001	-0.033	-0.033
	(-5.121)	(-1.469)	(-3.394)	(-3.791)
Constant	0.380	0.736	0.078	0.076
	(10.380)	(14.251)	(2.000)	(1.173)
Ind. Fixed Effects	No	Yes	No	Yes
R^2	0.204	0.262	0.195	0.405
N	35,489	35,489	35,489	35,489

Table IV: Payout Summary Statistics

Summary statistics are reported for our sample of 42,999 observations based on annual firm observations from 1997 to 2008. Observations are required to be in CRSP, COMPUSTAT, and our 10-K database. We apply the same screens as Hoberg and Prabhala (2009), and the Payout Status variables are also analogously defined. To compute local product market fluidity, we first define the vector of aggregate absolute change in usage of each word in the product market universe from year t-1 to year t ($D_{t-1,t}$). Based on Hoberg and Phillips (2010b), we base this calculation only on the words in the local product market dictionary. A firm's local product market fluidity is then the cosine similarity between the given firm's normalized word usage vector in year t and $D_{t-1,t}$ (see the data section for more details). This measures the extent to which product market words used by firm i are being adopted and dropped by other firms at a high rate. Self Fluidity is simply one minus the cosine similarity between firm i's year t product description and its year t-1 product description (higher values indicate that the firm is changing its own product composition. The HHI is the sales-weighted Herfindahl-Hirschman Index of firms in a firm's industry. The variables in Panel C include other variables known to explain payer status as discussed in the Appendix 1.

Variable	Mean	Std. Dev.	Minimum	Median	Maximum
Panel A: Data on Payout Status and Cash Holdings					
Dividend Payer	0.245	0.430	0.000	0.000	1.000
Equity Repurchaser	0.412	0.492	0.000	0.000	1.000
Both Payer & Repurchaser	0.157	0.364	0.000	0.000	1.000
Dividend Yield	0.005	0.014	0.000	0.000	0.237
Dividend/Assets	0.005	0.014	0.000	0.000	0.168
Dividend Initiator	0.014	0.119	0.000	0.000	1.000
Dividend Increaser	0.089	0.285	0.000	0.000	1.000
Dividend Decreaser	0.007	0.082	0.000	0.000	1.000
Cash+Equiv/Assets	0.209	0.236	0.000	0.108	0.961
Panel B: Data from 10-K Text Analysis					
Local Product Market Fluidity	6.932	3.362	1.374	6.379	20.628
Self Product Fluidity	21.043	14.920	1.457	17.154	78.464
HHI	0.221	0.231	0.019	0.127	1.000
Panel C: Data from the Existing Literature					
Total Risk	0.043	0.025	0.010	0.037	0.168
Market to Book	2.094	1.928	0.358	1.479	25.424
Asset Growth	0.035	0.329	-3.196	0.055	0.875
Income/Assets	-0.028	0.298	-3.001	0.061	0.325
NYSE Size %ile	0.260	0.284	0.000	0.138	1.000
Log Firm Age	2.946	0.988	0.621	2.944	4.974
Negative Earnings Dummy	0.341	0.474	0.000	0.000	1.000
R+D/Sales	0.329	1.676	0.000	0.002	23.816
Retained Earnings/Assets	-0.451	1.776	-15.439	0.080	0.914
Credit Line Dummy	0.612	0.487	0.000	1.000	1.000
Cash flow Risk	0.337	0.053	0.211	0.329	0.615
3-Year Sales Growth	0.418	0.797	-2.497	0.306	5.324
Text+Applied Patents	0.698	0.459	0.000	1.000	1.000

Table V: Pearson Correlation Coefficients

Pearson Correlation Coefficients are reported for our sample of 42,999 observations based on annual firm observations from 1997 to 2008. Observations are required to be in CRSP, COMPUSTAT, and our 10-K database. Please see Table IV for a description of the variables.

Row	Variable	Local Product Market Fluidity	Self Product Fluidity	HHI	Total Risk	Market to Book	Asset Growth	Income/ Assets	NYSE % ile	Log Firm Age	R+D/ Sales
					Correlation Coefficients						
(1)	Self Fluidity	0.200									
(2)	HHI	-0.302	-0.021								
(3)	Total Risk	0.177	0.191	0.045							
(4)	Market to Book	0.245	0.104	-0.078	0.040						
(5)	Asset Growth	-0.029	-0.018	-0.023	-0.262	0.120					
(6)	Income/Assets	-0.312	-0.204	0.029	-0.470	-0.154	0.559				
(7)	NYSE Size %ile	0.025	0.028	-0.191	-0.410	0.202	0.207	0.288			
(8)	Log Firm Age	-0.347	-0.136	0.031	-0.327	-0.130	0.025	0.267	0.279		
(9)	R+D/Sales	0.294	0.053	-0.076	0.109	0.174	-0.099	-0.342	-0.081	-0.126	
(10)	Neg. Earn. Dummy	0.306	0.194	-0.013	0.485	0.068	-0.334	-0.620	-0.341	-0.274	0.237

Table VI: Dividend Policy and Product Fluidity

Panel A reports logit estimates for our sample of 42,999 observations based on annual firm observations from 1997 to 2008. An observation is one firm in one year. The dependent variable is one if the firm is a dividend payer and zero otherwise. Observations are required to be in CRSP, COMPUSTAT, and our 10-K database. Please see Table IV for a description of the variables. All independent variables are standardized prior to fitting regressions to permit more intuitive comparisons across variables. In Panel B, we consider the subsample of dividend paying firms, and the dependent variable is the percentage dividend yield or Dividends/Assets. Because these are continuous variables, we use OLS regressions, and we only consider the specification with all controls to conserve space. For both panels, when the Extra Controls+Industry column is "Both," we add FIC-300 industry fixed effects and three additional variables (text+applied patents, the credit line dummy, and cash flow risk) but do not report coefficients to conserve space. All regressions are estimated with year fixed effects and standard errors are clustered by firm. t-statistics are in parentheses.

Row	Local Product Fluidity	Self Product Fluidity	HHI	Total Risk	Log Firm Age	Market to Book	Asset Growth	Income/ Assets	NYSE Size % ile	R+D/ Sales	Neg. Earn. Dummy	Ret Earnings /Assets	3-Year Sales Growth	Extra Controls+ Industry	Num. Obs/ R^2
							Panel A: Dividend Payer vs Non-Payer								
							Dependent Variable: Dividend Payer Dummy (Logistic Model)								
(1)	-0.610	-0.051	0.068	-1.359	0.664	-0.374	-0.554	1.306	0.602					No	42,999
	(-12.98)	(-1.96)	(2.00)	(-18.83)	(15.54)	(-5.99)	(-16.27)	(12.85)	(14.12)						0.360
(2)	-0.416	-0.021	0.071	-1.117	0.566	-0.322	-0.377	0.826	0.652	-8.036	-0.032	2.174	-0.482	Cntrls	39,768
	(-8.23)	(-0.78)	(2.00)	(-15.07)	(12.62)	(-4.46)	(-10.60)	(5.60)	(14.46)	(-4.55)	(-0.36)	(7.61)	(-10.25)	Only	0.379
(3)	-0.363	0.023	0.021	-1.038	0.538	-0.161	-0.395	0.473	0.704	-1.125	-0.156	2.559	-0.503	Both	39,768
	(-6.31)	(0.82)	(0.55)	(-13.75)	(11.54)	(-2.37)	(-10.21)	(3.36)	(14.55)	(-0.95)	(-1.77)	(7.92)	(-10.20)		0.419
							Dependent Variable: Dividend Payer Dummy (Linear Probability Model)								
(4)	-0.076	-0.013	0.008	-0.079	0.101	-0.022	-0.035	-0.003	0.124					No	42,999
	(-17.78)	(-5.03)	(1.94)	(-21.79)	(20.76)	(-7.45)	(-15.19)	(-1.03)	(22.14)						0.347
(5)	-0.072	-0.011	0.010	-0.078	0.104	-0.022	-0.036	-0.012	0.125	0.016	-0.058	0.010	-0.018	Ctls	39,768
	(-14.25)	(-4.03)	(2.30)	(-20.06)	(19.03)	(-6.44)	(-14.92)	(-3.37)	(21.09)	(8.47)	(-9.65)	(3.33)	(-8.25)	Only	0.354
(6)	-0.055	-0.002	-0.006	-0.064	0.091	-0.014	-0.036	-0.0133	0.123	0.009	-0.024	0.015	-0.021	Both	39,768
	(-10.44)	(-0.68)	(-1.41)	(-17.76)	(17.23)	(-4.31)	(-15.36)	(-4.05)	(21.35)	(4.26)	(-8.93)	(5.17)	(-10.04)		0.420
							Panel B: Dividend Levels								
							Dependent Variable: Dividend Yield								
(7)	-0.206	0.032	-0.007	0.127	0.081	-0.217	-0.710	-0.209	-0.243	-1.052	0.504	-1.174	-0.472	Both	10,343
OLS	(-3.73)	(1.25)	(-0.20)	(1.31)	(1.98)	(-3.43)	(-10.04)	(-0.94)	(-6.560)	(-0.80)	(3.30)	(-4.06)	(-6.42)		0.330
							Dependent Variable: Dividend/Assets								
(8)	-0.272	0.032	0.027	-0.40	0.01	1.209	-0.659	0.920	-0.141	1.588	0.159	-0.480	-0.465	Both	10,343
OLS	(-4.79)	(1.19)	(0.82)	(-5.61)	(0.37)	(14.16)	(-11.04)	(4.28)	(-3.54)	(1.13)	(1.274)	(-2.23)	(-6.04)		0.363

Table VII: Text Characteristics for Propensity Matched Firms

We estimate a pooled logit explaining whether firms pay dividends or not using a panel from 1997 to 2008. Explanatory variables include non-text variables: total risk log firm age, firm size, M/B, asset growth, R&D/Sales, negative earnings dummy and year fixed effects. We group firms into four quartiles based on the predicted propensity to pay. The table reports the mean (first row) and median (second row) of three text-based product characteristics for payers and non-payers for each quartile of the predicted propensity. We also the significance of test for *differences between* payers and non-payers within each quartile. Superscripts a, b, c indicate significance at 1%, 5%, and 10%, respectively, for the significance of these differences using t-tests or signed rank tests.

Variable	Quartile 1		Quartile 2		Quartile 3		Quartile 4	
	Payer	*Non-payer*	*Payer*	*Non-payer*	*Payer*	*Non-payer*	*Payer*	*Non-payer*
Local Fluidity	6.695^a	9.097	5.696^a	7.157	5.493^a	6.478	4.967^a	6.101
	6.234^a	8.776	5.250^a	6.818	4.996^a	5.998	4.393^a	5.515
Self-Fluidity	24.501	26.652	18.035^a	21.616	17.212^a	18.825	17.776	17.544
	18.622^c	22.565	14.107^a	17.884	13.542^a	15.480	14.219	14.469
HHI	0.300^a	0.205	0.286^a	0.224	0.264^a	0.211	0.211	0.211
	0.176^a	0.102	0.189^a	0.132	0.172^a	0.133	0.132^c	0.127
# Observations	83	10,673	710	10,045	2,479	8,276	7,276	3,479

Table VIII: Economic Significance

Panels A and B display the economic effects for the propensity to pay dividends based on logit coefficient estimates from Table 6, specifications (2) and (3). The dependent variable is one if the firm is a dividend payer and zero otherwise. Each column gives the propensity to pay at the 10th, 25th, 50th, 75th, and 90th percentile of a variable holding the other variables at their median values. Observations are required to be in CRSP, COMPUSTAT, and our 10-K database. Please see Table 3 for a description of the variables.

%ile	Local Product Fluidity	Self Product Fluidity	HHI	Total Risk	Log Firm Age	R+D/ Sales	Ret. Earnings	Cash flow Risk	Sales Growth
Panel A: Propensity to Pay Dividends: Full Model, No FIC Fixed Effects									
10	0.209	0.151	0.145	0.283	0.075	0.150	0.015	0.146	0.199
25	0.182	0.150	0.146	0.227	0.108	0.150	0.092	0.147	0.170
50	0.149	0.149	0.149	0.149	0.149	0.149	0.149	0.149	0.149
75	0.113	0.147	0.155	0.074	0.202	0.100	0.189	0.150	0.122
90	0.083	0.144	0.165	0.029	0.280	0.039	0.232	0.153	0.090
Panel B: Propensity to Pay Dividends + FIC Fixed Effects									
10	0.210	0.151	0.146	0.286	0.083	0.149	0.020	0.146	0.200
25	0.184	0.150	0.147	0.232	0.114	0.149	0.100	0.147	0.171
50	0.149	0.149	0.149	0.149	0.149	0.149	0.149	0.149	0.149
75	0.117	0.147	0.155	0.080	0.207	0.102	0.192	0.151	0.123
90	0.087	0.145	0.166	0.033	0.285	0.045	0.235	0.154	0.091

Table IX: Dividend Initiations, Omissions, Increases, and Decreases

Logistic regressions for our sample based on annual firm observations from 1997 to 2008. An observation is one firm in one year. In Panel A, the dependent variable is one if the firm is a dividend initiator and zero otherwise. In Panel A, the sample is limited to those firms that were paying no dividends in year t-1 (32,658 observations). In Panel B, the dependent variable is one if the firm is a dividend omitter and zero otherwise. In Panel C and D, the dependent variable is one if the firm is a dividend increaser and decreaser, respectively. The sample in Panels B, C, and D is limited to those firms that were paying positive dividends in year t-1 (10,341 observations).Observations are required to be in CRSP, COMPUSTAT, and our 10-K database. Please see Table IV for a description of the variables. When the Extra Controls+Industry Effects column is "Yes", then industry fixed effects (based on SIC-3 or FIC-300 as noted) in addition to two additional variables (text+applied patents, BKS cash flow risk, and the credit line dummy) are included in the regression but not displayed to conserve space. All independent variables are standardized prior to fitting regressions to permit more intuitive comparisons across variables. Panel regressions are estimated with year fixed effects and standard errors are clustered by firm. *t*-statistics are in parentheses.

Row	Local Product Fluidity	Self Product Fluidity	HHI	Total Risk	Log Firm Age	Market to Book	Asset Growth	Income/ Assets	NYSE Size % ile	R+D/ Sales	Neg. Earn. Dummy	Retained Earnings /Assets	3-Year Sales Growth	Extra Controls+ Industry Effects	Obs./ Pseudo R^2
							Panel A: Dividend Initiations								
(1)	-0.397	-0.014	0.034	-0.666	0.029	-0.176	-0.777	1.660	0.181					Neither	32,658
	(-6.90)	(-0.28)	(0.79)	(-6.73)	(0.65)	(-2.16)	(-12.62)	(8.32)	(3.90)						0.028
(2)	-0.240	0.017	0.022	-0.559	0.032	-0.005	-0.717	1.098	0.258	-0.046	-0.269	0.161	-0.385	Both	29,620
	(-3.19)	(0.30)	(0.41)	(-5.33)	(0.70)	(-0.06)	(-9.13)	(3.91)	(4.97)	(-0.35)	(-2.67)	(1.26)	(-4.28)		0.039
							Panel B: Dividend Omissions								
(3)	0.314	0.164	0.068	0.543	-0.170	-0.265	-0.067	-0.195	-0.766					Neither	10,341
	(5.19)	(3.41)	(1.18)	(9.36)	(-3.03)	(-2.37)	(-1.26)	(-3.54)	(-7.80)						0.075
(4)	0.190	0.123	0.035	0.493	-0.171	-0.319	-0.027	0.052	-0.893	0.202	0.135	-0.486	-0.220	Both	10,148
	(2.12)	(2.18)	(0.51)	(7.53)	(-2.50)	(-2.28)	(-0.46)	(0.65)	(-7.79)	(1.63)	(2.27)	(-3.82)	(-3.55)		0.104
							Panel C: Dividend Increases								
(5)	-0.208	-0.165	-0.033	-0.594	0.086	0.223	0.138	0.284	0.383					Neither	10,341
	(-4.33)	(-5.33)	(-0.85)	(-9.55)	(2.06)	(5.16)	(4.85)	(5.69)	(8.31)						0.172
(6)	-0.151	-0.147	-0.069	-0.488	0.059	0.192	0.081	0.208	0.520	-0.280	-0.149	0.336	0.094	Both	10,148
	(-2.72)	(-4.68)	(-1.54)	(-7.68)	(1.32)	(3.78)	(2.58)	(3.15)	(9.56)	(-3.53)	(-3.45)	(5.30)	(2.58)		0.241
							Panel D: Dividend Decreases								
(7)	-0.100	0.193	-0.099	0.141	0.178	-0.167	-0.261	-0.107	-0.223					Neither	10,341
	(-1.29)	(3.73)	(-1.73)	(2.47)	(2.20)	(-0.99)	(-3.72)	(-1.54)	(-2.27)						0.022
(8)	-0.163	0.215	-0.161	0.055	0.173	-0.067	-0.151	-0.012	-0.152	-0.199	0.326	-0.114	-0.299	Both	10,148
	(-1.59)	(3.51)	(-2.00)	(0.81)	(2.19)	(-0.53)	(-2.07)	(-0.16)	(-1.49)	(-1.66)	(4.96)	(-1.47)	(-4.31)		0.047

Table X: Repurchase Policy and Product Fluidity

Logistic regressions for our sample of 42,999 observations based on annual firm observations from 1997 to 2008. An observation is one firm in one year. The dependent variable is one if the firm is a repurchaser and zero otherwise. In Panel B, the repurchaser dummy is further restricted to larger repurchases (at least 1% of assets) and in Panel C the repurchaser dummy is further restricted to firms that repurchase both in the current year and in the previous year. Observations are required to be in CRSP, COMPUSTAT, and our 10-K database. Please see Table IV for a description of the variables. When the Extra Controls+Industry Effects column is "Yes", then industry fixed effects (based on SIC-3 or FIC-300 as noted) in addition to two additional variables (text+applied patents, BKS cash flow risk, and the credit line dummy) are included in the regression but not displayed to conserve space. All independent variables are standardized prior to fitting regressions to permit more intuitive comparisons across variables. Panel regressions are estimated with year fixed effects and standard errors are clustered by firm. t-statistics are in parentheses.

Row	Local Product Fluidity	Self Product Fluidity	TNIC HHI	Total Risk	Log Firm Age	Market to Book	Asset Growth	Income/ Assets	NYSE Size % ile	R+D/ Sales	Neg. Earn. Dummy	Retained Earnings /Assets	3-Year Sales Growth	Extra Controls+ Industry Effects	Obs./ Pseudo R^2
	Panel A: Positive Repurchase Dummy														
(1)	-0.159	0.026	-0.026	-0.377	0.062	-0.083	-0.430	0.408	0.386					Neither	42,999
	(-7.79)	(1.84)	(-1.50)	(-15.66)	(3.27)	(-4.40)	(-21.77)	(14.50)	(17.51)						0.137
(2)	-0.115	0.028	-0.026	-0.371	0.022	-0.081	-0.420	0.234	0.384	-0.060	-0.172	0.152	-0.107	Ctls	39,768
	(-5.06)	(1.91)	(-1.48)	(-14.11)	(1.05)	(-3.71)	(-19.58)	(7.21)	(16.36)	(-2.14)	(-9.29)	(5.36)	(-6.11)	Only	0.141
(3)	-0.098	-0.007	-0.014	-0.391	0.053	-0.108	-0.413	0.242	0.407	0.011	-0.162	0.153	-0.111	Both	39,768
	(-3.65)	(-0.44)	(-0.72)	(-14.40)	(2.46)	(-4.74)	(-18.96)	(7.43)	(17.08)	(0.41)	(-8.69)	(5.48)	(-6.17)		0.167
	Panel B: Repurchase More than 1% of Assets Dummy														
(4)	-0.131	0.018	-0.029	-0.429	-0.009	0.091	-0.569	0.531	0.394					Neither	42,999
	(-6.12)	(1.13)	(-1.52)	(-15.07)	(-0.47)	(5.02)	(-23.99)	(15.06)	(17.86)						0.124
(5)	-0.103	0.017	-0.041	-0.411	-0.061	0.086	-0.568	0.341	0.407	-0.056	-0.219	0.165	-0.146	Ctls	39,768
	(-4.32)	(1.06)	(-2.09)	(-13.51)	(-2.90)	(4.07)	(-21.61)	(8.28)	(17.39)	(-1.58)	(-10.18)	(4.76)	(-6.87)	Only	0.134
(6)	-0.084	-0.027	-0.015	-0.458	-0.019	0.022	-0.580	0.380	0.443	0.019	-0.210	0.152	-0.140	Both	39,768
	(-3.00)	(-1.62)	(-0.75)	(-14.00)	(-0.87)	(0.99)	(-21.12)	(8.96)	(18.50)	(0.54)	(-9.62)	(4.58)	(-6.25)		0.162
	Panel C: Two-Year Repurchase Dummy														
(7)	-0.201	-0.005	-0.026	-0.539	0.146	-0.040	-0.447	0.452	0.403					Neither	42,999
	(-8.13)	(-0.31)	(-1.25)	(-16.08)	(6.72)	(-1.76)	(-20.05)	(12.04)	(16.18)						0.158
(8)	-0.145	-0.003	-0.031	-0.513	0.075	-0.012	-0.387	0.198	0.411	-0.081	-0.183	0.256	-0.266	Ctls	39,768
	(-5.29)	(-0.16)	(-1.48)	(-14.47)	(3.17)	(-0.49)	(-16.16)	(4.61)	(15.69)	(-1.73)	(-8.09)	(5.19)	(-10.62)	Only	0.165
(9)	-0.114	-0.038	-0.025	-0.535	0.113	-0.051	-0.382	0.217	0.440	0.001	-0.176	0.248	-0.270	Both	39,768
	(-3.55)	(-2.15)	(-1.08)	(-14.45)	(4.53)	(-1.92)	(-15.69)	(5.10)	(16.39)	(0.01)	(-7.73)	(5.36)	(-10.53)		0.191

Table XI: Cash Holdings and Fluidity

This table examines the effect of fluidity on cash holdings. OLS regressions are based on annual firm observations from 1997 to 2008. An observation is one firm in one year. The dependent variable is equal to firm cash and cash equivalents divided by firm assets. Observations are required to be in CRSP, COMPUSTAT, and our 10-K database. In addition to the base variables defined in Table IV, we include an estimate of the foreign tax burden and industry acquisition intensity. Foreign tax burden equals the maximum of zero or foreign income times a firm's marginal effective tax rate computed as in Graham (1996) minus foreign taxes paid as in Foley et al. (2007). The industry acquisition intensity is the total number of acquisitions divided by the number of firms in a given industry. All independent variables are standardized prior to fitting regressions to permit more intuitive comparisons across variables. Column 1 has year fixed effects while column 2 includes both year and FIC-300 industry fixed effects. Standard errors are clustered by firm and correct for heteroskedasticity. *t*-statistics are in parentheses.

	(1)	(2) With Industry Controls
Local Product Fluidity	0.045	0.030
	(20.378)	(12.932)
TNIC HHI	-0.023	-0.011
	(-12.445)	(-5.589)
Log Firm Age	-0.011	-0.009
	(-5.650)	(-5.499)
Market to Book	0.049	0.038
	(27.237)	(21.707)
ln(Book Assets)	-0.047	-0.042
	(-23.282)	(-20.729)
Earnings / Assets	-0.006	-0.001
	(-2.985)	(-0.559)
Ind. Acq. Intensity	0.007	-0.001
	(4.715)	(-0.710)
Foreign Tax Burden	0.011	0.006
	(7.115)	(4.505)
Cash Flow Risk	0.033	0.013
	(14.531)	(5.831)
Capx / Assets	-0.034	-0.024
	(-25.583)	(-17.377)
Neg. Earn. Dummy	0.023	0.006
	(6.183)	(1.666)
R&D/Assets	0.056	0.043
	(20.151)	(13.785)
Constant	0.170	0.182
	(23.062)	(12.172)
R^2	0.441	0.525
N	41,655	41,637

Table XII: Cash Holdings and Fluidity: Age, Earnings and Bond Ratings

This table examines the effect of fluidity on cash holdings by young vs. old firms (columns 1 and 2), loss-making vs. profitable firms (columns 3 and 4) and investment grade vs. non-investment grade firms (columns 5 and 6). OLS regressions are based on annual firm observations from 1997 to 2008. An observation is one firm in one year. The dependent variable is equal to firm cash and cash equivalents divided by firm assets. Observations are required to be in CRSP, COMPUSTAT, and our 10-K database. In addition to the base variables defined in Table IV, we include an estimate of the foreign tax burden and industry acquisition intensity. Foreign tax burden equals the maximum of zero or foreign income times a firm's marginal effective tax rate computed as in Graham (1996) minus foreign taxes paid as in Foley et al. (2007) . The industry acquisition intensity is the total number of acquisitions divided by the number of firms in a given industry. All independent variables are standardized prior to fitting regressions to permit more intuitive comparisons across variables. All specifications include year and FIC-300 industry fixed effects. Standard errors are clustered by firm and correct for heteroskedasticity. *t*-statistics are in parentheses.

	(1)	(1)	(3)	(4)	(5)	(6)
	Young firms	Old firms	Neg. Earn.	Pos. Earn.	Non-investment grade	Investment grade
Local Product Fluidity	0.048	0.026	0.033	0.021	0.034	0.010
	(8.228)	(10.856)	(8.633)	(8.666)	(12.557)	(2.910)
TNIC HHI	-0.019	-0.010	-0.008	-0.009	-0.009	-0.009
	(-3.585)	(-4.971)	(-2.385)	(-4.727)	(-4.032)	(-2.916)
Log Firm Age	-0.011	-0.014	-0.023	-0.004	-0.010	-0.004
	(-1.299)	(-5.918)	(-7.013)	(-2.036)	(-5.034)	(-1.253)
Market to Book	0.032	0.039	0.026	0.047	0.034	0.049
	(8.080)	(20.576)	(11.000)	(18.604)	(17.886)	(12.699)
ln(Book Assets)	-0.059	-0.040	-0.034	-0.043	-0.041	-0.041
	(-10.481)	(-18.450)	(-9.394)	(-20.844)	(-16.065)	(-11.209)
Earnings / Assets	-0.001	0.001	-0.002	0.015	0.001	-0.001
	(-0.183)	(0.232)	(-0.742)	(1.859)	(0.225)	(-1.039)
Ind. Acq. Intensity	-0.0113	-0.0004	-0.0017	0.0012	-0.0012	0.0029
	(-2.075)	(-0.293)	(-0.845)	(0.747)	(-0.794)	(1.234)
Foreign Tax Burden	0.009	0.006	0.001	0.006	0.007	0.005
	(2.183)	(4.165)	(0.028)	(4.620)	(3.778)	(3.680)
Cash Flow Risk	0.014	0.013	0.020	0.008	0.017	0.003
	(2.308)	(5.428)	(4.909)	(3.541)	(6.065)	(0.921)
Capx / Assets	-0.021	-0.025	-0.028	-0.022	-0.024	-0.023
	(-7.258)	(-16.373)	(-13.110)	(-13.837)	(-15.024)	(-9.156)
Neg, Earn. Dummy	0.024	0.004			0.002	0.004
	(2.642)	(1.092)			(0.447)	(0.387)
R&D/Assets	0.021	0.049	0.032	0.394	0.039	0.292
	(4.147)	(13.544)	(11.181)	(2.934)	(12.965)	(2.345)
Constant	0.143	0.184	0.154	0.238	0.181	0.225
	(2.853)	(11.518)	(5.966)	(9.323)	(10.785)	(6.084)
R^2	0.548	0.528	0.537	0.459	0.532	0.493
N	4,477	37,160	14,112	27,525	30,438	11,199