

Are new IT-enabled investment opportunities diminishing for firms?

Online Appendix 1: Comparison with the Biotech Industry.

In addition, we analyzed the Biotech industry. One might argue that the products of Biotech firms are mostly NII investments for their customers, which would render high volatility. To verify this, we obtained data for firms in the biotech industry and repeated the analysis for hypothesis 1. The results show that the biotech industry is very volatile to economic news, even more so than IT (see Figure 1 and Table 1), though the gap between the two is shrinking (negative interaction coefficient).

Figure 1: Biotech industry volatility

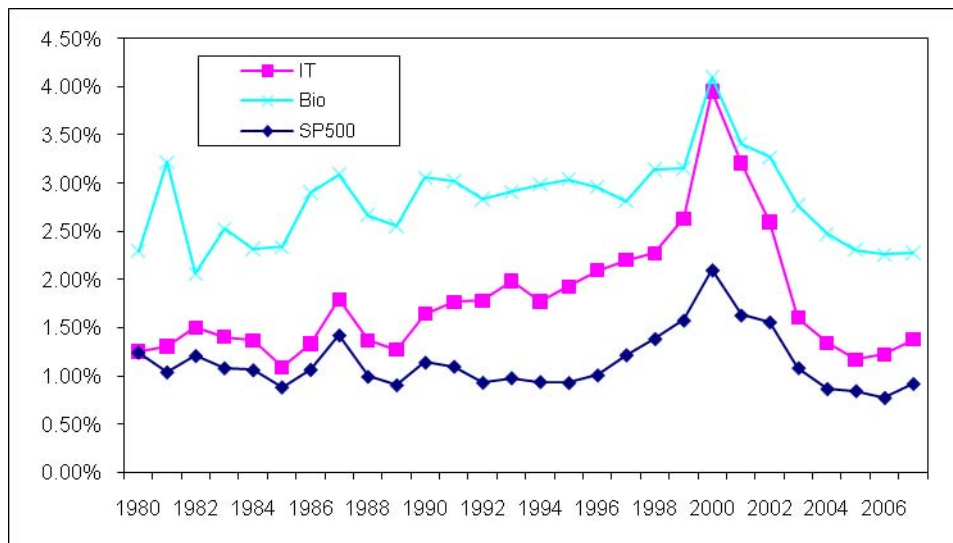


Table 1: Biotech Results

Variables	Value	P-Value
Intercept	0.0240	<.0001
UT_Dummy	-0.0157	<.0001
TF_Dummy	-0.0083	<.0001
Bio_Dummy	0.0383	<.0001
Year	0.0001	0.0002
UT_Dummy*year	0.0001	0.076
TF_Dummy*year	-0.0002	<0.0001
Bio_Dummy*year	-0.0017	<0.0001
Events	Included	Included
<i>R-square</i>	0.046	
<i>F-Value</i>	123.5	
P-Value	<0.001	
<i>df</i>	24	
<i>N</i>	174535	

Online Appendix 2: Industry-Level Analysis

The R-square reported in this paper is comparable to the results in the finance literature on the effects of macroeconomic news. We should note that the R-square is not high because our analysis is at the sector level. Some studies on stock volatility have achieved high R-square at the industry level. For example, Mazzucato (2002) achieved an R-square of 0.516 when comparing the volatility of the auto industry to the PC industry. To make a meaningful comparison, we aggregated our data to the industry level (IT, UT and TF). Doing so results in fewer observations (8735). We then controlled for firm size and leverage and present the results for hypothesis 1 in Table 2. Performing the comparison at the industry level achieves an R-square of 0.494, very similar to earlier work (Mazzucato 2002).

Table 2: Results at the industry-level

Variables	Coefficient	P-Value
Intercept	-0.2160	<.0001
UT_Dummy	-0.0125	<.0001
TF_Dummy	-0.0083	<.0001
Firm_size	-0.0001	<.0001
Leverage	-0.0004	0.026
Year (Dummy)	Included	
Events	Included	
<i>R-square</i>	0.494	
<i>F-Value</i>	60.25	
P-Value	<0.001	
<i>df</i>	47	
<i>N</i>	8735	

Online Appendix 3: The Effects of Dividends, Physical Assets and PE ratios

In the robustness checks section, we controlled for the main factors that may have a differential effect on sector volatility (i.e., leverage, growth and firm size). In this online appendix we provide results for three additional controls: dividends, physical assets and PE ratios.

Note that the prices used in this paper are dividend-adjusted prices. According to WRDS (www.library.hbs.edu/helpsheets/wrdsrspstock.html) "... dividends are relatively infrequent events, so the return on most days is simply the relative or percentage change in price from the end of one day to the end of the next ...". In the finance literature, the interpretation of the information content of "dividends" has changed over time. Initially, dividends (determined by insiders) were believed to signal future performance, or to satisfy the demand for payouts from owners (John and Williams 1985, Miller and Modigliani 1961). In other words, dividends provide useful information about firm value. More recently, there have been suggestions that dividend policy is indicative of the investment opportunities available to the firm (Fama and French 2001, Grullon, et al. 2002). Either one of the above interpretations could lead one to expect dividend paying sectors to have lower volatility. Below we plot dividends over time for IT, UT and TF industries. We normalized the dividends with market capital. The IT industry has a much lower dividend ratio compared to the other two industries.

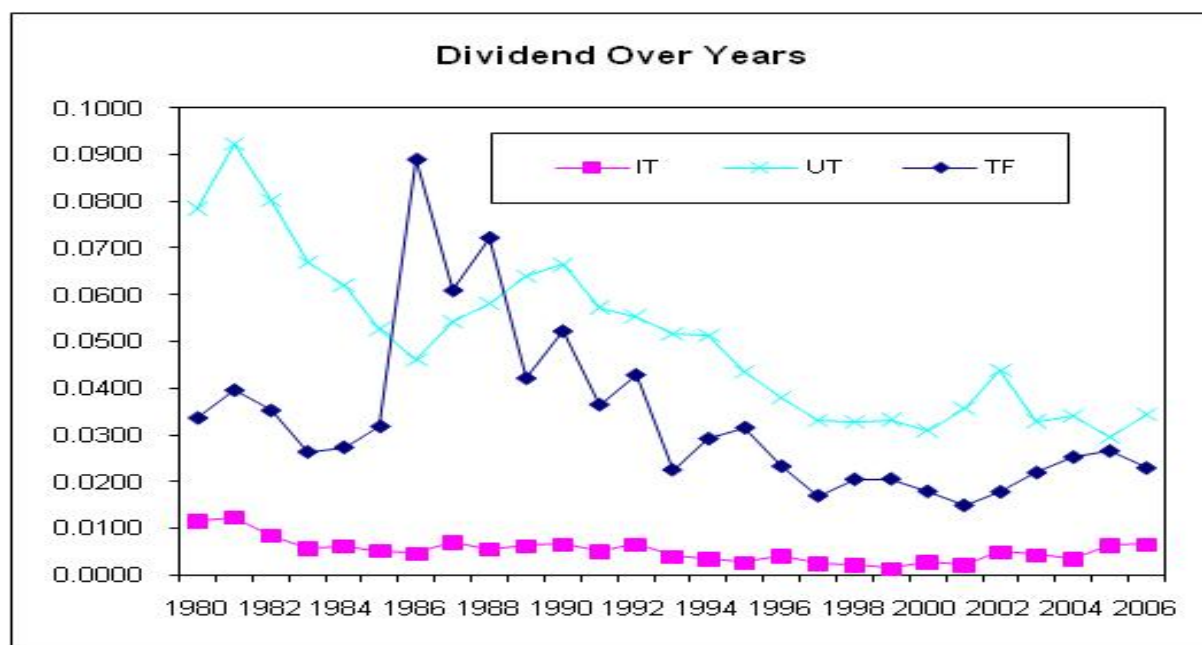


Figure 2: Divided over years for the IT, UT and TF industries

A firm's physical assets may affect volatility of its stock. We use the PPE (plant, property and equipment) measure available from Compustat to determine physical asset levels. Figure 3 plots the PPE for the three industries over time. The IT industry clearly has much lower levels of physical assets compared to the other two industries.

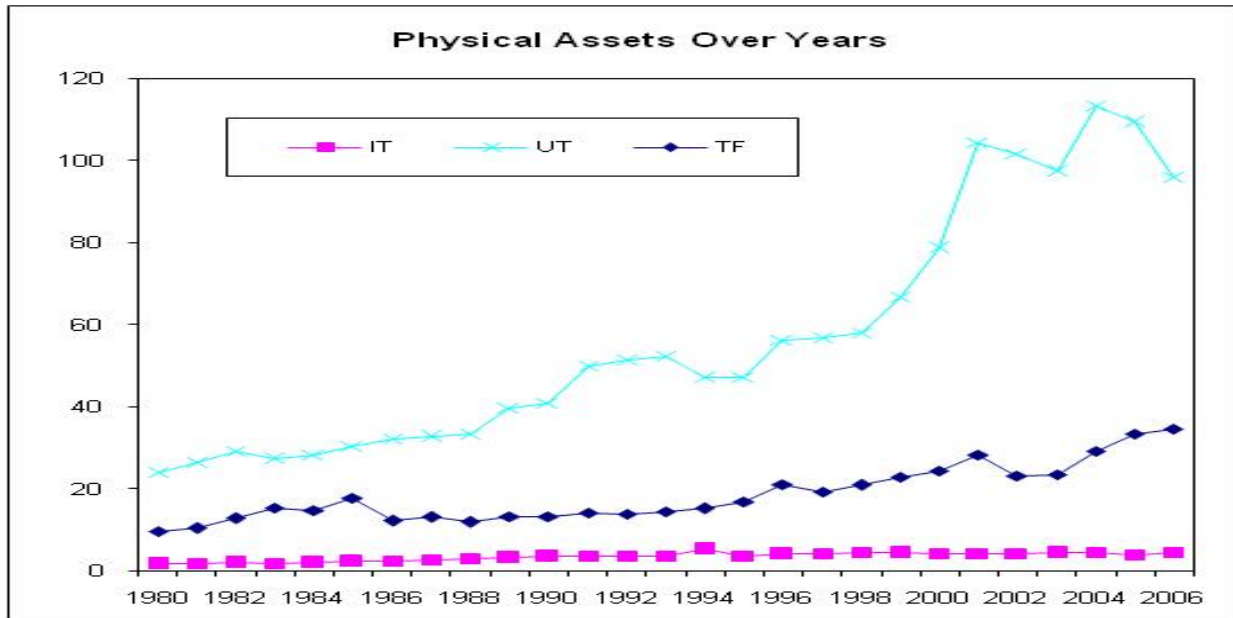


Figure 3: Physical asset over years for the IT, UT and TF industries

High growth firms typically are riskier and therefore demand a higher return. If IT does not matter, then the growth for IT industry firms will be lower. P/E ratios are one way to measure growth opportunities (or market anticipated future performance). We plot the P/E ratios for the IT, UT and TF industries over time. The figure below shows that IT's P/E was consistently higher than UT or TF's.

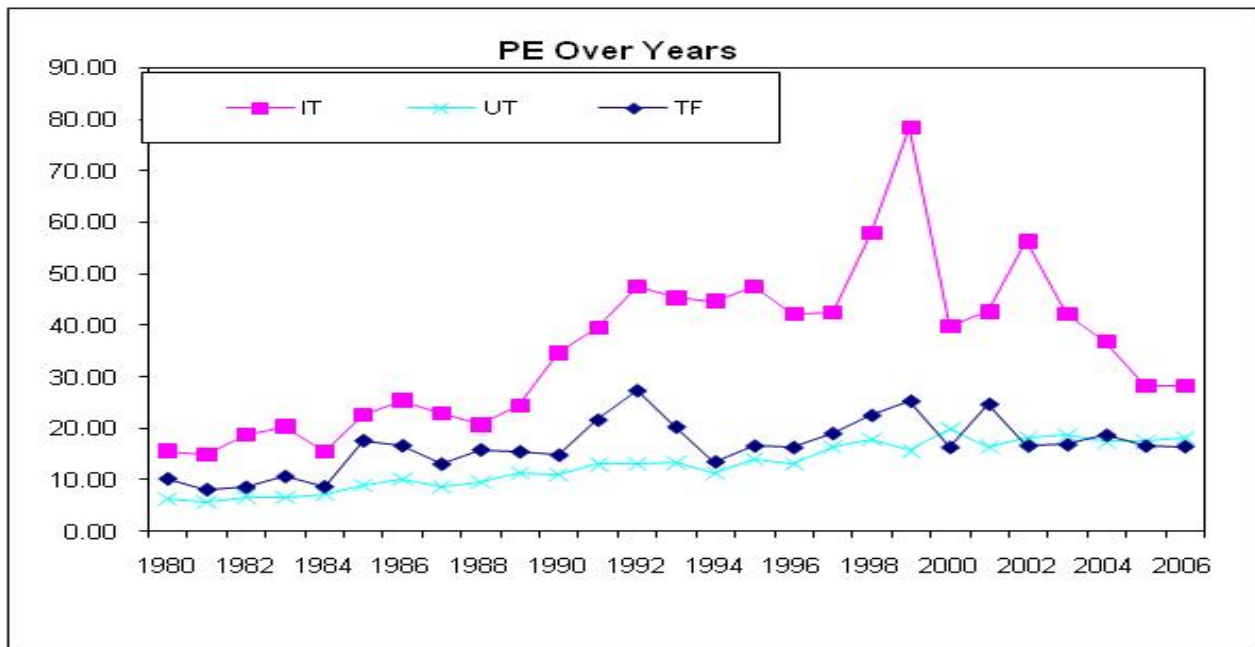


Figure 4: P/E ratio over years for the IT, UT and TF industries

We re-ran our analysis with these three additional control variables. The regression model set up is the same as the regressions used in the robustness checks section. The results are presented in Table 3. All of our main results still hold. Dividends have a negative impact on volatility, as expected. A higher P/E ratio is associated with higher volatility, also as expected. Physical assets have a positive effect on volatility.

Table 3: Regression results with the three additional controls

Variables	Value	P-Value
Intercept	0.0208	<.0001
UT_Dummy	-0.0068	<.0001
TF_Dummy	-0.0029	<.0001
OG_Dummy	-0.0026	0.0024
Year	0.0002	<.0001
UT_Dummy*Year	0.0000	0.078
TF_Dummy*Year	-0.0004	<.0001
OG_Dummy*Year	-0.0004	<.0001
Firm_size	-0.0001	<.0001
Leverage	-0.0004	<.0001
Growth_Rate	0.0012	<.0001
Dividends	-0.0001	<.0001
Physical_Assets	0.0002	<.0001
P/E ratio	0.0004	<.0001
Event Fixed Effects	Included	Included
<i>R-square</i>	0.087	
<i>F-Value</i>	453.12	
P-Value	<0.001	
<i>df</i>	29	
<i>N</i>	147551	

References

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