

Wealth Creation or Extraction in Capital Structures: The Case of Toshiba and Hedge Funds

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Abstract

The scientific status of an economic theory is either as an idealistic prescription (normative theory) or as a depiction of a factual reality (empirical theory). This issue is important to the status of macro-economic models to distinguish between capital structures which add to economic productivity or diminish productivity. The methodology of this research is to improve macro-economic models mathematically by raising their algebraic equations to vector equations and graphing the equations in a systems-dynamics flow models. To apply this approach empirically, we analyze a recent historical event in 2022 in Japan, wherein global hedge-funds invested in the Japanese corporate conglomerate Toshiba to take it apart (privatize it). In this vectorized modeling approach, the traditional Harrod-Domar-Solar macro-economic algebraic model is thus generalized to distinguish between the normative goal of investments to increase productivity in an economy or to extract wealth. This research shows how to model such differences in capital structures—wherein their capital flows increase or decrease productivity in an economy.

Keywords

Financial Systems, Macro-Economic Models, Institutional Economics, Capital Flows, Capital Structures

1. Introduction

Traditionally, economic theory had modeled a “capital structure” as capital ideally flowing from savings directly into productivity. The best known form of this model was due to Harrod and Domar, as a Keynesian model of economic growth (Van den Berg, 2013). Later, a Solow-Swan model also focused on

long-run economic growth, adding labor and technology to savings as factors in economic growth. However, in economic reality, financial institutions have not always flowed capital into productivity, but sometimes into non-productivity. One can model both cases into productivity or non-productivity by converting the Harrod-Domar model from an algebraic form into a mathematical vector form. We showed this in a previous paper, demonstrating how the classic macro-economic equations of Harrod-Domar-Solar-Swan could then model either productive or non-productive capital flows—thereby introducing the concept of “capital structures” (Betz, 2018). Here we use this vectorized capital structure model to analyze a contemporary case of non-productive capital flows from international hedge funds investing to break-up the Japanese conglomerate of Toshiba.

Also in this research, we further extend the “vectorized-capital-structures model” to encompass broader economic concepts, such as 1) Veblen’s ideas of “wealth-creation” or “wealth-extraction” (Veblen, 1904) and 2) Minsky’s ideas of different “forms of capitalism” (Minsky, 2008). The expansion the macro-economic model to include these traditional economic concepts is important, particularly, to understand the fragility of modern financial systems.

Nicholas Shaxson wrote about Veblen: “Veblen’s first book was *The Theory of the Leisure Class*..Veblen’s next big book, *The Theory of Business Enterprise*, published in 1904, got less attention but was more radical and more important. In it, he contrasted industry and the “machine process”—the productive engineers and entrepreneurs who rolled their sleeves up and made useful stuff—with what he called the “business” of making profits. Above the foundation of production rose a financial superstructure of credit, loans, ownership, bets, and markets to be controlled and milked. Veblen concentrated on a...struggle: between wealth creators and wealth extractors (Shaxson, 2019)...”

Also later in economic theory, Hyman Minsky emphasized the capital markets differ from commodity markets in that equilibrium pricing in a market (between supply and demand) does not empirically always exist in a capital market.

Hyman Minsky wrote: The view that money is the social device that enables bankers and entrepreneurial businessmen to force a surplus out of the economy and allocate that surplus to specific constructive (resource-creating) uses is the monetary theory of Schumpeter and Kalecki. Keynes’ monetary theory is an improvement over this “money finances investment” theory, for Keynes links the monetary mechanism not only to the financing of investment but also, through the doctrine of liquidity preference, to the setting of prices on prospective profit flows. This insight of genius (that made *The General Theory* an advance over what had preceded) was the recognition that in a capitalist economy there is not only a price level of current output but also a price level of capital and financial assets. The “annuities” that capital assets are expected to earn have a price, and investment occurs because the price of such annuities exceeds the supply price of investment output that is expected to earn such annuities. This Keynesian theory

in which investment is that the outcome of the relative values of items in the two distinct price levels of a capitalist economy is the construct that Schumpeter needed to complete the vision of *The Theory of Economic Development*, a construct he sought but never achieved (Minsky, 2008).

After the Second World War, Bretton Woods System of monetary management was established to partly regulate international capital flows. However after the collapse of the Bretton Woods system, financial systems have experienced several crises. The instabilities have been due to changes in global capital structures as institutional expansion of financial systems, from “banking” to “shadow-banking” to “casino-banking”, or as this progression is now called “financialization”. We next look at a historical case of “financialization” currently impacting the economic system of Japan, after this has strongly altered the U.S. economic system at the beginning of the 21st century.

2. Historic Case: Toshiba’s Struggle International Finance Hedge Funds

In the case of Toshiba, a recent history of shadow banking (by hedge funds) in the U.S. economy was next being repeated globally, beginning in the Japanese economy. Kana Inagaki, Leo Lewis and Eri Sugiura wrote: “The field of bidders vying to buy Toshiba in what would be Japan’s biggest-ever buyout has narrowed to two frontrunners, one consortium led by US private equity group Bain Capital and another spearheaded by a Japanese domestic fund... The sale of the 146-year-old industrial conglomerate has been subject to an extensive due diligence process in a round of bids that began in the spring (of 2022)...A deal for Toshiba could value one of Japan’s best-known companies at as much as \$22bn (Inagaki, Lewis, & Sugiura, 2022a, 2022b).”

In the second decade of the twenty-first century, the Japanese conglomerate Toshiba was attacked by private equity firms, intending to dismantle the corporation. In 2022, the Financial Times article, FT Big Deal, published: “For nearly seven years, the saga of Toshiba has unfolded with each new twist more extraordinary and damaging for the reputation of one of corporate Japan’s most famous names. The first stumble for Toshiba was a profit-padding scandal that laid bare a soured internal corporate culture. Then came the collapse of its US nuclear business, a glimpse into the abyss of bankruptcy and painful questions about the quality of the company’s dealmaking history and business strategy. Next was the controversial \$18bn sale of Toshiba’s memory chip business, renamed as ‘Kioxia’. Kioxia was bought by a consortium led by Bain Capital in one of Japan’s biggest ever private equity deal (FT Big Deal, 2022).”

Based in Boston, Massachusetts, USA, Bain Capital was an American private investment firm founded in 1984. Bain Capital was begun from a consulting firm, consisting of partners Bill Bain, T. Coleman Andrews Iii, and Eric Kriss. Then Mitt Romney Now a U.S. Senator in 2022) had just received an MBA degree from Harvard, and Bill Bain offered him a position to head a new private

investment firm. Mitt Romney was the son of George Romney, president of American Motors Corp from 1954 to 1962. Mitt Romney assisted Bain to find investors to start the private investment firm of Bain Capital. Later in 1999, Mitt Romney left Bain Capital to serve as the president and CEO of the 2002 Salt Lake City Olympic Games Organizing Committee. From 2003 to 2007, he served as governor of Massachusetts, and since January 2019, Mitt Romney has served as United States senator from Utah.

Bain Capital was one of the private investment firms buying Toshiba stock. And corporate problems for Toshiba opened up with the financial invasion by U.S. private equity firms. FT Big Deal published: “A huge issuance of new shares, in an emergency capital-raising exercise, loaded Toshiba’s shareholder register with feisty hedge funds and activists, more so than for any other major Japanese corporation. This has come back to bite Toshiba again and again. Particularly, after the company was forced by its investors to probe its own relationship with the Japanese government...whatever stability there was vanished entirely in 2021 (FT Big Deal, 2022).”

After the end of the Second World War and during the reconstruction of the Japanese economy, Japanese companies and the Japan government all were focused on rebuilding Japan. After a successful and dramatic recovery in the second half of the twentieth century, Japanese firms next faced increased international competition. At his time, Toshiba fell behind in international competition. This led to disagreement between Japanese management and international shareholders. FT Big Deal wrote: “Toshiba had received interest from private equity in a deal to take whole company off the market and repair its many problems as a private company. That ultimately forced the then chief executive out. It set investors at odds with Toshiba management once again and led to the establishment of a strategic review committee. The conclusion of the committee, delivered last November, was to split Toshiba into three parts. But many investors hated the idea and the plan was swiftly abandoned. In April 2022, Toshiba announced it was setting up a special committee to assess potential bids from private equity and other investors, opening the door for a landmark deal to take one of the country’s biggest industrial names private (FT Big Deal, 2022).”

In this case, there was a clash between traditional national management of a major Japanese company to maintain Toshiba as a national conglomerate and investors as global hedge firms proposing to take the company private, by loading it with the debt of acquisition. As a hedge-fund operation in “shadow banking”, this was a standard hedge fund practice—making a profit by acquiring a corporation and transferring the debt of acquisition to the acquired company’s books (which they are legally allowed to do as a privatized corporation).

For example, one hedge fund, Kohlberg Kravis Roberts’ (KKR), had initially taken an interest in privatizing Toshiba. But previously, KKR had some bad experience in privatizing a firm in Japan’s economy. Antoni Slodkowski, Leo Lewis and Kana Inagaki wrote: “Although KKR continues to identify Japan as its most

important market outside the US, the private equity firm suffered a big setback when an auto parts company it bought from Nissan, and rebranded as Marelli, entered court-led restructuring. The debt-laden Marelli suffered a huge sales collapse during the pandemic, and the sharpness of its reversal raised red flags among Japanese banks that had previously viewed leveraged buyouts as a lucrative opportunity. KKR declined to comment (Slodkowski, Lewis, & Inagaki, 2022).”

The profitability in hedge-funds acquisitions of public companies (by taken them private) has been in the financial operation of loading an acquired company with increased debt.

Taking Toshiba private would be the biggest leveraged buy-out by private equity firms in Japan. Historically in the U.S., Kohlberg Kravis Roberts & Co (KKR) had pulled off a large leveraged buy-out in 1988, taking the U.S. tobacco conglomerate, RJR Nabisco, private. For the privatization operation, KKR had borrowed millions of dollars from commercial banks (shadow banking funded by commercial banking). Next KKR divided the company into the tobacco business R. J. Reynolds and the food business Nabisco. The food business was further split and sold off as: Nabisco’s UK operations, Chun King, Del Mont Produce and Del Monte Foods. KKR made profits in selling the conglomerates’ divisions. In 1991, the tobacco division, R. J. Reynolds Tobacco, was then sold back again to the public and listed in the U.S. stock market. Spectacular profits were made, after privatization, from dividing a large company into smaller companies and the selling them off separate. In this way of flipping companies (public to private to public) the private-equity hedge funds (shadow banking sector of the late twentieth century) grew to hold a major share of global wealth in the twenty-first century.

Although KKR initially was interested in acquiring Toshiba, KKR later deferred privatization to the other private equity firms. Antoni Slodkowski, Leo Lewis and Kana Inagaki wrote: “Recently, the US private equity firm KKR has been stepping back from a potential \$22bn bidding war for Toshiba, people familiar with the talks said, leaving its main rival Bain Capital in pole position to pull off Japan’s biggest take-private deal. But KKR still aims to acquire businesses spun off from the conglomerate Toshiba (Slodkowski, Lewis, & Inagaki, 2022).”

Bain and other private equity funds, other than KKR, were interested in privatizing Toshiba. On June 28, 2022, Slodkowski, Lewis and Inagaki wrote: “Yesterday’s appointment of directors (representing activist hedge funds) ends years of infighting between management and several leading shareholders, a tussle that has been closely monitored as a litmus test of Japanese corporate governance standards...Chief executive Taro Shimada said the company had not settled on privatization and would consider various options (Slodkowski, Lewis, & Inagaki, 2022).”

Because Toshiba was a very large conglomerate, several U.S. hedge funds had decided to partner in taking Toshiba private and dismantling it. Slodkowski, Lewis and Inagaki wrote: “Blackstone approached KKR last month to prepare a

joint bid for Toshiba, setting the stage for a showdown with Bain, which in April secured qualified support for a buyout deal from Toshiba's largest shareholder, Singapore investment fund (Effissimo). But three people familiar with the discussions said KKR was now no longer as enthusiastic about bidding for the entire company and would instead aim to acquire businesses to be spun off from the conglomerate during the privatization process (Slodkowski, Lewis, & Inagaki, 2022)."

The hedge-funds financial maneuvers were also impacting the structure of Toshiba's board. Slodkowski, Lewis and KInagaki wrote: "KKR's decision came as Toshiba appeared to descend into further chaos following a historic annual shareholder meeting where representatives of two activist funds were voted on to the board after months of conflict between investors and management. Within hours of the meeting, former judge Mariko Watahiki, who had opposed the appointment of nominees from US activist hedge funds (Elliott Management and Farallon Capital) next resigned from the board. People close to the company said a large proportion of activists and hedge funds on Toshiba's shareholder register had voted against her reappointment (Slodkowski, Lewis, & Inagaki, 2022)."

This hedge-fund activity was also providing more information on the performance of Toshiba. Kana Inagaki, Leo Lewis and Eri Sugiura wrote: "Toshiba has evolved into a sprawling collection of subsidiaries and non-core assets, some of them listed separately, but many of which remain potential targets for future sell-offs. The due diligence process has provided bidders with vast collections of data and factory access normally off limits to investors. The progression of the sale process has given the second-round bidders an unprecedented level of insight in to one of Japan's most complex business groups (Slodkowski, Lewis, & Inagaki, 2022)."

The financial frenzy to privatize Toshiba continued into the fall of 2022. Antoni Slodkowski, Leo Lewis and Kana Inagaki wrote: "Toshiba has received eight initial buyout bids to go private and two proposals for capital tie-ups that would see it remain listed from the largest names in private equity, with the final deal expected to include domestic investors and a state-backed fund. Apart from KKR, Bain and Blackstone, Baring Private Equity Asia, Brookfield Asset Management, Apollo Global Management, MBK Partners and CVC Capital Partners have also submitted initial bids, people familiar with the process have said. The Japanese government-backed fund JIC also took part in the first round of bidding (Slodkowski, Lewis, & Inagaki, 2022)."

By February 15, 2023, Toshiba had received a 15 billion dollar offer as a buyout proposal.

3. Background—Vectorized Harrod-Domar Macro-Economic Model

Next, we compare this empirical case to the Harrod-Domar macro-economic model—of how financial savings should be invested for increasing economic productivity.

We will find that, In contrast to the normative expectation of the Harrod-Domar model, the global hedge funds' financial investment in Toshiba is not likely to increase productivity in Japan.

Historically, the formulation of economic growth models took a major change when John Maynard Keynes reformulated traditional economic models. Hendrik Van den Berg wrote: “When Keynes published his General Theory in 1936, the neoclassical paradigm was well-established in the economics profession. Even though the Great Depression weighed heavily on economists’ minds, economists were somewhat hesitant to jump to a new paradigm that seemed to contradict conventional mainstream economic thought. Most mainstream economists were more accepting of Hicks’ interpretation of Keynes’ General Theory, which omitted Keynes’ more complex and radical ideas... (and afterwards) the growth models were derived from Keynesian macroeconomic foundations by Roy Harrod and Evsey Domar (Van den Berg, 2013).”

It is useful to treat the Harrod and Domar models as basically similar. Hendrik Van den Berg wrote: “Harrod and Domar independently developed what turned out to be identical growth models, which we now refer to as the Harrod-Domar model. That two economists would independently produce the identical model was not surprising; their models were logical extensions of the same Keynesian macroeconomic model. In analyzing how macroeconomic policy could restore full employment, Keynes had focused on aggregate demand, especially the potentially volatile component called ‘investment’. Harrod and Domar pointed out that investment changed the economy’s supply side as well as the demand side, and full employment could be maintained only if investment and the other sources of aggregate demand grew just fast enough to exactly absorb the increased output that the new investment made possible (Van den Berg, 2013).”

The Harrod-Domar model consisted of two parts, a supply-side model of production and a demand-side model of demand. For the supply-side, the Harrod-Domar model posited two equations:

1) A constant marginal product of capital means the economy exhibits a constant capital-output ratio $K/Y_s = \gamma$, so that the supply of output Y_s is proportional to the stock of capital K : $Y_s = 1/\gamma K$.

In a steady state of production, the quantity of production Y_s is proportional to the capital K invested in production capacity by the factor of $(1/\gamma)$.

2) An increase in capital ΔK creates a proportional increase in production ΔY_s . $\Delta K = \sigma \Delta Y$.

Increase of Production ΔY occurs proportionate to an increase in Capital ΔK .

Harrod-Domar assumed that all savings S goes into productive investment I_s and all productive investment goes into capital K : $S = I_s = K$. Thus the key assumption is that Savings (\mathcal{S}) in an economy needs to be invested into Production (\mathcal{P}). This is an ideal function of savings in an economy. **Figure 1** summarizes the algebraic equations of Harrod-Domar and translates these into a systems graphic representation.

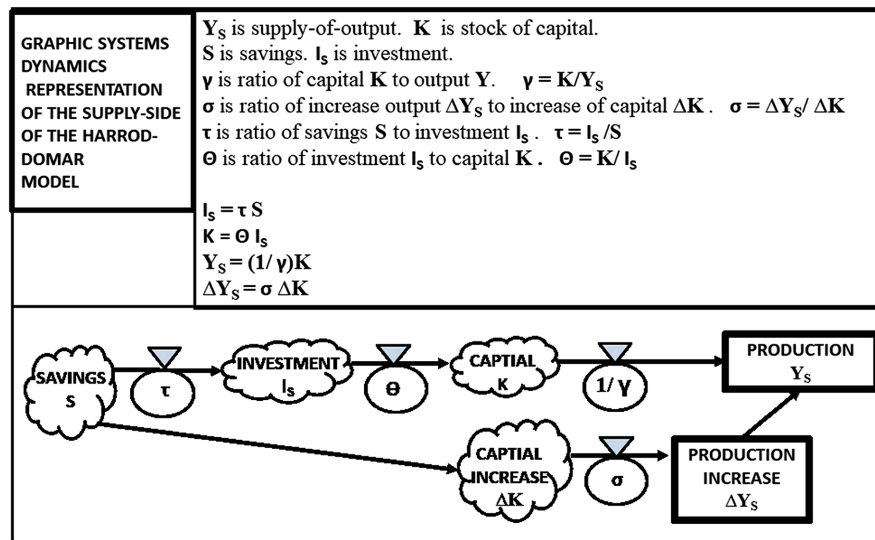


Figure 1. Harrod-Domar macro-economic model of savings & production.

One can note that in systems graphic depiction, flows are depicted by “arrows” in the direction of the flow; sources-of-a-flow are depicted by a “cloud” symbol; stocks by a “rectangle” symbol; and control-of-a-flow by the triangle-over-an-oval’ symbol. This systems Harrod-Domar model is algebraic in expression and expresses the capital flow from savings S to investment I_s to capital K into production Y_s , with flows controlled by proportionate factors.

One advantage of systems notation is that one can improve upon the algebraic form by introducing controls in the flows from savings S to investment I to capital K . Savings and investment and capital may not all be in equal ratio, and one can add more proportional factors to relate variable levels of transformation of savings to investment to productive capital: τ is the ratio of savings S to investment I_s : $\tau = I_s/S$. Θ is the ratio of productive capital ΔK to investment I_s : $\Theta = K/I_s$.

Harrod-Domar assumed that all savings S goes into productive investment I_s and all productive investment goes into capital K : $S = I_s = K$. Thus the key assumption was that Savings (\mathcal{S}) in an economy needs to be invested into Production (\mathcal{P}). This was an ideal function of savings in an economy, a normative explanation of a macro-economic connection of investment to productivity.

Footnote: The later Solow model of economic growth is not used in this analysis because it does not directly depict the relation of capital K to production Y , as did the earlier Harrod-Domar model. Solow wrote: “Output is produced with the help of two factors of production, capital and labor, whose rate of input is $L(t)$. Technological possibilities are represented by a production function: $Y = F(K, L)$ (Solow, 1956).” Solow then substituted a ratio r of capital K to labor L , resulting in a model dependent on the variable of labor L . This resulted in a model where capital K was still implicitly linearly proportional to production Y (as in the earlier Harrod-Domar model). Thus in terms of translating to a graphic system model, the Harrod-Domar model is more direct in expression

than the later Solow model, and the dependence of capital K to production Y is the same in both models.

In this kind of macro-economic model, a key assumption was that the capital structure of the activity of Savings S is not important. This is to say, that the institutional organization of how Savings S is formed and how it is invested I_s into Production was not regarded as economically important. But what if this is not empirically true? What if how the Savings is invested into Production in a national economy is relevant? We investigated this proposition by analyzing different capital structures in different national economies, using a generalization of the Harrod-Domar model by changing it from an algebraic model into a vector model (Betz, 2018).

The algebraic expression of the Harrod-Domar model can be generalized into a vector equation. A vector equation differs from an algebraic equation by “indexing” the variables of the algebraic equation. By introducing vectorized variables (indexed by the J -th subscript), we could distinguish the types of capital focused upon by an investment organization. As an illustration we applied this for a Berkshire-Hathaway type holding company, by indexing $J = 1$ to indicate this type of investment operation (Betz, 2018).

$$1/\gamma K_J = Y_J$$

where K_J is the J -th kind of capital flow to economic use Y_{Sj}

$$\Delta K_J = \sigma \Delta Y_J$$

where ΔK_J is the J -th kind of increase in capital flow to increase economic use ΔY_{Sj}

$$\tau S_t = I_J$$

where S_t is the savings into the J -th investment kind I_J .

In 2015, Berkshire Hathaway Inc had a business portfolio of wholly owned businesses, which included GEICO, BNSF Railway, Lubrizol, Fruit of the Loom, Helzberg Diamonds, Flight Safety International, Pampered Chef, and NetJets. In addition, Berkshire owned shares in many companies including: 26.7% of the Kraft Heinz Company, 17% of American Express, 9.4% of Coca-Cola Company, 9.9% of Wells Fargo, 6.9% of IBM, and 2.5% of Apple. Berkshire also has significant holdings in United Airlines, Delta Airlines, Southwest Airlines, and American Airlines.

Figure 2 also models Toshiba as a corporate conglomerate, which it became during the industrialization of Japan. In Japan in the early twentieth century, the form of capital structure was a “zaibatsu”. With a bank at the center of a group of businesses, the Japanese zaibatsu organized by a family with a bank at the center of a set of industrial corporations. Hidemasa Morikawa wrote: “The Meiji Restoration of 1868 led to the establishment of a modern economic and political infrastructure, which laid the basis of Japan’s industrialization. These years encompassed the introduction of the joint-stock company, formation of a modern banking system, development of railway and steamship line, modernization of

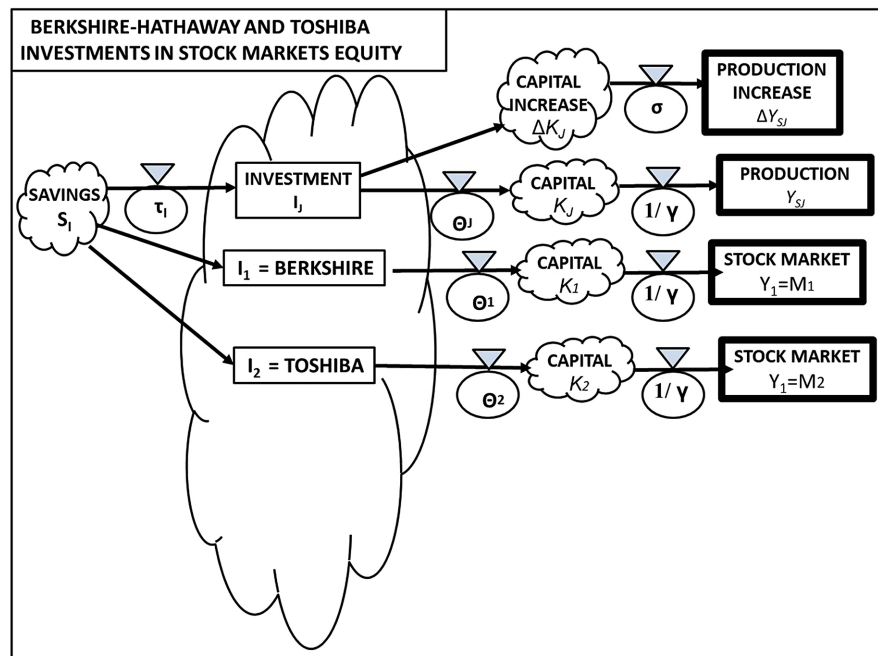


Figure 2. Shows Berkshire-Hathaway and Toshiba as examples of conglomerate investors.

cotton spinning through the importation of machinery and factor system, and application of steam power to mining...During this phase the founders of the zaibatsu accumulated their wealth (Morikawa, 1992).”

In the Meiji restoration, the new government dissolved the warrior ruling class, the samurai. Former samurai had to become merchants or government officials or military officers. The enterprising samurai, involved in money-changing, established the first banks and funded commercial businesses in production and trading. Albert J. Alletzhauer wrote: “Zaibatsu”, meaning financial clique or “estate wealth”, is a modest phrase for the family-run industrial empires, which rose to prominence during the Taisho (1912-25) and Showa (1926-88) eras... Every zaibatsu house was dominated by a family patriarch, usually a man of samurai descent. It was the samurai who, at the beginning of the Meiji period in 1868, had used their government contacts to win concessions and licenses. At the core of each zaibatsu lay the family bank, which funded the dozens of other family endeavors (Morikawa, 1992).”

In the early twentieth century, there were four major zaibatsu which dominated Japan’s newly developed industry: Mitsui, Mitsubishi, Sumitomo. Yasuda Alletzhauer wrote: “Central to each house was also the family trading firm, with outposts worldwide, used not only to buy and sell goods...funded by the bank. Raw materials were brought by the trading companies and merchandise produced by the manufacturing arm and sold back out through the trading company. They were everywhere: from steel to railways, textiles to chemical, banking to mining, shipbuilding to trading...four zaibatsu towered over the entire Japanese economy (Morikawa, 1992).”

Initially, the zaibazu specialized in different kinds of services to the government in industrializing Japan's economy. Hidemasa Morikawa wrote: "The political merchants (from feudal Japan) that developed into major zaibatsu can be divided into three groups according to the kinds of services they provided the Meiji government: first, Mitsui and Yasuda, financiers licensed to handle national tax revenues; second, Okura and Fujita, merchant enterprises that supplied goods and services required by the regime; and third Mitsubishi, which received special subsidies from the government for shipping operations (Morikawa, 1992)."

Originally, Toshiba was a member of the Mitsui Group zaibatsu and currently still has been a member of the Mitsui keiretsu, with preferential arrangements with Mitsui Bank and the other members of the keiretsu. Toshiba began as an electrical products company, Tokyo Shibaura Denki K.K. (Tokyo Shibaura Electric Co., Ltd) and in 1939 merged with Shibaura Seisaku-sho (founded in 1875) and Tokyo Denki (founded in 1890). After the second world war in 1978, the company's name was changed to Toshiba Corporation and listed on the Tokyo Stock Exchange.

Toshiba grew into a conglomerate firm with groups including Toshiba Music Industries/Toshiba EMI (1960), Toshiba International Corporation (the 1970s) Toshiba Electrical Equipment (1974), Toshiba Chemical (1974), Toshiba Lighting and Technology (1989), Toshiba America Information Systems (1989) and Toshiba Carrier Corporation (1999). It was a major producer of semiconductor chips, personal computers, consumer electronics, home appliances, and medical equipment. It invented the flash memory chip and sold off this business as Toshiba Memory.

Toshiba's financial troubles began in the twenty-first century, after it acquired the nuclear power business from Westinghouse; but, as a subsidiary, this company went bankrupt in 2017. Also previously in 2015, Toshiba announced it had an accounting scandal, restating its profits for the previous three years. The CEO and several senior officials resigned.

In September 2017, Toshiba agreed to sell its memory chip business to a group led by the American hedge fund Bain Capital of \$48 billion dollars and the new company was called Kioxia. In November 2021, Toshiba announced it planned to split into three separate companies. But in March 2022, the stockholders rejected the plan.

4. Applying the Vectorized Macro-Economic Model to the Leveraged Buy-Out of Toshiba

While the above model of Toshiba as a conglomerate within the capital structure of a Japanese keiretsu is normative (desirable in Japanese economic history), it was not necessarily empirically real when the global hedge funds invested in Toshiba to leverage-buy-out (flip) the company.

To analyze the case of capital flow in hedge-funds investment in Toshiba, one

needs to add to the Harrod-Domar-Solow vectorized model the leverage-loans borrowed by hedge-funds to purchase Toshiba stock. And then (if and when Toshiba is taken private) these leverage loans can be transferred from the hedge-funds onto Toshiba's books. This is shown in **Figure 3**.

What this vectorized macro-economic model shows is that savings do not necessarily come directly from savings into capital investments but through investment institutions I_j (such as KKR and Bain); and in cases of leveraged buy-out investments of corporations (such as Toshiba), the hedge funds borrow capital from banks (such as Morgan Stanley) to fund the investment. And the hedge-fund investment decreases productivity (through lay-offs and lack of productivity-improvement investments and by the burden of the leveraged bank loan transferred from the hedge fund to the acquired company).

We see that the leveraged loan for buy-out of Toshiba will likely burden Toshiba with additional debt which does not increase production but decreases it. This is the importance of vectorizing the macro-economic investment equation to show both kinds of investments that either increase production Y or decrease production Y . A vector notation can distinguish different kinds of investment institutions, which have different impacts upon productivity, positive or negative. This kind of effect was first shown in (Betz, 2018).

5. Global Hedge Funds and Leveraged Buyouts

The profitability of leveraged buy-outs depended critically upon borrowing money for the buy-out and then transferring the debt onto the acquired company. This is why these types of company acquisitions have been called “leveraged buy-outs”. After the transferring the bank loan for acquisitions from the hedge-funds books onto the acquired company, the hedge-fund profits—but the acquired company loses productivity.

And this is one reason why the Harrod-Domar-Solow macro-economic algebraic equations model needed to be up-dated to model modern financial investments by hedge funds—“shadow banking”.

By 2022, the leveraged buy-out activity of hedge-funds had become a major sector of capital-funding. For example, the scale of bank-lending to the investments of hedge-funds in “leveraged-buyout” investments had grown into a very large portion of capital flows after 1981 (**Figure 4**).

In below **Figure 3**, the chart on the right (Issuance of New Leveraged Loans and Junk Bonds in the US by Year (\$Bn)) shows the rate of issuance of junk bonds from 2000 through 2022. And this shows the numbers issued climbed from 2000 to 2008, until in 2008, all the financial markets collapsed, due to the collapse of securitized mortgage bond Ponzi scheme. Issuance of junk bonds for leveraged buy-outs began again in 2010, running through to a peak in 2021.

In 2022, the leveraged buy-out junk bond market was so big, it literally “jammed-up” the selling the loans by banks to other investors as junk bonds. Commercial banks making loans to hedge-funds for leveraged buy-outs could

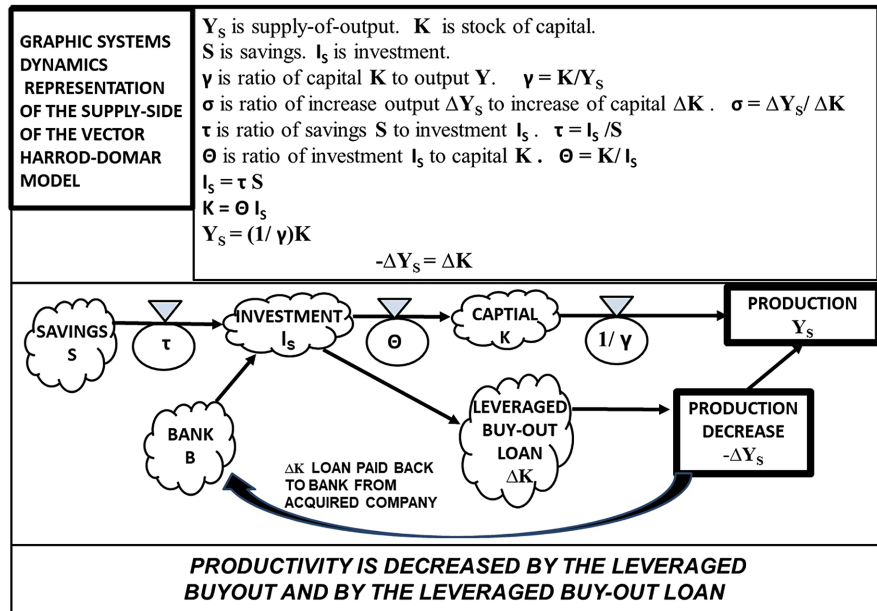


Figure 3. Leveraged buy-out loans.

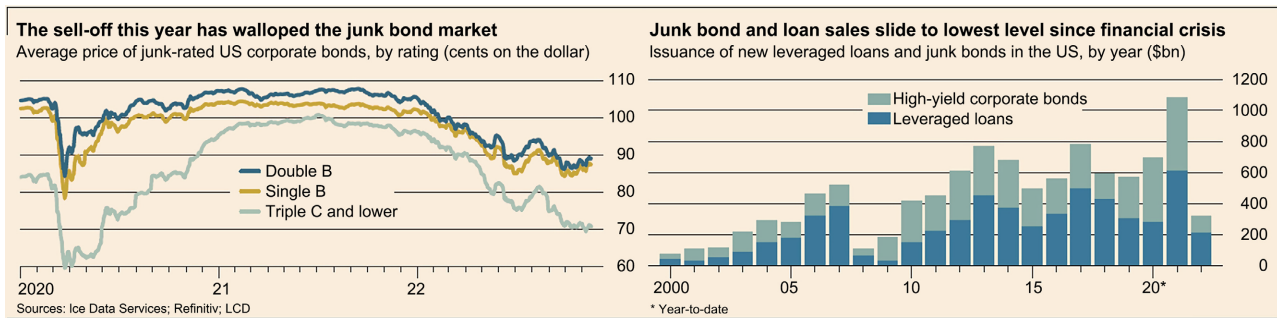


Figure 4. Source: (Platt & Clarfelt, 2022). “US banks take advantage of trading thaw to shift ‘hung loans’ off their books.” Financial Times Nov 11, 2022. <https://www.ft.com/search?q=Financial+Times+Nov+11%2C+2022>.

not pass along the loans as junk-bonds to other investors.

In 2022, Eric Platt and Harriet Clarfelt wrote: “Wall Street banks are using a thaw in corporate debt markets (in November 2022) to offload billions of dollars” worth of loans tied to risky private equity takeovers but many are still incurring losses to clinch deals with investors. The sale of debt this month linked to the buyout of television ratings provider Nielsen offered a reprieve to lenders including Bank of America and Barclays, which are desperate to clear “hung” deals that have piled up on their balance sheets this year because of a dearth of investor appetite. The \$3.2tn market for riskier corporate bonds and leveraged loans has begun revving up in recent weeks after a long lull, paving the way for banks to mull selling some debt on to investors...The bond and loan deals that banks have been stuck holding were struck late last year or early this year before markets were jolted by soaring borrowing costs. The banks committed to finance the takeovers at far more generous terms than a company could find in markets today. Last week, lenders led by Citigroup and Bank of America abandoned part

of a planned \$2.4bn debt sale to fund Apollo Global Management's \$7.1bn take-over of car-parts maker Tenneco, after steep discounts and double-digit yields failed to woo creditors. Weeks earlier, a \$3.9bn debt offering to fund Apollo's purchase of telecoms group Brightspeed was scrapped (Platt & Clarfelt, 2022)."

6. Veblen's Wealth Creation and Extraction Theory Applied to Shadow-Banking

In these historical cases of institutional investment operations, we see how financial institutional operations (such as hedge funds) do not always create wealth in an economy but can extract wealth from an economy by flipping companies (from public to private to public).

Thorsten Veblen was not the first economist to distinguish between financial instruments which extract wealth rather than creating wealth in an economy. Nicholas Shaxson wrote: "Generations of economic thinkers had known about this distinction at least as far back as the publication of Adam Smith's *The Wealth of Nations* in 1776. The main problem, though, was that people disagreed about who the wealth creators were. A conservative tradition holds that they are the rich, the owners of money and capital, who build the factories, then get taxed by government, which redistributes their wealth to the poor and to the recipients of handouts (Shaxson, 2019)."

Shaxson was reminding us was that some economic theorists, such as Veblen, had early seen that a financial system necessary for production and trade might not always be used to assist wealth creation in an economy—but might also be manipulated by financiers to extract wealth from existing productive enterprises. The leveraged-buyouts and flipping of productive companies by hedge funds has in empirical fact extracted wealth from the productive sector of an economy. The importance of the is case study of Toshiba's attack by hedge funds illustrates that this wealth-extraction kind of operation is happening globally 2022 (although it began in the U.S. economy in the 1980s).

In empirical fact, the normative economic model of an incorporated enterprise to have a CEO guide production for the private benefit of dividends and public benefit of price competition may not always occur in real historical instances. Nicholas Shaxson wrote: "Half a century ago it was widely accepted that the job of a corporate CEO was to generate wealth to serve several goals: to produce profits, to create and maintain good jobs, to contribute taxes to support roads and schools, and so on. All these things enriched healthy communities and made a stronger nation—and this formula ultimately made for stronger corporations too. Back then, CEOs at big firms earned twenty to thirty times what the average worker did. But financialization has whittled down the purpose of business to little more than a single-minded focus on maximizing the wealth of shareholders, the owners of those companies, often at the expense of employees, suppliers, or the wider community. This shift has unleashed gushers of profits for owners—and for CEOs, who now earn two to three hundred times the aver-

age worker's paycheck (Shaxson, 2019)."

A "financialization" of the economy occurs when banks provide significant lending to the financial institutions whose operations extract wealth from existing productive enterprises. Nicholas Shaxson wrote: "As recently as 1995 over half of bank lending went to small businesses, which are the economy's lifeblood, creating two out of three jobs. Now the share is less than a quarter. Most of the credit now unleashed on the economy has been circulating inside the financial sector, unmoored, disconnected from the real economy and from the people it is supposed to serve (Shaxson, 2019).

How financialization operates in the present global economy, Nicholas Shaxson described as: "Private equity titans buy up healthy companies, load them up with debt, and drive them into the corporate graveyard—yet get ridiculously rich in the process... Are they creating wealth? Or are they extracting it (Shaxson, 2019)?"

The financialization of the U.S. economy increased when the twenty-first century began with the government policies of low interest rates and deregulation of financial systems. For example, in 2004 and 2005, large U.S. firms such as Toys "R" Us, The Hertz Corporation, Metro-Goldwyn-Mayer and SunGard were taken privately and flipped. What is distinctive about the case of private equity funds buying into Toshiba in 2022 is the extension of this wealth extraction activity by U.S. hedge funds into the global economy. The hedge fund buy-outs of productive corporations generally has put large financial burdens on them. Ruchir Sharma wrote: "The typical company owned by a private equity firm has debts of more than five times earnings, versus one to three times for publicly-traded companies (Sharma, 2022)."

7. Conclusion: Financialization and Capital Structures

The term "financialization" has been used to describe the development of capitalism focused upon financial services, particularly after 1980. But it follows an earlier school of economics which emphasized that capital flows and investment institutions interacted in an economy. This school later has been called "post Keynesian". For example, Wynne Godley and Marc Lavoie wrote: "The alternative paradigm, which has come to be called 'post-Keynesian' or 'structuralist', derives originally from those economists who were more or less closely associated personally with Keynes such as Joan Robinson, Richard Kahn, Nicholas Kaldor, and James Meade, as well as Michal Kalecki (Godley & Lavoie, 2007)..."

In the post-Keynesian school, Hyman Minsky was an important advocate of the economic fact that how money flows and financial institutions interact alters the nature of capital structures.

There is a direct intellectual line in economic thought from Keynes to Schumpeter to Minsky about how financial structures can create their own pricing. This means that capital flows are influenced by institutional arrangements and their "annuities" (profit expectations). Hyman Minsky wrote: "In both

Keynes and Schumpeter the; in-place financial structure' is a central determinant of the behavior of a capitalist economy. But among the players in financial markets are entrepreneurial profit-seekers who innovate. As a result, these markets evolve in response to profit opportunities which emerge as the productive apparatus changes. The evolutionary properties of market economies are evident in the changing structure of financial institutions as well as in the productive structure (Minsky, 2008).”

And this change in market economies leads to what we currently call “financialization”. These ideas led Minsky to propose several versions of capitalism:

1) “**Commercial Capitalism** involves the financing of goods that are being traded or processed.

2) **Finance Capitalism** arose because the industrial revolution led to a great increase in the relative importance of machinery in production and therefore of the non-labor costs that prices had to cover. Railroads in particular, especially when there were continents to be crossed, required vast amounts of funding...A main development during this very creative period in capitalism’s history was the emergence of the corporation as the dominant form of ownership.

3) **Managerial Capitalism** arose as corporate managements became independent of their stockholders. No individual stockholder in the great firms could challenge management; and with the attenuation of owners’ interests, corporate Board of Directors became beholden to management.

4) **Money Manager Capitalism** arose from the way tax laws and markets capitalized income streams in the 1980s; and the total market valuation (value of equity shares plus bonds) of a highly-indebted firm was typically greater than the market valuation of a more conservatively financed firm. A market in the control of firms developed: the fund managers whose compensation was based upon the total returns earned by the portfolio they managed were quick to accept the higher price for the assets in their portfolio that resulted from the refinancing that accompanied changes in the control of firms...the emphasis was not upon the capital development of the economy but rather upon the quick turn of the speculator, upon trading profits (Minsky, 2008).”

8. Summary

What we are seeing in this historical case of global hedge funds attacking the Japanese conglomerate Toshiba for privatizing the company is an example of Minsky’s capital structure of “Money Manager Capitalism”.

The idealistic assumption in some traditional macro-economic models that all savings-investments go to production (or to increase production) is not always empirically accurate. Capital investments can also go into only increasing wealth but also extracting wealth (and in that operation, decreasing production). Macro-economic models should be capable of tracing where investment in an economy goes and how it impacts an economy. Having added the concept of a “capital structure” into a macro-economic model, this research technique can improve the accuracy of a macro-economic model of a capital. In particular, in a

systems-dynamics graph, a vectorized form of the Harrod-Domar equations enables economists to realistically depict the current global capital structure of “financialization”.

Currently in addition to Toshiba, examples of contemporary global Money Manager Capitalism abounded in 2022. For example, Joe Nocera wrote: “Albertsons wants to pay \$4 billion to shareholders ahead of its proposed merger with Kroger, a move that would require the already debt-ridden company to borrow \$1.5 billion. Cerberus Capital Management, a big private equity firm, has long attracted controversy. In 2007, it took over Chrysler, but after two years of Cerberus ownership, the company needed a government bailout to stay in business...Now the firm, which has some \$60 billion in assets, is trying to pull off a deal that is expected to face intense scrutiny from antitrust regulators. Cerberus is the largest investor in Albertsons, the country’s second-largest supermarket chain by revenue. In October, Kroger, which is nearly twice the size of Albertsons, announced it was going to buy its smaller rival for \$24.6 billion. If the deal were to go through without any government-mandated divestitures, the combined company would own some 5000 stores, making it by far the dominant grocery chain in the (U.S.) country (Nocera, 2022).”

These are just other examples of a capital structure in which money-managers control financial prices, Minsky’s “Money-Manager Capitalism”. What makes the case of Toshiba so note worthy is that a second national economy, after the U.S. economy, may be moved into this phase of a capital structure in which financial-flows price the economy rather than fund productive growth. The normative issue about this case is whether or not such a Money-Manager Capitalism will be good for the Japanese public (or only good for the international hedge-fund shadow banking). Private good, yes. But where is the public good for a national economy in this kind of shadow banking?

The regulatory issue is this. Whether or not an institutional leveraged-buyout investor n privatizing a firm should be allowed to load that firm down with the debt involved in the acquisition? When so permitted by government regulation, then such an investment in the capital structure does not increase productivity in an economy but decreases productivity.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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