

**Marketization and Financialization:  
How the U.S. New Economy Business Model  
Has Devalued Science and Engineering PhDs**

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This note comments on Eric Weinstein's, "How and Why Government, Universities, and Industries Create Domestic Labor Shortages of Scientists and High-Tech Workers," posted recently on INET's website <https://www.ineteconomics.org/research/research-papers/how-and-why-government-universities-and-industry-create-domestic-labor-shortages-of-scientists-and-high-tech-workers>

At the outset of his paper, "How and Why Government, Universities, and Industries Create Domestic Labor Shortages of Scientists and High-Tech Workers," Weinstein argues that:

Long term labor shortages do not happen naturally in market economies. That is not to say that they don't exist. They are created when employers or government agencies tamper with the natural functioning of the wage mechanism.

The contention, written from the perspective of the late 1990s, is that in the first half of the 1990s an oversupply ("a glut") of science and engineering (S&E) labor that depressed the wages of PhD scientists and engineers was primarily the result of the promotion of a government-university-industry (GUI) agenda, coordinated by the National Science Foundation under the leadership of Erich Bloch, head of the NSF from 1984 to 1990. Beginning in 1985, the NSF predicted a shortfall of 675,000 S&E personnel in the U.S. economy over the next two decades. According to a study by the NSF's Policy Research and Analysis (PRA) division, quoted by Weinstein,

salary data show that real PhD-level pay began to rise after 1982, moving from \$52,000 to \$64,000 in 1987 (measured in 1984 dollars). One set of salary projections show that real pay will reach \$75,000 in 1996 and approach \$100,000 shortly beyond the year 2000.

Weinstein argues that the GUI agenda (inspired by Reaganomics) sought to prevent these salary increases. He contends that the legislation that enabled this oversupply was the Immigration Act of 1990

that expanded the H-1B nonimmigrant visa program and instituted employment-based immigration preferences. Given that most of these foreigners came from lower-wage (Asian) nations, it is assumed that they were attracted to work in the United States by what for them were high wages, whereas Americans with S&E PhDs began to shun S&E careers as the salaries became less attractive.<sup>1</sup>

There is a lot missing from Weinstein's perspective, which is also the perspective of demographer Michael Teitelbaum, who Weinstein cites extensively and who was at the Sloan Foundation from 1983 to 2013, rising to Vice-President in 2006. Weinstein and Teitelbaum view the salaries of scientists and engineers as being determined by supply and demand on the labor market ("the natural wage rate" and "the natural functioning of the labor market"). From this (neoclassical) perspective, they completely ignore the "marketization" of employment relations for S&E workers that occurred in the U.S. business sector from the mid-1980s as well as the concomitant "financialization" of the U.S. business corporation that remains, in my view, the most damaging economic problem facing the United States. This transformation of employment relations put out of work large numbers of PhD scientists and engineers who previously had secure employment and who enjoyed high incomes and benefits as well as creative corporate careers. The marketization of employment relations brought to an end of the norm of a career with one company (CWOC)—an employment norm that was pervasive in U.S. business corporations from the 1950s to the 1980s, but that has since disappeared.<sup>2</sup> The "financialization" of the corporation, manifested by massive distributions to shareholders in the forms of cash dividends and stock buybacks, undermined the opportunities for business-sector S&E careers.

The major cause of marketization was the rise of the "New Economy business model" (NEBM) in which high-tech startups, primarily in information-and-communication technology (ICT) and biotechnology, lured S&E personnel away from established companies, which offered CWOC under the "Old Economy business model" (OEBM). As startups with uncertain futures, the New Economy companies could not realistically offer CWOC, but instead enticed S&E personnel away from CWOC at Old Economy companies by offering these employees stock options on top of their salaries (which were typically lower than those at the Old Economy companies). The stock options could become extremely valuable if and when the startup did an initial public offering (IPO) or a merger-and-acquisition (M&A) deal with an established publicly-listed company.

The rise in S&E PhD salaries from 1982 to 1987, identified in the NSF study that Weinstein quotes, was the result of increased demand for S&E personnel by New Economy companies, with some of the increase taking the form of stock-based pay, which in the Census data drawn from tax returns is lumped in with salaries.<sup>3</sup> Competing with companies for S&E personnel, the rise of the NEBM in turn put pressure on salaries at Old Economy companies as they tried to use CWOC to attract and retain S&E

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<sup>1</sup> The Weinstein paper appears to have been published prior to the adoption of the American Competitiveness and Workforce

<sup>2</sup> William Lazonick, *Sustainable Prosperity in the New Economy? Business Organization and High-Tech Employment in the United States*, W. E. Upjohn Institute for Employment Research, 2009; ; William Lazonick, "The New Economy Business Model and the Crisis of US Capitalism," *Capitalism and Society*, 4, 2, 2009: article 4; William Lazonick, Philip Moss, Hal Salzman, and Öner Tulum, "Skill Development and Sustainable Prosperity: Collective and Cumulative Careers versus Skill-Biased Technical Change," Institute for New Economic Thinking Working Group on the Political Economy of Distribution Working Paper No. 7, December 2014, at <https://www.ineteconomics.org/ideas-papers/research-papers/skill-development-and-sustainable-prosperity-cumulative-and-collective-careers-versus-skill-biased-technical-change>; William Lazonick, "Labor in the Twenty-First Century: The Top 0.1% and the Disappearing Middle Class," in Christian E. Weller, ed., *Inequality, Uncertainty, and Opportunity: The Varied and Growing Role of Finance in Labor Relations*, Cornell University Press, 2015: 143-192.

<sup>3</sup> Almost all gains from exercising employee stock options and the vesting of employee stock awards are taxed at the ordinary income-tax rate, not at the capital-gains tax rate, with taxes withheld by the employer at the time that options are exercised or awards vest. Hence these stock-based gains are reported as part of "wages, tips, other compensation" on IRS Form 1040.

labor in the face of the stock-based alternative. By the last half of the 1980s, this New Economy competition for talent was eroding the learning capabilities of the corporate research labs that, in many cases from the early twentieth century, had been a characteristic feature of Old Economy companies in a wide range of knowledge-intensive industries.<sup>4</sup>

The CWOC norm under OEBM had provided employment security and rising wages from years-of-service with the company and internal promotion of S&E personnel (significant proportions of whom in science-based companies had PhDs). As I show in my book *Sustainable Prosperity in the New Economy?*, the beginning of the end of CWOC was the transformation of IBM, the world's leading computer company, from OEBM to NEBM from 1990 to 1994. In 1990, with 374,000 employees, IBM still bragged about its adherence to the CWOC norm (calling it "lifelong employment"), claiming that the company had not laid off anyone involuntarily since 1921. By 1994 IBM had 220,000 employees, and, with senior executives under CEO Louis Gerstner themselves getting fired for not laying off employees fast enough, CWOC was history. Over the course of the 1990s and into the 2000s, other major Old Economy companies followed IBM's example, throwing out of work older employees, many of them highly educated and with accumulated experience that had previously been highly valued by the companies.

Already in the early 1990s, the marketization of employment relations was responsible for a precipitous decline of employment at the corporate research labs that had underpinned the twentieth-century growth of Old Economy high-tech companies, of which IBM was an exemplar. In 1993, a conference held at Harvard Business School decried the "end of an era" in industrial research, with papers from the conference appearing in a volume *Engines of Innovation*, published in 1996.<sup>5</sup> In the introductory chapter, entitled "Technology's Vanishing Wellspring," conference organizers and volume editors Richard Rosenbloom and William Spencer argued that industrial research (as distinct from product development) of the type that had been carried out by corporate labs in the "golden era" of the post-World War II decades "expands the base of knowledge on which existing industries depend and generates new knowledge that leads to new technologies and the birth of new industries." In the more competitive environment of the 1980s and 1990s, however, in the new industries of "biotechnology, exotic materials, and information products (and services based on them)", Rosenbloom and Spencer observed that it was more difficult for companies "to keep new technologies fully proprietary", and hence "research activities have been downsized, redirected, and restructured in recent years within most of the firms that once were among the largest sponsors of industrial research."<sup>6</sup>

There is little doubt that S&E PhDs were major victims of this transformation. But the problem that they, along with most other members of the U.S. labor force, have faced is not simply the marketization of employment relations. For reasons that I have fully described in my publications cited above, the transition from OEBM to NEBM was accompanied by the "financialization" of the U.S. business corporation as, from the last half of the 1980s, U.S. boardrooms and business schools embraced the ideology that, for the sake of superior economic performance, a business enterprise should be run to "maximize shareholder value" (MSV). Instead of retaining employees and reinvesting in their productive capabilities, as had been the case when CWOC had prevailed, MSV advocated and legitimized the downsizing of the company's labor force and the distribution of corporate revenues to shareholders in

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<sup>4</sup> Matt Hopkins and William Lazonick, "Who Invests in the High-Tech Knowledge Base?" Institute for New Economic Thinking Working Group on the Political Economy of Distribution Working Paper No. 6, September 2014 (revised December 2014) at <https://www.ineteconomics.org/ideas-papers/research-papers/who-invests-in-the-high-tech-knowledge-base>

<sup>5</sup> Rosenbloom and Spencer, *Engines of Innovation*. Richard Rosenbloom was David Sarnoff Professor of Business Administration at Harvard Business School, while William Spencer was CEO of SEMATECH.

<sup>6</sup> *Ibid.*, pp. 2-3.

the forms of both cash dividends and stock repurchases.<sup>7</sup>

With the demise of CWOC, older employees were the most vulnerable, not only because they tended to have the highest salaries, but also because the shift from OEBM to NEBM was a shift from proprietary technology systems, in which employees with long years of experience were highly valued, to open technology systems that favored younger workers with the latest computer-related skills (often acquired by working at other companies). Under CWOC, older employees were more expensive not because of a “natural wage rate” that was the result of supply and demand on the S&E labor market, but because of the internal job ladders that are integral to a “retain-and-reinvest” resource-allocation regime. The salaries of S&E employees tended to increase with years of experience with the company, with a defined-benefit pension (based on years of service and highest salary levels) in retirement. These types of secure employment relations, and the high and rising pay levels associated with them, were the norm among established high-tech companies in the mid-1980s, but, as exemplified by IBM’s transformation, started to become undone in the early 1990s, and were virtually extinct a decade later, as Old Economy companies either made the transition to the NEBM, or disappeared.<sup>8</sup> The culprit in the weakening in the demand for, and earnings of, S&E PhDs from the early 1990s was the demise of CWOC—a phenomenon that Weinstein (and Teitelbaum) entirely ignore.

With the rise of NEBM, companies wanted employees who were *younger and cheaper*, and that was the major reason why at the end of the 1980s the ICT industry pushed for an expansion of H-1B nonimmigrant visas and employment-based immigration visas. It is not at all clear that an influx of PhDs from foreign countries via these programs was undermining the earnings of S&E PhDs in the early 1990s. Most H-1B visa holders had Bachelor’s degrees when they entered the United States. At the same time, large numbers of non-immigrant visa holders entered the United States on student visas to do Master’s and PhD degrees, and then looked to employment on H-1B visas to enable them to stay in the United States for extended periods (up to seven years).<sup>9</sup> It was in response to the availability of advanced-degree graduates of U.S. universities that in 2005 an additional 20,000 H-1B visas were added to the normal cap of 65,000. Without the influx of foreign students into U.S. S&E Master’s and PhD programs, many of these programs would not have survived. Through this route, the H-1B visa program has made more foreign-born PhDs available to corporations for employment in the United States. But I posit that it has been the demise of OEBM and rise of the NEBM, not an increased supply of foreign-born PhDs, that has placed downward pressure on the career earnings of the most highly educated members of the U.S. labor force.

Besides giving employers access to an expanded supply of younger and cheaper high-tech labor in the United States, the H-1B visa along with the L-1 visa for people who had previously worked for the employer for at least one year outside the United States have another valuable attribute for employers: the person on the visa is *immobile* on the labor market—he or she can’t change jobs—whereas under NEBM the most valued high-tech workers are those who are highly mobile. This mobility of labor can boost the worker’s pay package but is highly problematic for a company that needs these employees to

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<sup>7</sup> William Lazonick, “Profits Without Prosperity: Stock Buybacks Manipulate the Market and Leave Most Americans Worse Off,” *Harvard Business Review*, September 2014, 46-55; William Lazonick, “Stock Buybacks: From Retain-and-Reinvest to Downsize-and-Distribute,” Center for Effective Public Management, Brookings Institution, April 2015 at <http://www.brookings.edu/research/papers/2015/04/17-stock-buybacks-lazonick>.

<sup>8</sup> Lazonick, *Sustainable Prosperity*, ch. 3. For an important case study that includes the fate of the once renowned Bell Labs, see William Lazonick and Edward March, “The Rise and Demise of Lucent Technologies,” *Journal of Strategic Management Education*, 7, 4, 2011.

<sup>9</sup> Lazonick, *Sustainable Prosperity*, ch. 5.

be engaged in the collective and cumulative learning processes that are the essence of generating competitive products. Under OEBM, CWOC was the central employment institution for college-educated workers precisely because of the need for collective and cumulative learning. But it was the rise of NEBM, not the Immigration Act of 1990, that undermined CWOC. The growing dominance of NEBM with its open systems architectures then led employers to make increased use of H-1 and L-1 visas in the 1980s, prompting them to get behind an expanded cap for H-1B visas in the Immigration Act of 1990.<sup>10</sup>

Once OEBM was attacked by NEBM, with its offer of stock-based pay, these corporations became fertile territory for the adoption of the ideology that a company should be run to “maximize shareholder value” (MSV). This momentous transformation in U.S. corporate governance occurred from the late 1980s, legitimizing the transition from a “retain-and-reinvest” to a “downsize-and-distribute” corporate-governance regime. In the 1990s and beyond, this corporate-governance transformation laid waste to CWOC across corporate America, knowledge-intensive companies included.<sup>11</sup> With corporate research eroding as high-tech personnel responded to the lure of stock-based pay from NEBM companies—including not only startups but also those such as Intel, Microsoft, Oracle, Sun Microsystems, and Cisco Systems that during the 1990s grew to employ tens of thousands of people, most of them with stock-based pay—senior executives at the Old Economy high-tech companies began to see their company’s stock price as not only key to the size of their own stock-based pay packages but also as an instrument to compete for a broad-based of high-tech personnel. As exemplified by IBM in the 1990s and beyond, a company’s stock price could be raised by laying off expensive older workers and using the resultant “free” cash flow (as the purveyors of MSV called it) to do stock buybacks.<sup>12</sup>

As I have documented in detail, over the past three decades this legalized looting of the U.S. business corporation has only gotten worse. As shown Table 1, driven by stock buybacks, net equity issues by U.S. nonfinancial corporations were, in 2015 dollars, *minus \$4.5 trillion* over the decade 2006-2015. In 2016 net equity issues were minus \$586 billion. Net equity issues are new stock issues by companies (in this case nonfinancial corporations) minus stock retired from the market as the result of stock repurchases and M&A deals. The massively negative numbers in recent decades are the result of stock buybacks. I have calculated net equity issues as a percent of GDP by decade to provide a measure of the value of buybacks done relative to the size of the U.S. economy. In both absolute inflation-adjusted dollars and as a percent of GDP, buybacks have become a prime mode of corporate resource allocation in the U.S. economy. Contrary to popular belief, in aggregate U.S. corporations fund the stock market, not vice versa. Note that almost all of the buybacks in the decade 1976-1985 occurred in 1984 and 1985 after in November 1982 the U.S. Securities and Exchange Commission adopted Rule 10b-18 that gave license to massive buybacks, in essence legalizing systemic stock-price manipulation and the looting of the U.S. business corporation.

**Table 1. Net equity issues of nonfinancial corporations in the United States, 1946-2015, by decade, in 2015 dollars, and as a percent of GDP**

Decade	Net Equity Issues, 2015\$ billions	Net Equity Issues as % of GDP
1946-1955	143.2	0.56
1956-1965	110.9	0.30

<sup>10</sup> Ibid., ch. 2. Note that the H-1 visa for workers in specialty occupations was renamed the H-1B visa in 1990 after the H-1A visa was created specifically for nurses.

<sup>11</sup> Lazonick, “Stock Buybacks”; Lazonick, “Labor in the Twenty-First Century.”

<sup>12</sup> Lazonick, “Profits Without Prosperity”; Lazonick, “Stock Buybacks.”

<b>1966-1975</b>	<b>316.0</b>	<b>0.58</b>
<b>1976-1985</b>	<b>-290.9</b>	<b>-0.40</b>
<b>1986-1995</b>	<b>-1,002.5</b>	<b>-1.00</b>
<b>1996-2005</b>	<b>-1,524.4</b>	<b>-1.09</b>
<b>2006-2015</b>	<b>-4,466.6</b>	<b>-2.65</b>

Source: Board of Governors of the Federal Reserve System, Federal Reserve Statistical Release Z.1, "Financial Accounts of the United States: Flow of Funds, Balance Sheets, and Integrated Macroeconomic Accounts," Table F-223: Corporate Equities, March 9, 2017, at <https://www.federalreserve.gov/releases/z1/current/>.

Over the years 2006-2015, the 459 companies in the S&P 500 Index in January 2016 that were publicly listed over the ten-year period expended \$3.9 trillion on stock buybacks, representing 53.6 percent of net income, plus another 36.7 percent of net income on dividends. Much of the remaining 9.7 percent of profits was held abroad, sheltered from U.S. taxes. Mean buybacks for these 459 companies ranged from \$291 million in 2009, when the stock markets had collapsed, to \$1,205 million in 2007, when the stock market peaked before the Great Financial Crisis. In 2015, with the stock market booming, mean buybacks for these companies were \$1,173 million. Meanwhile, dividends declined moderately in 2009, but over the period 2006-2015 they trended up in real terms.

Among the largest repurchasers are America's premier high-tech companies. Table 2 shows the top 25 repurchasers over the decade 2006-2015. Among the companies that one would expect to employ large numbers of S&E PhDs are Exxon Mobil, Microsoft, IBM, Apple, Cisco Systems, Hewlett Packard, Pfizer, Oracle, Intel, General Electric, Johnson & Johnson, Chevron, and ConocoPhillips. We do not know the historical numbers of S&E PhDs at these companies, but I hypothesize that numbers would be much higher than they are if the companies were not financialized. Many of America's largest corporations routinely distribute more than 100 percent of net income to shareholders, generating the extra cash by reducing cash reserves, selling off assets, taking on debt, or laying off employees.<sup>13</sup> As I have shown, the only logical explanation for this buyback activity is that the stock-based pay that represents the vast majority of the remuneration of senior corporate executives incentivizes them to manipulate their companies' stock prices, leaving most Americans worse off.<sup>14</sup>

**Table 2. The 25 largest stock repurchasers among U.S.-based corporations, 2006-2015, showing net income (NI) stock buybacks (BB), and cash dividends (DV)**

<sup>13</sup> Lazonick, "Labor in the Twenty-First Century": William Lazonick, "How Stock Buybacks Make Americans Vulnerable to Globalization," Paper presented at the Workshop on Mega-Regionalism: New Challenges for Trade and Innovation, East-West Center, University of Hawaii, Honolulu, January 20-21, 2016, at [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2745387](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2745387);

<sup>14</sup> Lazonick, "Profits Without Prosperity."

rank	Company Name	Ticker Symbol	NI, \$b	BB, \$b	DV, \$b	BB/NI%	DV/NI%	(DV+BB)/NI%
1	EXXON MOBIL	XOM	349	206	93	59	27	86
2	MICROSOFT	MSFT	174	124	58	71	33	105
3	IBM	IBM	135	119	33	89	24	113
4	APPLE	AAPL	228	103	36	45	16	61
5	PROCTER & GAMBLE	PG	105	72	56	69	53	122
6	CISCO SYSTEMS	CSCO	76	67	13	88	17	105
7	HEWLETT-PACKARD	HPQ	47	63	9	134	20	154
8	PFIZER	PFE	90	63	68	70	76	146
9	WAL-MART	WMT	152	61	48	40	31	71
10	ORACLE	ORCL	81	57	12	71	15	86
11	INTEL	INTC	90	54	37	60	41	101
12	GENERAL ELECTRIC	GE	149	52	88	35	59	94
13	HOME DEPOT	HD	45	50	19	111	42	153
14	GOLDMAN SACHS	GS	80	49	14	62	18	80
15	AT&T	T	115	47	93	41	81	122
16	DISNEY (WALT)	DIS	55	46	11	83	20	103
17	TIME WARNER	TWX	18	44	10	250	56	305
18	JOHNSON & JOHNSON	JNJ	126	42	61	34	49	82
19	WELLS FARGO	WFC	149	41	49	28	33	61
20	JPMORGAN CHASE	JPM	166	41	51	25	31	55
21	CHEVRON	CVX	188	40	62	21	33	54
22	AIG	AIG	-35	36	7	-103	-20	-123
23	CONOCOPHILLIPS	COP	60	36	31	61	52	113
24	PEPSICO	PEP	60	36	30	59	50	109
25	MCDONALD'S	MCD	45	33	25	74	55	129

Source: Calculated from data downloaded from Standard & Poor's Compustat database.

The Weinstein-Teitelbaum focus on a GUI design to expand the supply of S&E PhDs ignores the transformations of corporate governance and employment relations that have decimated career employment for this group of workers over the past three decades. At the same time, the channeling of trillions of dollars of value created in U.S. nonfinancial corporations to the financial sector has opened up jobs on Wall Street that can provide quick income bonanzas for highly-educated members of the U.S. labor force, many of whom might have otherwise pursued S&E careers. Among the wealthiest of these Wall Street players are corporate predators—euphemistically known as “hedge-fund activists”—who have billions of dollars in assets under management with which they can attack companies to pump up their stock prices through the implementation of “downsize-and-distribute” allocation regimes and, even if it takes a few years, dump the stock for huge gains.<sup>15</sup>

In the case of Apple, we have shown how Carl Icahn used his wealth, visibility, hype, and influence to take \$2 billion in stock-market gains by buying \$3.6 billion of Apple shares in the summer of 2013 and selling them in the winter of 2016, even though he contributed absolutely nothing of any kind to Apple

<sup>15</sup> Rachel Butt, “Here are some of the 10 biggest activist money managers and some of their most impressive bets,” *Business Insider*, June 17, 2016, at <http://www.businessinsider.com/top-10-biggest-activist-investors-2016-6>. Matt Hopkins, William Lazonick, and Jang-Sup Shin are engaged in research on the methods and gains of these predatory value extractors.

as a value-creating company.<sup>16</sup> Apple CEO Tim Cook and his board (which includes former U.S. Vice President Al Gore) helped Icahn turn his accumulated fortune into an even bigger one by having Apple repurchase \$45 billion in shares in 2014 and \$36 billion in 2015—by far the two largest one-year stock buybacks of any company in history. Imagine the corporate research capabilities in which Apple could have invested, and the S&E PhDs the company could have employed, had it looked for productive ways to use even a fraction of the almost unimaginable sums that it wasted on buybacks.<sup>17</sup> From 2011 through the first quarter of 2017, Apple spent \$144 billion on buybacks and \$51 billion on dividends under what it calls its “Capital Return” program. But the company is “returning” capital to shareholders who never gave the company anything in the first place; the only time in its history that Apple has ever raised funds on the public stock market was \$97 million in its 1980 IPO.<sup>18</sup>

A number of “hedge-fund activists”—Nelson Peltz of Trian, Daniel Loeb of Third Point, and William Ackman of Pershing Square are among the most prominent—have been able to put up one or two billion dollars to purchase small stakes in major high-tech companies, and, with the proxy votes of pension funds, mutual funds and endowments, have been able to put pressure on companies, often by placing their representatives on the boards of directors, to implement “downsize-and-distribute” regimes for the sake of “maximizing shareholder value.”<sup>19</sup> In the summer of 2013, Nelson Peltz’s Trian Fund Management bought DuPont stock worth \$1.3 billion, representing 2.2% of shares outstanding. In May 2015 Peltz lost a proxy fight to put four of his nominees on the DuPont board, but in October 2015 DuPont CEO Ellen Kullman, who had opposed Peltz, resigned, and the new management began to implement Peltz’s plans to cut costs and hit financial targets, to be done in the context of a merger with Dow Chemical, which had fallen into the hands of another corporate predator Daniel Loeb. Meanwhile, in October 2015, Peltz bought 0.8 percent of the shares of General Electric (GE), and began to pressure another iconic high-tech company to cut costs and increase its stock price. GE was already a financialized company that had done \$52 billion in buybacks in the decade 2006-2015 (see Table 2)—a massive amount of money for the purpose of manipulating its stock price. Undoubtedly responding to additional pressure from Peltz, during 2016, GE, with profits of \$8.0 billion, paid out \$8.5 billion in dividends and spent another \$22.0 billion on buybacks. This financialization of U.S. high-tech corporations undermines, among other things, the employment of S&E PhDs.

We need research on this subject to quantify its impacts. I submit, however, that such a research agenda must focus on transformations of regimes of corporate governance and employment relations. Relying on the neoclassical economist’s notion of a “natural wage rate” determined by the interaction of supply and demand, Weinstein, a mathematician, and Teitelbaum, a demographer, missed the transformations in corporate governance and employment relations that marked the late 1980s and early 1990s—and beyond—and as result, in my view, failed to understand the changing fortunes of S&E PhDs in the marketized, globalized, and financialized New Economy. Given the dominance of what I have called “the myth of the market economy”<sup>20</sup> in the thought processes of economists, Weinstein and Teitelbaum

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<sup>16</sup> William Lazonick, Matt Hopkins, and Ken Jacobson, “What we learn about inequality from Carl Icahn’s \$2 billion ‘no brainer,’” Institute for New Economic Thinking Ideas & Papers, June 6, 2016, at <https://ineteconomics.org/ideas-papers/blog/what-we-learn-about-inequality-from-carl-icahn-2-billion-apple-no-brainer>.

<sup>17</sup> See William Lazonick, “What Apple should do with its massive piles of money,” *Harvard Business Review Blog*, October 20, 2014, at <https://hbr.org/2014/10/what-apple-should-do-with-its-massive-piles-of-money>.

<sup>18</sup> William Lazonick, “Numbers show Apple shareholders have already gotten plenty,” *Harvard Business Review Blog*, October 16, 2014, at <https://hbr.org/2014/10/numbers-show-apple-shareholders-have-already-gotten-plenty>

<sup>19</sup> With Matt Hopkins and Jang-Sup Shin, I am involved in project on how the U. S. SEC has accommodated and even encouraged the corporate value extractors who call themselves “shareholder activists” or “hedge-fund activists.”

<sup>20</sup> William Lazonick, *Business Organization and the Myth of the Market Economy*, Cambridge University Press, 1991.

## Lazonick: Marketization and Financialization

were by no means alone in erroneously focusing on supply and demand on the PhD labor market while failing to recognize the centrality of corporate governance and employment relations in determining the earnings and career prospects of S&E PhDs. It is time for new economic thinking on these critical questions.