Venture Capital Flows: Does IT Sector Investment Diminish Investment in Other Industries

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While recently the Venture Capital activity in Information Technology (IT) sector is booming, some argue that it is coming at the cost of investment in other sectors. I explore how the renewed focus on IT sector impacts the investments in Health Sciences (HS) sector. The exploratory analysis of the data spanning over 1994 to 2014 suggests that while over the short run greater investment --measured in terms of dollar volume and number of deals– in IT sector has a crowding out effect, over the longer period there are positive spillover effects of IT investments for HS sector.

INTRODUCTION

In the first quarter of 2014, Venture Capital investment in Information Technology industry companies rose 33% while investment in Life Sciences industry companies fell 10%, according to PricewaterhouseCooper's MoneyTree report. Since 2009, VC activity in Life Sciences has fallen from 26% of total VC deals to 19% of total VC deals in 2013. This is an exploratory paper that looks at relationships between venture capital investment in two main sectors – Information Technology (IT) sector and Health Sciences (HS) sector. I examine the trends in both the number of venture capital investment deals in each sector and the total dollar volume invested. I focus on the time period between January 1994 and January 2014 tied as it is to the advent of significant information technology development. An initial look at trends appears to suggest that in this period, Information Technology Sector investment may have had a crowding-out effect on Health Sciences Sector investment. However, relevant literature review shows little to no formal analysis on dynamics of venture capital funding allocation across various sectors.

There are numerous non-academic popular press publications that point to an imbalance of investment activity into Information Technology with an implicit discussion on less-than-ideal investment activity into Health Sciences.

This paper attempts impart more rigorous analysis to the temporal trends in Information Technology Sector and Health Science Sector investments by conducting exploratory statistical tests to analyze both the crowding out effects and the spillover effects of Information Technology Sector VC investment onto the Health Sciences Sector VC investment.

The purpose of this paper is to seek answers to the following questions:

1. Does higher investment in IT sector come at a cost in terms of lower investment in the HS sector? That is, does higher IT sector investment correlate with lower HS sector investment?

2. Does investment in IT have positive spillover effects for HS sector? That is, does higher IT sector investment correlate positively with HS investment activity in later periods?

Broadly, the analysis suggests a crowding-out effect of IT investment on contemporaneous HS investment and positive spillover effect with a 4-year lag.

In the next section I discuss existing academic literature as it relates to the formation of the main hypothesis. Section 3 describes data sources and sample selection as well as explains the variables used in the analysis; Section 4 presents the discussion of our results and Section 5 concludes the paper.

LITERATURE REVIEW AND BASIS FOR HYPOTHESES

In any economy the sustained growth through innovation is conditional upon innovative ventures getting funding support. Kortum and Lerner (2000) suggest that VCs financing has played a critical role in bringing to the market some of the most risky and innovative ventures. The recent decades have seen emergence of new industries including internet-based ecommerce, biotechnology, health services industry, and information technology (IT) largely due to private equity and venture capital industry funding. Gompers and Lerner (1998) suggest that until 1980s VCs did not play much of an economically significant role in generating innovative industrial growth through funding of new ventures. However, recent VC industry reports suggest that VC investments have grown to $29.6 billion in 2013 from a low of $549 million in 1978. The results are obvious in terms of some of the largest firms being new technology based firms including Google, Facebook, and Tesla Motors among others.

While the aggregate VC activity levels have been well documented statistically, not much research exists on the economic rationalization of inter-sectoral allocation of VC investments. Given the non-existence of evidence relating to dynamics of VC activities across sectors, I explore related research on the topic to understand basic economic intuition behind VC equity investment allocations across competing sectors.

For instance, does one sector's superior expected performance lead to other sectors getting drained out of VC funds? How does herding behavior (Scharfstein and Stein, 1990) affect inter-sectoral VC investments? For example, did the boom in IT sector cause lower VC investments and deals in other industries? Michel (2014) suggests that investors get turned away by poor performance and overinvest in well-performing sectors. Those overinvested sectors may suffer in the long run as they may face lower returns. Analyzing return on VC investments and their impact of long-term post IPO performance, Michel reports that firms with higher VC returns perform relatively poorly --to the extent of 32 to 43%-- compared to those with lower VC returns in the three years following the IPO. He concludes, "…that investors are too optimistic or do not properly understand the informational content of the recent return on VC investment." Similarly, results reported by Hall and Woodward (2010) indicate that about half of their sample venture-capital backed startups had non-positive value generating exits. Gupta (2000) suggests that this may more likely be the scenario during peaks of VC cycles wherein even poor quality firms get VC funding. Nanda and Kropf (2011) report that, "…startups receiving their initial funding in more active investment periods were significantly more likely to go bankrupt than those founded in periods when fewer startup firms were funded."

The evidence may lead to the argument that equity investors and VC fund managers may also misallocate their resources based on past performance rather than the promise of the newer ventures in other sectors. Based on the evidence one may argue that focus on IT sectors may lead to reduction in VC funding for other sectors including healthcare.

Alternatively, one may ask if a boom in one industry leads to positive spillover effects in generating innovation and thus higher VC activity levels in other sectors. For instance, Nanda and Kropf (2012) focus on US based startups that received VC funding between 1985 and 2004 and report that firms that received funding in "hot" markets and finally went public, "…are valued higher on the day of their IPO, have more patents and have more citations to their patents." The evidence may lead to a plausible argument that VC funding in the more popular sectors may allow VCs to generate greater returns in some

investment in their portfolios and that may facilitate them taking more risks and investing in more uncertain ventures within and outside of the initial investment sector. Nanda and Korpf argue that, "…the flood of capital in hot markets also plays a causal role in shifting investments to more novel startups – by lowering the cost of experimentation for early stage investors and allowing them to make riskier, more novel, investments." For our purpose, the implication is that higher investment in IT sector may lead to higher levels of VC activity in Healthcare sector in later years.

There appears to be some evidence of positive spillover effects of VC activity in generating greater entrepreneurship, which would lead to future expansion in VC activities within and outside of the original sectors. Samila and Sorenson (2011) analyze panel data from the U.S. metropolitan areas over the period from 1993-2002 and report that greater VC presence leads to positive spillover effects in various dimensions of economic activities including greater number of startups, higher employment, and aggregate income. In particular their results suggest significant stimulus to investment and entrepreneurial activities triggered by VC investment as they report, "…imply that venture capital stimulates the creation of more firms than it directly funds. That result appears to be consistent with either of two mechanisms: one, would-be entrepreneurs that anticipate a future need for financing more likely start firms when the supply of capital expands. Two, companies funded by venture capital may transfer tacit knowledge to their employees thereby enabling spinoffs, and may encourage both their own employees and others to become entrepreneurs through demonstration effects." Smila and Sorenson estimates indicate that investing in an additional firm would stimulate entry of 2 to 12 establishments. Given the evidence, one may expect to see a higher level of VC activity in one sector leading to higher level of VC activity in other sectors.

Hypotheses

Given the discussion in the section above, I formulate formal hypotheses as follows. It is possible that due to previous performance record or herding behavior shaped by anticipated superior performance in IT, VCs increase their focus on IT sector and allocate greater share of their funding in IT sector. Higher investment activity in this sector may crowd out investment activity in HS sector. More formally, I hypothesize as follows.

> *Hypothesis H1A: In a given period, higher Information Technology Sector investment activity, measured by Number of Deals or Sum of Equity Invested, is correlated with lower Health Science Sector investment activity with corresponding metrics.*

Alternatively, it is plausible to argue that investment activity between the two sectors is positively correlated in contemporaneous periods. This could be due to a variety of factors including efforts toward portfolio diversification, synergies across portfolio companies, or immediate innovation and other factor spillovers. This discussion leads to the following hypothesis:

> *Hypothesis H1B: In a given period, higher IT sector investment activity, measured by Number of Deals or Sum of Equity Invested, is correlated with higher HS sector investment activity measured in terms of corresponding metrics.*

One may argue that IT is a fundamental ingredient in making business operations more streamlined and efficient in all sectors of the economy. As more IT ventures mature and bring newer IT products and services in the market, they lead to greater investment in the sectors that are more likely users of those IT products and services. In addition, newer IT innovations may also spur innovation in other sectors due to more cutting edge technological products and services offered by IT ventures allowing development of newer possible products and services. However, this spillover effect is expected only with a lag as it requires previous IT sector VC ventures to mature enough to yield new products and services that may later initiate efficiency seeking and innovation seeking VC investments in other sectors.

The second set of hypotheses, therefore, pertains to a lagged relationship. The primary hypothesis is that IT sector investment activity is correlated with higher HS sector investment activity in future periods. This could be due to innovation spillover effects across sectors. Based on these arguments, our formal hypothesis is describe as follows:

> *Hypothesis H2A: In a given period, higher IT sector investment activity, measured by Number of Deals or Sum of Equity Invested, is correlated with higher HS sector investment activity measured in terms of corresponding metrics in a future period.*

Alternatively, there could be either no significant or a negative correlation between previous period IT sector investment activity and future HS sector investment activity. It is plausible to argue that separate set of factors drive investment activities on these two sectors and that there is no interaction between the two sets. It is also possible that contemporaneous negative relationship sustains or even gets confounded over the longer periods. This yields our final hypothesis.

> *Hypothesis H2B: In a given period, higher Information Technology Sector investment activity, measured by Number of Deals or Sum of Equity Invested, is correlated with lower Health Science Sector investment activity measure with corresponding metrics in a future period.*

SAMPLE COMPOSITION AND DATA DESCRIPTION

Data Sources

I study the temporal trends in venture capital investment activity from 1994-2013. First, I collect monthly investment activity metrics, discussed below, from ThomsonOne MoneyTree Deals. MoneyTree deals are reported via collaboration between PricewaterhouseCoopers and National Venture Capital Association (NVCA). I look at monthly data from 1994-2013 for two sectors classified by Venture Economics Industry Classification (VEIC); Information Technology and Health Sciences. The Information Technology Sector includes Communications, Computer Hardware, Computer Software, Internet Specific, Other-Computer, and Semiconductor subgroups. The Health Sciences Sector includes Biotechnology, Medical Diagnostics, Medical Therapeutic, Medical and Health Products, Medical and Health Services, and Pharmaceutical subgroups. MoneyTree data is limited to companies domiciled in the US. MoneyTree data excludes angel, incubator, and similar investments.

Measurement and Description of Variables

Test Independent Variables

Number of Deals in IT Sector: To measure the level of activity in IT sector I use the number of deals that VCs in aggregate participated in ventures in IT sectors. I focus on the levels and the absolute changes in the levels of our test variables from nth period to n+1 period.

Aggregate VC Equity Invested in Information Technology Sector: Our alternative proxy for the level of activity in the IT sector is in terms of the aggregate dollar amount invested by VCs in the ventures belonging IT sector. I focus on the levels and the absolute changes in the levels of our test variables from nth period to n+1 period.

Test Dependent Variables

Number of Deals in Health Sciences Sector: To measure the level of activity in HS sector I use the number of deals that VCs in aggregate participated in ventures in HS sectors. I focus on the levels and the absolute changes in the levels of our test variables from nth period to n+1 period.

Aggregate VC Equity Invested in Health Sciences Sector: Our alternative proxy for the level of activity in the HS sector is in terms of the aggregate dollar amount invested by VCs in the ventures

belonging HS sector. I focus on the levels and the absolute changes in the levels of our test variables from nth period to n+1 period.

Control Variables

Total Deals in Period: To clearly delineate the relationship between IT sector and HS sector activity levels, it is important to control for factors that may be driving the overall VC activities across all sectors. For this purpose, I control for the aggregate VC activity across all the sectors in a given period. I use total VC equity invested as well as the number of VC deals as our control variables.

Time Trend: To ensure that I control for any confounding effects of industry investment trends across time periods, I utilize a time trend variable.

Descriptive Statistics

Table 1 provides the sample descriptive statistics. The average number of VC deals in IT sector for the sample period is 194 with a large standard deviation at a level of 103.8. The average number of VC deals in HS sector for the sample period is significantly lower at 56 with a standard deviation at a level of 20.5. The sample minimum and maximum for the IT deals are, respectively, at 24 and 633. The corresponding HS sector numbers are materially lower at 8 and 105. The sample average IT sector equity outlay is $1554m. The corresponding number for HS equity investments is $462m. The sample shows a large variance in equity outlays for both sectors with standard deviations being 1632.1 for the IT sector and 237.1 for the HS sector. Measured in terms change in the levels, it appears that IT sector has experienced larger absolute changes in both the number of deals as well as the equity investment levels over the sample period.

Methods

To test hypotheses H1A and H1B, I estimate the following multivariate regression model relating HS sector activity to contemporaneous period's IT sector activity:

$$\text{Number of HS Deals (HS Equity Investment)} = \beta_0 + \beta_1 * \text{Number of IT Deals (IT Equity Investment)} + \beta_2 * \text{Total VC Deals (Total VC Equity Investment)} + \beta_3 * \text{Time Trend} + \varepsilon \quad (1)$$

To test hypothesis H2A and H2B, I estimate the following multivariate regression model relating current period HS sector activity to previous period's IT sector activity:

$$\text{Number of HS Deals (HS Equity Investment)} = \beta_0 + \beta_1 * \text{Lagged Number of IT Deals (IT Equity Investment)} + \beta_2 * \text{Total VC Deals (Total VC Equity Investment)} + \beta_3 * \text{Time Trend} + \varepsilon \quad (2)$$

EMPIRICAL FINDINGS AND DISCUSSION OF RESULTS

Multiple Regression Results for Full Sample - Number of Deals

In the first set of regression tests I analyze if, and to what extent, do the variations in IT sector VC deals explain the variations in HS sector deals. I test the nature and strength of relation by analyzing regression coefficients for the entire time period from 1994 to 2014 for deal levels and changes therein.

To investigate relationship between investment in Information Technology (IT) sector and investment in Health Science (HS) sector, I run the multiple regression model specified in equation [1]. The results are reported in Table 2 and Table 3. In Table 2, I regress number of deals in HS sector over number of deals in IT sectors. In Table 3, I report the regressions relating changes in the number of deals in the two sectors. Table 2 and Table 3 contain 5 columns of results. In Column 1, I report regressions results relating contemporaneous variables. In Columns 2 through 5, the results contain lagged variables where previous year IT variables (lagged up to 4 years) relate to later year HS variables.

In Table 2 Column 1, the coefficient of IT deals appears with a negative coefficient significant at the less than 1% significance level. This indicates that contemporaneously, higher number of deals in IT

sector is associated with lower number of deals in HS sector even after controlling for the aggregate number of VC deals and time trend. The evidence provides support to the H1A hypothesis that a greater focus on IT may come at the cost of reduced activity in HS sector. Interestingly, a look at Column 2 indicates that 1 year lagged IT deals do not significantly influence HS sector deals, although the coefficient is still negative. Looking at the first two columns, if anything, it appears that there is some support for hypothesis H1A that higher level of VC activity in IT sector may adversely affect VC activity level in HS sector.

With respect to the control variables, Column 1 and 2 results indicate that HS sector activity level in terms of deals in the sector are positively influenced by aggregate VC activities across all industries. That is, in times of higher aggregate VC activities, HS sector also witnesses spiked activity level in terms of number of deals.

In Columns 3 through 5 of Table 2, the results show an entirely different picture. It appears that a higher previous year IT sector activity level leads to greater activity in HS sector in subsequent years. In all the columns 3 through 5, the IT deals coefficients are positive and significant at the less than 5% significance level. It also appears that economic significance of IT activity influence on HS activity increases with the length of the lag. These results indicate some support for our hypothesis H2A that IT VC deals may have positive spillover effects in terms of HS innovations and efficiency seeking ventures being funded in subsequent years. That is, higher activity level in IT sector in a given year derives higher activity levels in HS sector in later years.

Multiple Regression Results for Full Sample - Change in Number of Deals

In Table 3, I report the results of the multiple regression model specified in equation [1] except that I run these regression with change in the number of deals rather than with the number of deals. The results in Column 1 report contemporaneous relationship between change in number of deals in IT sector in a given year and change in number of deals in HS sector in the same year. In Columns 2 through 5, I report the results of lagged change in number of deals in IT sector in a given year with change in number of deals in HS sector in later years.

Interestingly, after controlling for deal levels and time trends, in all specifications (contemporaneous and all lags), for the test variable of changes in IT deals, there are positive coefficients with significance at the less than 1% level. The results suggest that an increase in number of deals in IT sector is followed by an increase in number of deals in HS Sector. I interpret these results as an indication of positive spillover effects of IT VC activity on HS VC activity. That is, an upward trend in number of deals in IT sector reinforces a similar upward trend in number of deals in HS Sector. These results support our Hypothesis H2A.

In terms of control variables, in the contemporaneous regression neither aggregate VC activity level nor the time trend variables seem to be significant. However, consistent with previously reported deal levels regression results, in the lagged variable regressions the total VC deals appear with a significant positive coefficient.

Sum of Equity Invested

In the second set of regression tests I analyze if, and to what extent, do the variations in amount of VC equity invested in IT sector explain the variations in HS sector equity investment. I test the nature and strength of relation by analyzing regression coefficients for the entire time period from 1994 to 2014 for the amount of VC equity invested and changes therein.

To investigate relationship between Information Technology (IT) sector investment and investment in Health Science (HS) sector, I run the multiple regression model specified in equation [1]. The results are reported in Table 4 and Table 5. In Table 4, I regress the amount of equity invested in HS sector over amount of equity invested in IT sectors. In Table 5, I report the regressions relating changes in the amount of equity invested in the two sectors. Table 4 and Table 5 contain 5 columns of results. In Column 1, I report regressions results relating contemporaneous variables. In Columns 2 through 5, the results contain lagged variables where previous year IT variables (lagged up to 4 years) relate to later year HS variables.

In Table 4 Column 1, the coefficient of IT equity appears with a negative coefficient significant at the less than 1% significance level. This indicates that contemporaneously, higher dollar volume of equity invested in IT sector is associated with lower dollar amount of equity invested in HS sector even after controlling for the aggregate number of VC investment and potential time trend. The evidence provides support to the H1A hypothesis that a greater focus on IT may come at the cost of reduced activity in HS sector. Interestingly, when I look at Column 2, it appears that 1 year lagged IT investment levels do not significantly influence HS sector investment levels, although the coefficient is still negative. Looking at the first column, it appears that there is some support for hypothesis H1A that higher level of VC activity in IT sector may adversely affect VC activity level in HS sector.

With respect to the control variables, Column 1 results indicate that HS sector activity level in terms of equity in the sector are positively influenced by aggregate VC activities across all industries. That is, in times of higher aggregate VC activities, HS sector also witnesses spiked activity level in terms of dollar volume of VC investment.

In Columns 2 through 5 of Table 4, the results show an entirely different picture. It appears that a higher previous year IT sector investment leads to greater investment in HS sector in subsequent years. In all the columns 2 through 5, the IT investment coefficients are positive and in column 5, it is significant at less than 1% significance level. It also appears that economic significance of IT activity influence on HS activity increases with the length of the lag. These results indicate some support for the hypothesis H2A that IT VC investment may have positive spillover effects in terms of HS innovations and efficiency seeking ventures being funded in subsequent years. That is, higher investment level in IT sector in a given year derives higher investment levels in HS sector in later years.

Change in Sum of Equity Invested

In Table 5, I report the results of multiple regression model specified in equation [1] except that I run these regression with change in the amount of equity invested rather than with the amount of equity. The results in Column 1 report contemporaneous relationship between change in sum of equity invested in IT sector in a given year and change in sum of equity invested in HS sector in the same year. In Columns 2 through 5, I report the results of lagged change in sum of equity invested in IT sector in a given year with change in sum of equity invested in HS sector in later years.

Interestingly, after controlling for investment levels and time trends, in all specifications (contemporaneous and all lags), for the test variable of changes in IT equity invested, there are positive coefficients with significance at the less than 1% level. The results suggest that an increase in sum of equity invested in IT sector is followed by an increase in sum of equity invested in HS Sector. I interpret these results as an indication of positive spillover effects of IT VC activity on HS VC activity. That is, an upward trend in sum of equity invested in IT sector reinforces a similar upward trend in sum of equity invested in HS Sector. These results support our Hypothesis H2A.

In terms of control variables, in the contemporaneous regression neither aggregate VC activity level nor the time trend variables seem to be significant. However, in the lagged variable regressions, consistent with previously reported deal levels regression results, total VC investment appears with a significant positive coefficient.

CONCLUSION

This paper sought to explore trends in US Venture Capital investment across two major sectors of Information Technology and Health Sciences Technology. My first hypothesis was that there exists a crowding-out effect between investments in the two sectors in the same period as venture capital funds have limited capital. The second hypothesis was that after a certain amount of time, Information Technology innovation may have positive spillover effects on Health Science Technology innovation and that the effect would manifest itself as an increase in HS Venture Capital investment in future periods. Utilizing Venture Capital industry data for US based firms from 1994-2014 on equity invested and number of deals closed, our results lend preliminary support to both my hypotheses at a statistically

significant levels. I report that contemporaneously, higher of VC equity invested in IT sector leads to lower VC equity investment in HS sector. Consistent conclusions are arrived at when I use number of deals as a proxy for VC investment sector activity. Further I find that higher level of VC activity – both sum of equity invested and number of deals – in IT sector in a given time period leads to higher VC investment activity in HS sector in later years. In combination, the contemporaneous and lagged analysis suggests that while there may be a crowding effect in the shorter time period, over the longer period there may be positive complementarities between the two sectors. Our robustness checks, where I splice the data according to market conditions broadly support my conclusions arrived at using the full sample.

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TABLE 1
SAMPLE DESCRIPTIVE STATISTICS

	Observations	Mean	Std. Deviation	Min	Max
Number of IT Deals	242	194.120	103.826	24	633
Sum of Equity Invested in IT	242	1554.013	1632.101	65.073	10006.58
Number of HS Deals	242	56.169	20.591	8	105
Sum of Equity Invested in HS	242	462.765	237.173	21.444	1305.379
Change in Number of IT Deals	241	0.349	70.716	-213	197
Change in Equity Invested in IT	241	8.680	616.223	-2888.293	2204.633
Change in Number of HS Deals	241	-0.050	24.709	-72	73
Change in Equity Invested in HS	241	1.239	228.149	-712.230	638.397

TABLE 2
MULTIPLE REGRESSION RELATING IT DEALS TO HS DEALS

Dependent Variable (HS Deals)	Concurrent	1 Year Lag	2 Year Lag	3 Year Lag	4 Year Lag
Number of IT Deals	-0.534***	-0.145	0.000	0.005	0.022**
	(0.000)	(0.164)	(0.969)	(0.570)	(0.015)
Total Deals	0.516***	0.090***	0.082***	0.079***	0.078***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Time	0.079***	0.133***	0.132***	0.139***	0.150***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	1.308*	16.90***	16.448***	14.996***	10.286**
	(0.241)	(0.000)	(0.000)	(0.001)	(0.036)
Number of Observations	242	230	218	206	194
Adjusted R-squared	0.9250	0.4985	.4331	0.3991	0.3754

*, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

TABLE 3
MULTIPLE REGRESSION RELATING CHANGE IN IT DEALS TO CHANGE IN HS DEALS

Dependent Variable (Change in HS Deals)	Concurrent	1 Year Lag	2 Year Lag	3 Year Lag	4 Year Lag
Change in Number of IT Deals	0.291***	0.222***	0.146***	0.100***	0.087***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Total Deals	0.011	0.344***	0.069***	0.073***	0.063***
	(0.150)	(0.001)	(0.000)	(0.000)	(0.000)
Time	-0.004	-0.005	0.005	0.020	0.026
	(0.723)	(0.769)	(0.831)	(0.401)	(0.303)
Constant	-2.729	-9.833**	-21.966***	-26.142***	-24.061***
	(0.268)	(0.010)	(0.000)	(0.000)	(0.000)
Number of Observations	241	229	217	205	193
Adjusted R-squared	0.7322	0.5282	0.3671	0.2657	0.2231

*, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

TABLE 4
MULTIPLE REGRESSION RELATING IT INVESTMENT LEVELS TO HS INVESTMENT LEVELS

Dependent Variable (HS Investment Levels)	Concurrent	1 Year Lag	2 Year Lag	3 Year Lag	4 Year Lag
Amount of IT Equity Invested	-0.580*** (0.000)	0.010 (0.176)	0.0121* (0.076)	0.011 (0.137)	0.021*** (0.004)
Total Equity	0.564*** (0.000)	0.043*** (0.000)	0.046*** (0.000)	0.045*** (0.000)	0.046*** 0.000)
Time	0.575*** (0.000)	1.957*** (0.000)	1.895*** (0.000)	1.810*** (0.000)	1.744*** (0.000)
Constant	5.893 (0.691)	113.725*** (0.000)	113.968*** (0.001)	132.668*** (0.002)	126.013** (0.013)
Number of Observations	242	230	218	206	194
Adjusted R-squared	0.8390	0.4587	0.4002	0.3106	0.2585

*, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

TABLE 5
MULTIPLE REGRESSION RELATING CHANGE IN IT EQUITY INVESTMENT TO CHANGE IN HS EQUITY INVESTMENT

Dependent Variable (Change in HS Investment Levels)	Concurrent	1 Year Lag	2 Year Lag	3 Year Lag	4 Year Lag
Change in Amount of IT Equity	0.188*** (0.000)	0.129*** (0.000)	0.127*** (0.000)	0.124*** (0.000)	0.109*** (0.000)
Total Equity	0.007 (0.304)	0.010 (0.210)	0.016** (0.050)	0.020** (0.026)	0.022** (0.021)
Time	-0.039 (0.832)	-0.012 (0.957)	0.046 (0.850)	0.123 (0.655)	0.243 (0.443)
Constant	-12.456 (0.671)	-22.894 (0.540)	-47.562 (0.278)	-69.008 (0.185)	-95.632 (0.126)
Number of Observations	241	229	217	205	193
Adjusted R-squared	0.2644	0.1249	0.1264	0.1235	0.1027

*, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.