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How Corporate America is Enhancing the Economy: An Analysis on How Corporate America Sources and Dispenses Profits into the Economy, with Capital and Labor Effects

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Abstract: *This paper examines how private sector investment boosts the American economy. Here we use time series data collected from the U.S. government publishing office to understand the relationship between GDP and corporate investment, how corporate is investing its profit after a contribution to tax payments and how private domestic investment is dispensed into residential and non-residential industrial fields. We mostly focus on a corporate business cycle and selected manufactures. Corporate would invest their profits into structure, equipment, and intellectual properties. This paper takes a close look at how investment by corporates enters the economy and promote productivity. By such analysis, we answer issues on corporate behaviour, its contributions to the society and how it would retain its profits or reinvest its profits into every aspect of both its own business cycle and the society in general. We answer questions such as to what extent, investment would influence GDP, how much are corporates willing to invest their after-tax profits into manufactures, fixed investments and general social welfare promotion and study their investment-dispensing behaviour. Afterall, we concluded that Corporate America has a balanced industry chain that maintains the well-being of American people. However, we notice a lack of manufacturing capital investments and employment in manufacturing sector. Compared to labour, capital is the driver that directly related to the economic growth as well as the increase of stock index.*

Keywords: *Corporate America, Infrastructure, Public Finance, Econometrics*

1. Introduction

The relationship between land rent payments and the business activities has long been talked about with perspectives of both historians and empiricists. In his masterpiece The Wealth of Nations (1776), Adam Smith examined the nitty-gritty of the 18th century England's manufacturing and trade activities. The relationship between trading, mercantile and fined manufacturing activities was always discussed along with the activities relating to agriculture. Some would argue that agriculture is the essence of all industries as it requires so much delicate understanding of the land and its properties. Others disagree by discouraging the peasants for their lack of entrepreneurship and pointed out that merchants and entrepreneurs, especially private sectors, are the drive force of the economic growth. The classical model of capital and labour are discussed almost in every well-written textbook. Here we would like to see how corporate America is contributing to capital accumulation and labour encouragement. If we take Corporate America as a whole, this paper is more of a ten-year's performance analysis of the Corporate America.

Recent research has noticed a relationship between corporate cash and employment. Philippe (Philippe Bachata, 2019) mentioned that "We argue that the negative relationship between the corporate cash ratio and employment is systematic, both over time and across firms." His research examined the negative correlation between labour to wealth ratio and cash ratio with a time-series data ranging from 1980 to 2015. He used a more common Cobb-Douglas production function instead of the linear regressions in this paper.

Aghion (Aghion, 2010) also mentioned that there are "cross-country correlation between volatility and growth", repeating Ramsey and Ramsey (1995), he researched on the negative impact of volatility to growth and pointed out that volatility may impact the economy stronger in where the country is less

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developed, as they have tighter credit market.

Armenter (Roc Armenter, 2017) also conducted research on the U.S. non-financial sectorial debt and financing activities. Interestingly, they pointed out that "The U.S. non-financial corporate sector became a net lender to the rest of the economy in the early 2000s, with close to half of all publicly-traded firms holding financial assets in excess of their debt liabilities. Moreover, firms find it optimal to fund additional financial asset holdings through equity revenues. The calibrated model matches well the distribution of public firms' balance sheets during the 2000s and correctly predicts which firms are net savers. "From a capital investment perspective, in this paper, we aim at examining the correlation between private sectors and their surrounding biological loops by talking about their tax payment, their contributions to GDP by their profitability and their invested profits into fixed investments, in both residential and non-residential aspects. We examine the private sector's investment in structures, equipment and intellectual properties and their investment trends. We closely look at the investments that are dispersed into information processing equipment, industrial equipment, transportation equipment, software, and R&D products. We also examine how much private sector is weighing compared to the public sector and why this is important.

Labour and corporate behaviour is also studied in recent research. Most scholars researched it from a labour union perspective, some institutions publish research on labour union behaviours such as (Cornell University ILR School, fall 2010) Cornell published reports advocating on the cost of Americans to send jobs overseas. Most of such reports are institutional and less quantitative. However, there are slight empirical research on this issue. (Freeman, 2006) Freeman proposed many real concerns after the data analysis on manufacturing industry.

Other scholars focus on the financialization of corporate America. Krippner (Krippner, 2005) realized there is a financializing trend of corporate America and excessive financialization would erode the U.S. non-financial industries. He pictured on the trends of excessive financial industries compared to manufacturing.

From a labour encouraging perspective, we examine how many individuals corporate America is hiring absolutely and proportionally, and in what industries are the labour forces hired. We will answer the question on how much labour hired by the corporate America is creating productivity on a timely manner. Is there any correlation between the numbers of hired people and the capital investing amounts, and finally the economic fluctuations? We will set up a model here.

We are also trying to look at each industry within the manufacturing and merchant realm. These industries are metals, machinery, computer and electronic products, transportation equipment, apparel, printing, chemicals, and food industries. We are regressing the monthly S&P 500 and Dow Jones here to gain an overview.

We are also looking at the correlation between private investment amount and amount spent on new construction figures including numbers of new houses, lodging, offices, commercial constructions, manufacturing constructions etc. we also look at how corporate America funds itself by investing, financing, and operating activities. Mostly corporate funds 60% of itself and the rest comes from the external equity and debt financings. We also examine slightly on corporate America's capital structure and how it is using its funding sources within its own stock stake, or by holding more financial assets.

We will be spending considerable amount of time navigating the algorithms of such data and we mostly focus on essential indicators such as corporate profits before and after tax, fixed private investment, private employment, corporate funds and sources and uses, we analyse the economic growth with an investment perspective and measure how much labour should be put along with the investment to model GDP and S&P500 stock index.

2. Data

Here we collected time series data from the U.S. Government Publishing Office (https://www.govinfo.gov/app/collection/econi/2010/12/1) from the fiscal year 2008 to the fiscal year 2019. For macro census data, lots of them only provide quarterly accumulative data. We are smoothing such lack of data problem by filling in quarterly data with monthly data. For instance, the first quarter data of a fiscal year only has one figure, yet we apply this figure to months include January, February and March. Such data include GDP, exports and imports, profits before and after tax, real gross domestic investment, fixed investment by type, productivity by business and non-farm business, sources and uses of funds of non-farm non-financial corporate business.

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Some data is provided monthly, such data include non-agricultural employment (with the year 2008 missing because of a lack of census), industrial production of selected manufactures, new constructions,

Some data is more frequent than other data, such as stock market index. For this case, we collected S&P 500 data at the last day of the months. The stock data comes from yahoofinance.com.

There are 144 observations with monthly data from fiscal year 2008 to 2019. There are 84 defined variables. We are importing such data from raw collection to truncated excel spreadsheets, then we defined and sorted such data into the Stata .dta file and finally make the dataset ready to use. The data collections could be sorted into the below categories: (See Table 1.)

2.1. Variable Definitions with Stata

We are firstly defining our data into proper variable formats, see the table below:

Table 1 Summary of Statistics

#	Issues	#.#	Variables	Description of Variables	Observations
1	**GDP & General Investments**	1.1	GDP		GDP
		1.2	Consumption	Personal Consumption Expenditures	Consumption
		1.3	**Investment**	Gross Domestic Investment	Investment
		1.4	Government Purchases	Federal and State Government purchases for defenses and non-defenses purposes	Government Purchases
		1.5	Net Exports	Exports minus imports	Net Exports
2	Corporate Profits before Tax (CPBT)	2.1	**Domestic Non-financial Industries**	including manufacturing, utilities, wholesale and Retails	$ Billions
		2.2	Domestic Financial Industries	Financial & Capital Market corporate profits	$ Billions
		2.3	International related Industries	International corporate profits	$ Billions
3	Corporate Profits after Tax (CPAT)	3.1	Tax on the previous section	Tax collected to the public	$ Billions
		3.2	Net Dividends	Distributed to shareholders	$ Billions
		3.3	**Undistributed Profits**	Investing into the business again, additional paid-in capital	$ Billions
4	Real Private Domestic Investment	4.1	Inventory Investment	Including non-farm and total inventory-type investments	$ Billions
		4.2	Residential Investment	Including residential housing investments	$ Billions
		4.3	**Non-residential Investment**	Including non-residential investment in structures, equipment and intellectual properties (IPs).	$ Billions
		4.4	Total Gross Domestic Investment	The sum of 4.1,4.2 and 4.3	$ Billions
5	Real Private Fixed Investment by type	5.1	Investment in **non-residential structures**	Including offices etc.	$ Billions
		5.2	Investment in non-residential **Equipment**	Including information processing equipment, industrial equipment, transportation equipment	$ Billions
		5.3	Investment in **IP** products	Including Software and R&D investments	$ Billions
		5.4	Investment in **Residential** buildings	Investment in residential structures, single family for instance.	$ Billions
6	How Corporate Investment is boosting Employment?	6.1	**Goods**-producing Industries	Including **construction** and **manufacturing** jobs created.	# Jobs created
		6.2	**Service**-providing Industries	Including trade & transportation (retails), information, financial activities, professional services, education and health, leisure and hospitality, and other employments. (Government employment excluded)	# Jobs created
7	How selected manufactures and investments increased productivity?	7.1	**Durable Manufactures**	Including primary metals, metal products, machineries, computer and electronic products, transportation equipment etc.	Indexed to 2007. 100%-300%
		7.2	**Non-durable manufactures**	Apparels, printing, chemicals, and food.	Indexed to 2007. 50%-150%
		7.3	**New Constructions**	New constructions happened each year in private residential and non-residential realms.	$ Billions
8	How Corporate America funds itself?	8.1	**External Funds**	New stocks issued, new securities and mortgages, loans and short-term paper, etc.	$ Billions
		8.2	**Internal Funds**	Dividends reinvested and additional-paid-in capitals	$ Billions
9	How Corporate America uses funds	9.1	**By Holding Financial Assets**	Financial assets amount held each year	$ Billions
		9.2	**By capital expenditures**	Capital expenditures spent each year	$ Billions

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2.2. Specified Data Sources

It is necessary to mention the data source as such bulk packages of data were previously scattered all over the digital and non-digital forms of documentations. As previously mentioned, the data mostly come from the website of U.S. Government Publishing Office (https://www.govinfo.gov/app/collection/econi/2010/12/1). The detailed sources come from, but not limited to Department of Commerce (Bureau of Economic Analysis, Bureau of Census), Department of Labour (Bureau of Labour Statistics) etc. The stock market index comes from (https://www.macrotrends.net).

3. Econometric Algorithms

We have several phenomena to examine so the mathematical equations are several.

First, we would like to understand how much corporate America's performance is contributing to GDP every year. As we have long understood, consumptions, investments, government purchases and net exports consist of the ultimate four components of the domestic product. By regressing the real data, we could see how investment consist of the economy. Even such investment is not sometimes always contributed by corporates, most of them are, representing corporate activities rather than consumption or government expenditures. Here we look at the net imports and exports slightly too.

3.1. Accounting Trial Equations with Stata

We have closely examined the data from the government. However, as we are not conducting surveys on a face-to-face basis, we would like to firstly testify the accounting equations used in calculating the total amounts of the spreadsheets data to ensure such calculation is generally correct and acceptable. This is the reason why Part 3.1 is spending efforts in testifying the known relations.

3.1.1. Trial of GDP with Corporate Investments

This regression gives (See Table X):

$$GDP = \alpha C + \beta I + \gamma G + \varepsilon NX \quad (1)$$

$$GDP = 1.069C + 1.032I + 0.576G + 1.038NX + 460.6587 \quad (1^*)$$

It is making sense as the GDP components are as self-explanatory. After this trial we gained the idea of investment. Now we nail our research down to corporate level behaviours.

3.1.2. Components of Corporate Investments and Distributions

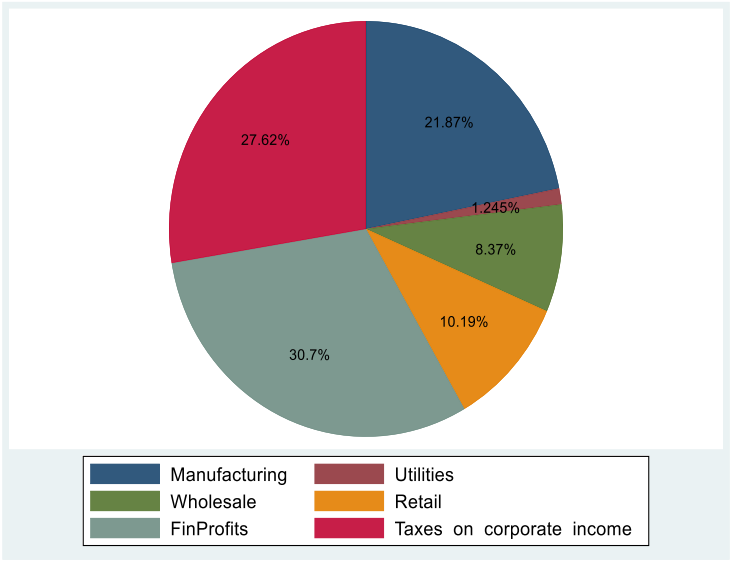

Figure 1 Components of Corporate Profits by Industries

Here we could simply graph the components of corporate profits before tax with Stata. (See Figure

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1.) We could apparently tell that Corporate America contributes 27.62% of the total profit before tax and such share of tax collected finally goes to the IRS and the U.S. government and is used to the public. About 30.7% of the profits generated are from the capital market, or financial market industry. Examples of such giant financial enterprises are Blackstone, Bank of America, Wells Fargo, Berkshire Hathaway et cetera. The rest large portions are from the real economy. The largest real economy components are manufacturing, retail, wholesale, and utilities. We could hereby name a few large corporations lying in the above-mentioned realms such as Parker Hannifin, Walmart, Costco, Goodyear, Hewlett-Packard, and many others.

There are normally three ways to deal with profits, profits are either distributed to shareholders as dividends or retained within corporates. If we try to regress after tax profits, net dividends and undistributed profits, we could form the model (See Table X)

$$Totalprofits = \alpha Dividends + \beta Undistributed + \varepsilon \quad (2)$$

Regressing the variables in Stata, we get:

$$Totalprofits = 0.9999 Dividends + 1 \times Undistributed + 0.0751 \quad (2^*)$$

This is also a highly well-fit model. If we intentionally try regressing with detailed variables in fixed investments session, lets create a model as:

$$Totalfixedinvestment = \alpha structureRES + \beta computer + \gamma industrial + \mu transportation + \theta industrial + \rho transportation + \upsilon residential + \varepsilon \quad (3)$$

Regressing the variables in Stata, we get:

$$Totalfixedinvestment = 1.2981 structureRES + 0.3426 computer + 1.3611 industrial + 1.2441 transportation + 2.4048 software - 1.3251 R\&D + 1.0938 residential + 192.64 \quad (3^*)$$

This is to some extent acceptable. Although we have observed high investment in software but low correlation in R&D. When we go back to the raw data, we realized that there is a tendency that from 2008 to 2019, corporates are cutting R&D investments except for purchasing more computers. Computer and data processing have become an important link to the R&D activities such that the item of computer expenditure was brought out separately. Despite the investment in computers, corporate America was not increasing R&D investments, ceteris paribus.

3.2. Corporate America's Labour and Capital

In this part we examine the situations and the relations between labour and capital in private sectors.

3.2.1. Employment in Private Sectors

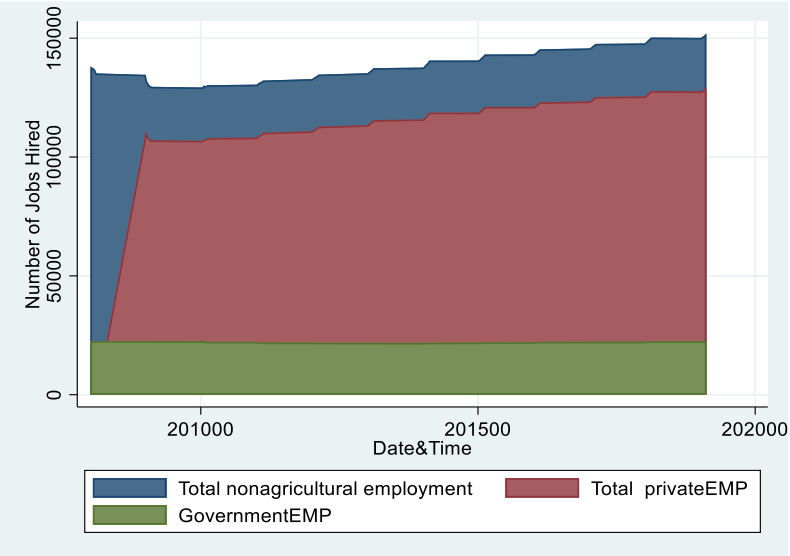

Figure 2 Employments by Sectors

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Here we focus on private sector employments, namely how much corporate America is hiring and in what industries it is hiring. To overview, we first look at how much private America is hiring, compared to that of government hiring. The numbers get out of the survey including all full-time and part-time salaried and waged employees. Total non-agricultural employment reaches 151,961 jobs amongst which 129,297 (85.09%) are from private sectors. The government hires only 22,664 (14.91%) jobs by the end of the fiscal year 2019.

Apparently private employment consists of the greatest portion of non-agricultural employments in the United States. How are they related to each sector of the industry? Here we form a model using Stata:

$$TotalprivateEMP = \alpha manufacturingEMP + \beta retailtradeEMP + \gamma \inf EMP + \mu financialEMP + \theta edu\,\&\,healthEMP + \rho leisure\,\&\,hospitalityEMP + \rho otherprivateEMP + \varepsilon \quad (4)$$

As self-explanatory as it shows, the model decomposes the total private employment in different industries. Such industries include manufacturing, retail trade, information processing, financial services, education and health, leisure and hospitality and other private employment. After the regression, we get:

$$TotalprivateEMP = -71.38694 manufacturingEMP - 62.4172 retailtradeEMP - 26.77608 \inf EMP - 16.14133 financialEMP + 29.94584 professionalEMP - 46.42225 edu\,\&\,healthEMP + 89.5113 leisure\,\&\,hospitalityEMP - 77.299 otherEMP + 1540820 \quad (4^*)$$

This results need a little further discussion because total private employment is 151961 jobs in 2019 and the constant term is 154820, which means probably the census is not surveying enough categories of jobs in terms of different industries. However, some correlation coefficients are making sense, as manufacturing is switched to other countries, the U.S. has comparative advantageous in industries such as information professing, professional and businesses, leisure and hospitality services.

To consider such adjustments on omitted industries, we regress the total private employment, again, from only the two categories of goods and services perspective. This time our model becomes:

$$TotalprivateEMP = \alpha GoodsEMP + \beta ServicesEMP + \varepsilon \quad (5)$$

And Stata gives the regression as:

$$TotalprivateEMP = -6.5886 GoodsEMP + 42.4262 ServicesEMP - 353570.1 \quad (5^*)$$

This is a very interesting and enlightening result for private sector employment. Apparently, the services industry gives the U.S. a most comparative advantage in providing services in professional, financial, and hospitality services. Yet when we focus on the negative -6.5886 coefficient, we could conclude that whenever the U.S. hires more jobs on goods manufacturing, the total private employment would decrease. Would that affect the performance of Corporate America? Now we might would like to examine the capital side.

3.2.2. Capital Sources in Private Sectors

From basic corporate finance concepts, we understand cashflow is crucial to the operation, financing and investing activities of corporates. To illustrate the idea of capital, we in general, use the notion of "sources and uses" of the funds defined by the Bureau of Economic Analysis. We firstly would like to model sources of internal and external ways. We create the model:

$$TotalSources = \alpha InternalSources + \beta TotalExternalSources + \varepsilon \quad (6)$$

The above is just a decomposition of sources into internal and external. Regress the raw data in Stata we get:

$$TotalSources = 0.2908 InternalSources + 1.7008 TotalExternalSources + 608.81 \quad (6^*)$$

This model explains that corporate America funds itself mostly with external sources. However, as the model's is only 0.75, we try generating an interaction term to see if it's possible to increase, after adjustment and regression in Stata, our adjusted model becomes:

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$$TotalSources = -0.1752InternalSources + -0.4044TotalExternalSources + 0.0011915Internal\&ExternalSources + 1410.096 \quad (6^{**})$$

This time we improved the to 0.78. We noticed an increase in the constant term from 608.81 to 1410.096. This shows a steady tendency of corporates receiving funds.

How about decomposition to stock financing, short-term debt, mortgages and securities and other markets funds? We regress according to:

$$TotalSourcesofFunds = \alpha InternalSources + \beta NetFundsRaised + \gamma mortgages + \eta Loans\&ShorttermPaper + \mu OtherMarketFunds + \varepsilon \quad (7)$$

And get the results:

$$TotalSourcesofFunds = 0.233357InternalSources - 0.4652252NetFundsRaised + 1.584279mortgages + 1.431664Loans\&ShorttermPaper + 0.7059992OtherMarketFunds + 763.3163 \quad (7^{*})$$

This model is not very persuasive because of a low (0.34). However, we are keeping it there as a reference to the decomposition of sources of funds. The positive and negative sign of each coefficient reveals that mostly corporates finance themselves with securities and mortgages, loans and short-term paper and other market funds. The internal Sources only contribute to a little, while net funds raised is negative as they represent funds raised by issuing corporates' own stocks. We could conclude here as American corporates have strong credit markets and external financing markets, compared to internal sources of funds.

3.2.3. Capital Sources versus Use in Private Sectors

We now look at the uses of the funds, for coherent reasons, we first look at the discrepancy between sources and uses.

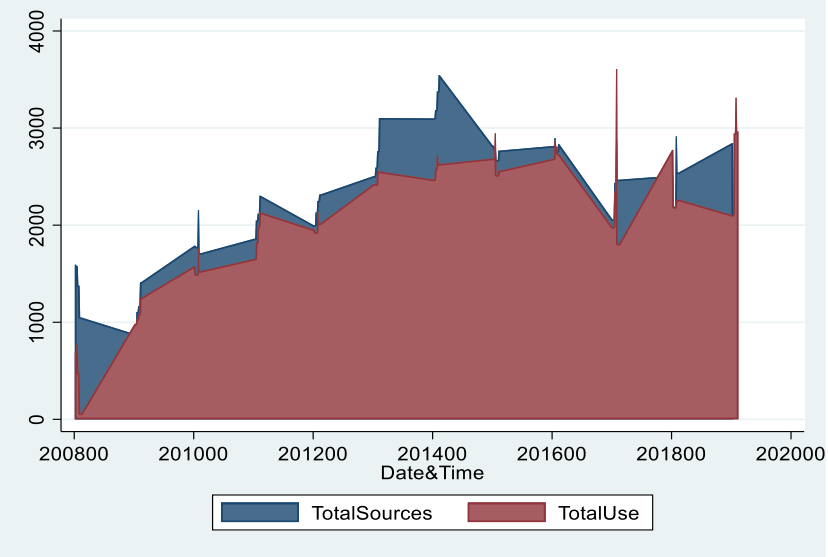

Figure 3 Total Sources and Total Uses of Corporate Funds

Here we then break the total uses into capital expenditures and increases in financial assets. If we continue forming another model:

$$TotalUsesofFunds = \alpha CapitalExpenditures + \beta FinancialAssetsHoldings + \varepsilon \quad (8)$$

Apparently, this is just the accounting equation, so this model is surely built with high goodness of fit. We could testify it with Stata and get:

$$TotalUsesofFunds = 1\times CapitalExpenditures + 1\times FinancialAssetsHoldings + 1.82e(-12) \quad (8^{*})$$

Its R-squared is equal to 1 as it is exactly the algorithm.

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3.2.4. Exploring the New Constructions

Every year corporate America residential and non-residential constructions including all sorts of housing, lodging, offices, commercial buildings, manufacturing plants etc. Sometimes government-related building projects would also get bid by corporate America. Here we explore the relationship with the decomposition of new constructions. We form the model:

$$TotalNC = \alpha TotalresidentialNC + \beta LodgingNC + \gamma OfficeNC + \eta CommercialNC + \mu ManufacturingNC + \rho GovNC + \varepsilon \quad (9)$$

Regress all the variables mentioned above, in Stata, we get:

$$TotalNC = 0.9998299 TotalresidentialNC + 0.9938325 LodgingNC + 1.004166 OfficeNC + 1.000868 CommercialNC + 1.000089 ManufacturingNC + 0.9984893 OtherNC + 1.000449 GovNC + 0.0906991 \quad (9^*)$$

This is a decent result with equals to 1 so the model represents all the variables in the reality well. We could see the model is correct.

4. Analysis of Corporate America's Performance

If previously what we did was only calculations of accounting equations and simple decompositions, here we start our real cross-sectional analysis of Corporate America's performance, by relating private sectors' investment, dividends distributed and reinvested, overall employment, capital sources and uses, corporate America's new construction activities each year, and generate its overall performance indicators. Then we compare the indicators to the S&P 500 index and see if the stock market would reflect corporates performance biased or unbiased.

4.1. Trend of the Important Indicators

Now we plot the trends so we could directly get the idea of which critical variables are convergent or divergent to each other. Such variables include GDP, Corporate Profit after Tax, Dividends, Undistributed Profits, Fixed Investments, Total Sources and Total Uses, and New Constructions. As they are all measured by billions of dollars. We separately plot the employment diagram, too. Trends and diagrams are as follows:

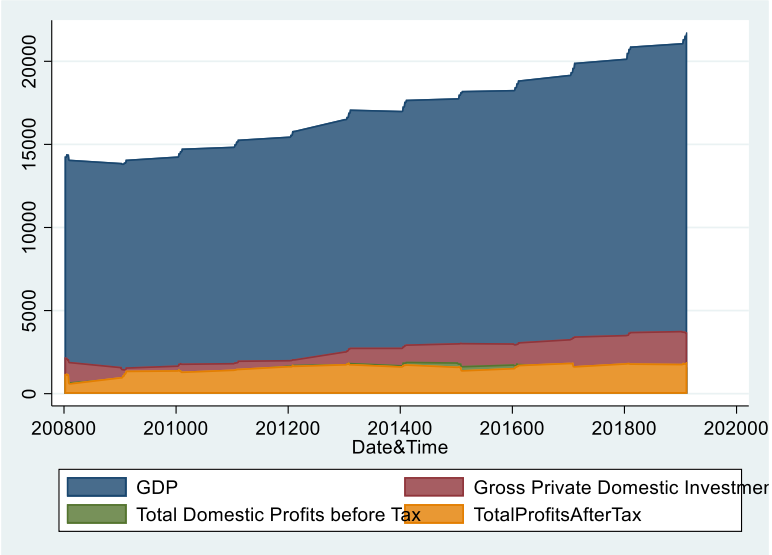

Figure 4 GDP and Corporates

As before-tax and after-tax figured are highly coinciding, we could see that corporate tax is not taxed heavily on Corporate America. Now we look at the trend analysis of investment, corporate profit after tax, dividends, and undistributed portions of retained earnings. We could plot:

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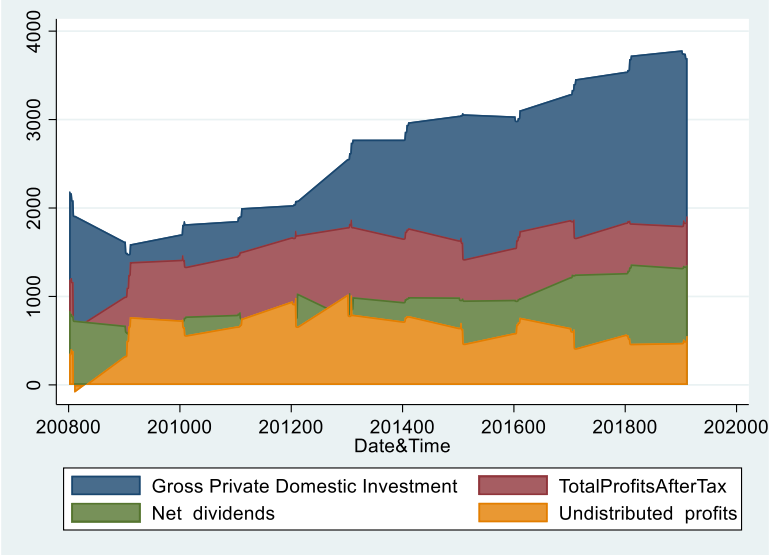

Figure 5 Investment and Profits including dividends and Undistributed Profits.

Here we could see that corporate earns profit and invest at the same time. Corporate America is benevolent enough to distribute almost half to stakeholders, while remain about half undistributed dividends. We see a drastic change of undistributed profits in 2008 because of the 2008 financial crisis. We also see a trend that the net dividends distributed seldom go down because people are expecting more dividends. So undistributed profits remain stable but slightly decreased. How about the trends between fixed investment, total sources and total uses, and new constructions? Let us plot:

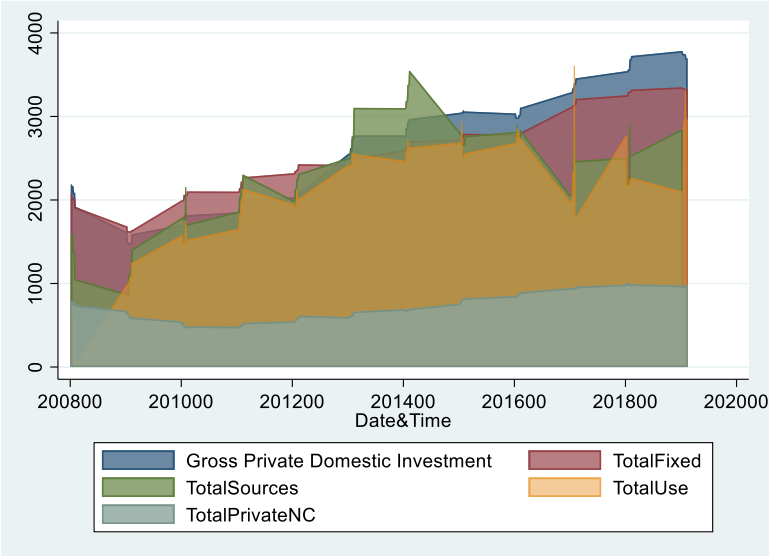

Figure 6 Investment, Fixed Investment, Corporate Funds, and New Constructions

We see a highly coincided area of each variable, we might guess these variables could form a model on how corporate America is making fixed investments by regressing investment, fixed investment, sources and uses. As this model helps us understand what factors would affect corporates' use of funds. So here we assume the model could be:

$$Uses = \alpha Source + \beta FixedInvestment \quad (10)$$

Regress it with collected variables, we get:

$$Uses = 0.0074178 Source + 2.034913 FixedInvestment$$
$$-4.995182 NewConstructions + 839.0348 \quad (10^*)$$

That is the relation between corporate funds and fixed investments and new constructions. Fixed Investment is highly contributing to the uses of the corporate funds. New construction has a negative

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value of the uses, but the absolute value is big, which means new constructions do occupy corporate funds to a great amount. We will examine the details of relationships between employment, new constructions and investment in different sectional industry and selected manufacturing in the next session. Here we jump ahead and focus on overall trends. How are the corporate profit after tax, new private constructions, private employment, fixed investment, and S&P related? Here we plot:

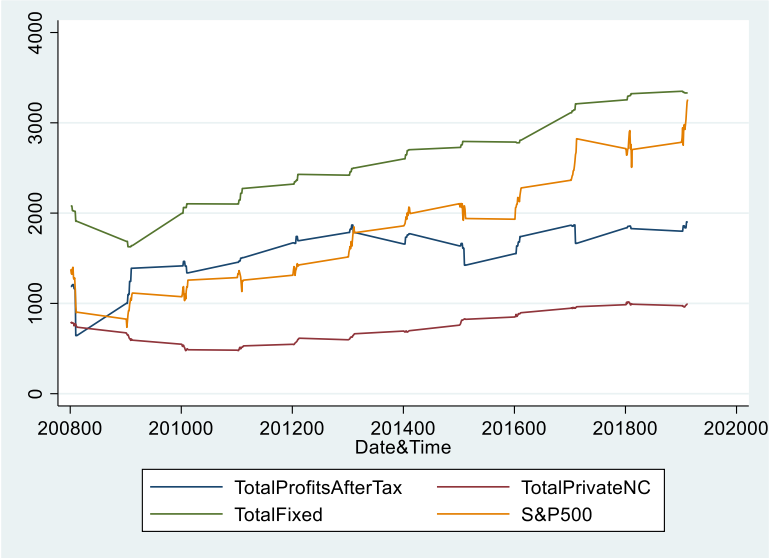

Figure 7 Corporate Profit, Private New Construction, Fixed Investment and Stock Index

The result here is very insightful: We notice an increasing trend after the 2008 financial crisis of the total fixed investment and the stock market. New construction experienced a slight down in 2010 but in general remained stable and increasing. Profits after tax experienced two major falls in 2008 and 2015. Yet still from a long run we see a strong coincidence between corporate profits after tax and private new construction, and another long-term coincidence between fixed investment and the stock index. It is interesting to see the coincidence between the real economy where fixed investments were real in the pocket and the stock index, it's also interesting to see the new construction and the profits. This tells us that corporate would directly invest their profits into new projects instead of retaining it. And thus, fixed investment would directly boost the stock index accordingly.

How about employment? Here we plot it with the number of total fixed investment and S&P 500.

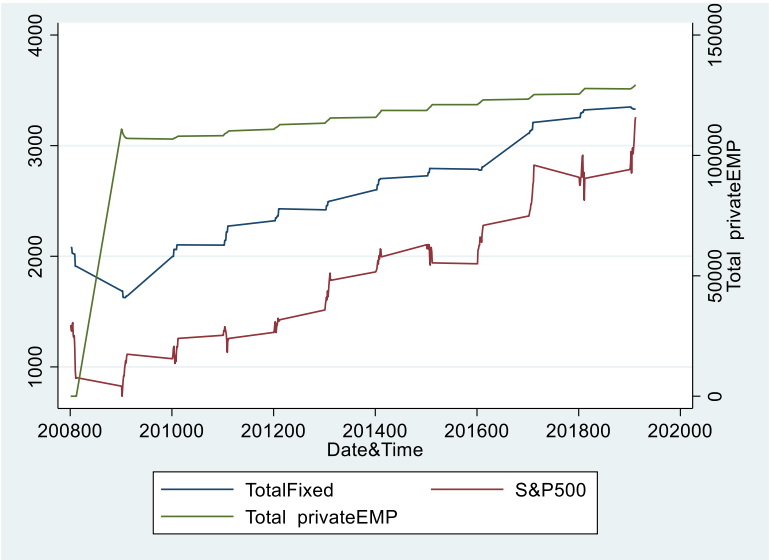

Figure 8 Fixed Investment and Private Employment, and Stock Index

We see a good trend as capital and **LABOUR** combined would give good stock result. To quantify this, we regress the three variables and create the simple model of capital and **LABOUR** here.

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$$S\&P500 = \alpha Capital + \beta Labor + \varepsilon \quad (11)$$

$$S\&P500 = 1.236056 Capital - 0.0004044 Labor - 1287.681 \quad (11^*)$$

This is an extremely interesting model. It says the stock market performance requires influences of capital, yet LABOUR is not really impacting the stock market index. How about a regression on GDP and capital and LABOUR? We try regressing:

$$GDP = \alpha Capital + \beta Labor + \varepsilon \quad (12)$$

And **GET:**

$$GDP = 4.479047 Capital + 0.0044259 Labor + 5210.141 \quad (12^*)$$

It is just as the stock market regression we previously did, in a sense that capital is extremely important than **LABOUR**. We could conclude that maybe **LABOUR** is not as important, and capital is the king? We cannot conclude it that way, instead, we could examine the relations in different sectors of the economy. As we have data.

4.2. Sectorial Analysis on Industries

As we recall figure 1, we could break down the corporate profits and taxes into this pie chart:

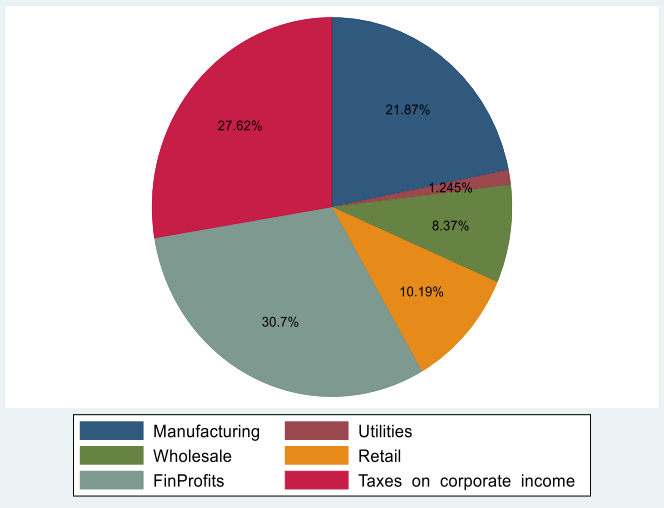

Figure 9 Components of Corporate Profits by Industries

We could also examine the componential shares of fixed investment, as they might be related to the profits of different industries. We plot the shares of investments in residential and non-residential structures, equipment of all kinds, computer, software, and R&D related investments, as follows:

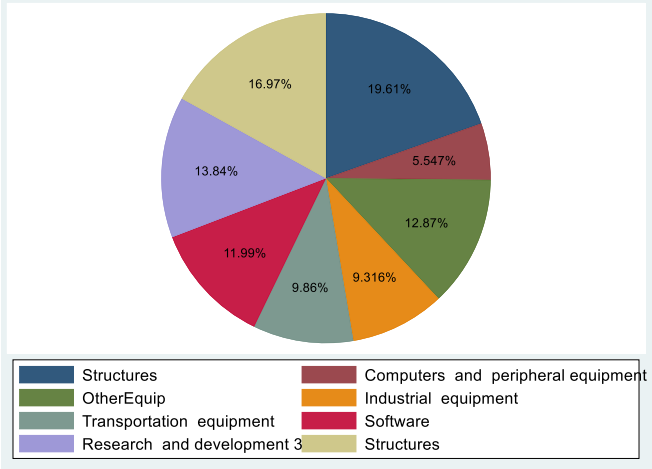

Figure 10 Private Investment in Residential & Non-residential Realms

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It is apparent that every advanced country would have stable infrastructure investment of residential and non-residential housing, transportation, industrial and other equipment. Yet what worth noticing is Corporate America's extremely large R&D, software and computer equipment and Intellectual-Property related investments that are driving America's data management and researching ability above many countries. Such investment could possibly be solicited from all industries including manufacturing, financial services, wholesale, retail, and utilities.

The above is an analysis on sectorial corporate investment, namely capital, how about employment? We could continue plotting with our sectorial data:

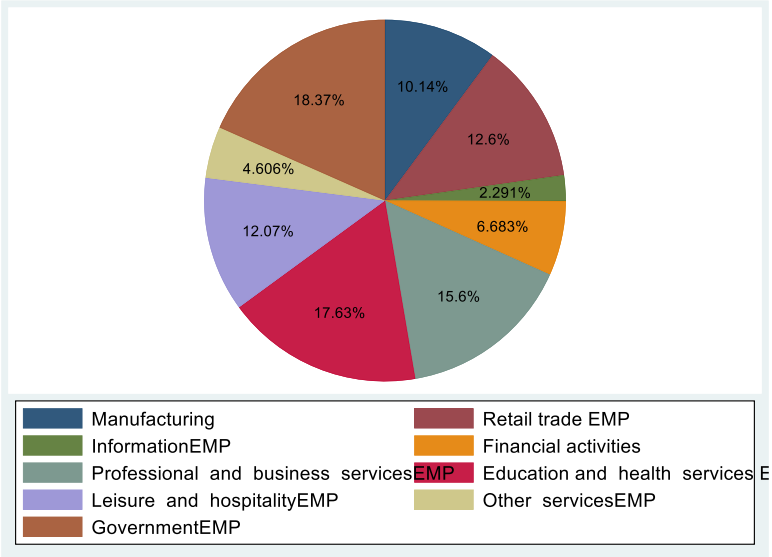

Figure 11 Sectorial Employment (Including Government Employment)

Surprisingly, we found government employment (18.37%) takes the largest portion followed by education and health services (17.63%). The next several would be professional & business services (15.6%), retail trade (12.6%), leisure and hospitality (12.07%), manufacturing (10.14), followed by even less employments in industries such as financial activities(top-level buyer side), others and information. It is a very dynamic allocation, yet we would have several takeaways on the shortage of manufacturing jobs. However, we could also happily see that education and health services rank the second most employed industry, which provides good education and healthcare to every citizen and residents.

We have not had enough space to list every Fortune 500 Companies by industries here. However, we trust that after this rough analysis of how capital and labor is distributed, we could form some general idea of how Corporate America is enhancing the American Economy. We will be talking about this in the next chapter.

5. Conclusions, Discussions and Limitations

We could conclude from the analysis above that:

First, Corporate America has a strong financial system which gives them opportunities to finance either by issuing new stocks or by credit markets.

Second, private sector contributes more than 70% of the American Economy. It creates jobs, increase fixed investment in both large infrastructure and equipment. It is the drive force of the American economy.

Third, America has good industry chains that provides balanced goods and services to its people, however, manufacturing sector needs to be enhanced as most productivity-driven investments were dispensed into computers, data-processing and R&D, manufacturing and labor work needs to be improved in general. The corporate America depends heavily on capital while the influence of labor to both stock market and GDP is rare.

Fourth, labour employments in the U.S. is not contributing to the economic growth much as capital.

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Because of time constraint, we have not eliminated the data from agricultural and financial corporates out of S&P 500 and Dow Jones. They provide a great portion of dollar amounts contributed by Corporate America each year. That would possibly create some impurities in the corporate America with only merchant and fine manufacture environment with only goods and services provisions we have established.

We also have never examined the detailed diversity of workforce in Corporate America and have not answered questions as ethnicity, wage rates and job categories. The data only reflected increasing trend of jobs created.

We have also not been able to talk about the phenomena from a perspective of competitive equilibrium. We are minimizing interaction terms and related second-hand variable. We avoid creating variables with no basis of the raw data. So, this might be a lack of analysis from a competitive equilibrium perspective.

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Appendix

Table A1 GDP Regression Results

Source	SS	df	MS	# of Observations	=	144
Model	851382588	4	212845647	F(3,140)	>	99999.00
				Prob > F	=	0.00
Residual	278772.743	139	826.138573	R-squared	=	0.9997
				Adjusted R-squared	=	0.9997
Total	851497422	143	5954527.42	Root MSE		28.743

Table A1 GDP Correlation Results*

GDP	Coefficient	Std. Err	t	P>| t |	95% Conf.	Interval
Consumption	1.068668	.0140121	76.27	0	1.040964	1.096373
Investment	1.031684	.0194392	53.07	0	.9932487	1.070118
Net Exports	1.037578	.0317526	32.68	0	.9747978	1.100359
Gov. Purchases	.5758017	.040875	14.09	0	.4949846	.6566188
Total	460.6587	46.6669	9.87	0	368.39	552.9275

Table A2 Profit Distribution Regression Results

Source	SS	df	MS	# of Observations	=	144
Model	10484304.7	2	5242152.35	F(3,140)	>	99999.00
				Prob > F	=	0.00
Residual	0.457596229	141	0.003245363	R-squared	=	1.0000
				Adjusted R-	=	1.0000

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				squared		
Total	10484305.2	143	73316.8193	Root MSE		0.05697

Table A2 Profit Distribution Correlation Results*

Total Profits After Tax	Coefficient	Std. Err	t	P>| t |	95% Conf.	Interval
Net Dividends	0.9999227	0.0000212	4.7e+04	0.00	0.9998809	0.9999646
Undistributed Profits	1.000008	0.0000249	4.0e+04	0.00	0.999586	1.000057
Constant	0.0751091	0.0284127	2.64	0.009	0.0189392	0.131279

Table A3 Fixed Investments Regression Results

Source	SS	df	MS	# of Observations	=	144
Model	57629115.5	8	7203639.43	F(3,140)	>	10784.80
				Prob > F	=	0.00
Residual	90172.443	135	667.944022	R-squared	=	0.9984
				Adjusted R-squared	=	0.9983
Total	10484305.2	143	403631.384	Root MSE		25.845

Table A3 Fixed Investments Correlation Results*

Total Fixed Invstmt	Coefficient	Std. Err	t	P>| t |	95% Conf.	Interval
In Structures	1.298054	.1188065	10.93	0.000	1.063092	1.533017
In Computers	.3425886	.0619365	5.53	0.000	.2200972	.46508
In Other Equipment	1.361126	.1815728	7.50	0.000	1.00203	1.720221
In Industrial Equipment	1.094289	.5729207	1.91	0.058	-.0387719	2.22735
In Transportation Equipment	1.244099	.200211	6.21	0.000	.8481432	1.640054
In Software	2.40481	.0973466	24.70	0.000	2.212289	2.597332
In R&D Equipment	-1.325081	.0716775	-18.49	0.000	-1.466837	-1.183325
In Residential	1.093752	.0900214	12.15	0.000	.9157175	1.271787
Constant	192.636	112.0886	1.72	0.088	-29.04087	414.3128

Table A4 Private Sectorial Employment Regression Results

Source	SS	df	MS	# of Observations	=	144
Model	1.4814e+11	8	1.8517e+10	F(3,140)	>	251.22
				Prob > F	=	0.00
Residual	9.9508e+09	135	73709887.4	R-squared	=	0.9371
				Adjusted R-squared	=	0.9333
Total	1.5809e+11	143	1.1055e+09	Root MSE		8585.4

Table A4 Private Sectorial Employment Correlation Results*

Total Private Employment	Coefficient	Std. Err	t	P>| t |	95% Conf.	Interval
Manufacturing EMP	-71.38694	13.45804	-5.30	0.000	-98.00279	-44.77108
Retail trade EMP	-62.4172	10.88746	-5.73	0.000	-83.94924	-40.88516
Information EMP	26.77608	41.26692	0.65	0.518	-54.8372	108.3894

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Financial Activities	-16.14133	22.61664	-0.71	0.477	-60.87008	28.58741
Professional and businesses EMP	29.94584	11.89674	2.52	0.013	6.417749	53.47392
Education and health services	-46.42225	12.93142	-3.59	0.000	-71.99662	-20.84788
Leisure and hospitality EMP	89.5113	15.57131	5.75	0.000	58.71605	120.3065
Other services EMP	-77.29998	35.95162	-2.15	0.033	-148.4012	-6.19874
Constant	1540820	181201.1	8.50	0.000	1182460	1899180

Table A5 Private Total Employment on Goods & Services Regression Results

Source	SS	df	MS	# of Observations	=	144
Model	1.5175e+11	2	7.5876e+10	F(3,140)	>	1688.78
				Prob > F	=	0.00
Residual	6.3351e+09	141	44929638.6	R-squared	=	0.9599
				Adjusted R-squared	=	0.9594
Total	1.5809e+11	143	1.1055e+09	Root MSE		6703

Table A5 Private Total Employment on Goods & Services Correlation Results*

Total Private Employment	Coefficient	Std. Err	t	P>| t |	95% Conf.	Interval
Goods EMP	-6.588569	.115483	-57.05	0.000	-6.81687	-6.360267
Services EMP	42.42618	.8260193	51.36	0.000	40.7932	44.05916
Constant	-353570.1	14694.83	-24.06	0.000	-382620.8	-324519.5

Table A6 Internal & External Sources of Funds Regression Results

Source	SS	df	MS	# of Observations	=	144
Model	76114789.4	2	38057394.7	F(3,140)	>	216.85
				Prob > F	=	0.0000
Residual	24745363	141	175499.029	R-squared	=	0.7547
				Adjusted R-squared	=	0.7547
Total	100860152	143	705315.751	Root MSE		418.93

Table A6 Private Total Employment on Goods & Services Correlation Results*

Total Private Employment	Coefficient	Std. Err	t	P>| t |	95% Conf.	Interval
Internal	.2907766	.0959544	3.03	0.003	.1010814	.4804719
External	1.700833	.0892219	19.06	0.000	1.524448	1.877219
Constant	608.8097	159.388	3.82	0.000	293.7107	923.9088

*Table A6** Internal & External Sources of Funds Regression Results (adjusted)*

Source	SS	df	MS	# of Observations	=	144
Model	80566809.1	3	26855603	F(3,140)	>	185.27
				Prob > F	=	0.0000
Residual	20293343.4	140	144952.453	R-squared	=	0.7988
				Adjusted R-squared	=	0.7945
Total	100860152		705315.751	Root MSE		380.73

*Table A6*** Private Total Employment on Goods & Services Correlation Results (adjusted)*

Total Sources	Coefficient	Std. Err	t	P>| t |	95% Conf.	Interval

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Internal	-.1752418	.1211428	-1.45	0.150	-.4147475	.064264
External	-.404489	.3884431	-1.04	0.300	-1.172462	.3634839
Internal * External	.0011915	.000215	5.54	0.000	.0007665	.0016166
Constant	1410.096	204.6642	6.89	0.000	1005.464	1814.728

Table A7 Sources of Funds by Industries Regression Results (adjusted)

Source	SS	df	MS	# of Observations	=	144
Model	34191090.4	5	6838218.08	F(3,140)	>	14.15
				Prob > F	=	0.0000
Residual	66669062.1	138	483109.145	R-squared	=	0.3390
				Adjusted R-squared	=	0.3150
Total	100860152	143	705315.751	Root MSE		695.06

Table A7 Private Total Employment on Goods & Services Correlation Results (adjusted)*

Total Sources	Coefficient	Std. Err	t	P>| t |	95% Conf.	Interval
Internal Sources	.233357	.1864797	1.25	0.213	-.13537	.6020839
Total Net Funds Raised	-.4652252	.3911888	-1.19	0.236	-1.238724	.3082739
Securities & Mortgages	1.584279	.4581332	3.46	0.001	.6784105	2.490147
Loans & Short-term Paper	1.431664	.4645186	3.08	0.002	.5131695	2.350158
Other Markets Funds	.7059992	.1604052	4.40	0.000	.3888295	1.023169
Constant	763.3163	303.3187	2.52	0.013	163.5633	1363.069

Table A8 Uses of Funds Regression Results

Source	SS	df	MS	# of Observations	=	144
Model	80843021.8	2	40421510.9	F(3,140)	>	0.00
				Prob > F	=	1
Residual	0	141	0	R-squared	=	1
				Adjusted R-squared	=	1
Total	80843021.8	143	565335.817	Root MSE		0.00

Table A8 Uses of Funds Correlation Results*

Total Sources	Coefficient	Std. Err	t	P>| t |	95% Conf.	Interval
Internal Sources	1.00	0.00	0.00	0.00	0.00	0.00
Other Markets Funds	1.00	0.00	0.00	0.00	0.00	0.00
Constant	1.82e-12	0.00	0.00	0.00	0.00	0.00

Table A9 New Constructions Regression Results

Source	SS	df	MS	# of Observations	=	144
Model	4651357	7	664479.571	F(3,140)	>	99999.00
				Prob > F	=	0
Residual	1.06098523	136	.007801362	R-squared	=	1
				Adjusted R-squared	=	1
Total	4651358.06	143	32526.9794	Root MSE		0.08833

Table A9 New Constructions Correlation Results*

Total Sources	Coefficient	Std. Err	t	P>| t |	95% Conf.	Interval
Total Residential NC	.9998299	.0002711	3688.32	0.00	.9992938	1.000366
Lodging NC	.9938325	.0041986	236.71	0.00	.9855295	1.002135
Office NC	1.004166	.0028241	355.57	0.00	.9985815	1.009751
Commercial NC	1.000868	.0021914	456.73	0.00	.9965347	1.005202
Manufacturing NC	1.000089	.0007981	1253.11	0.00	.9985111	1.001668
Other NC	.9984893	.0008705	1147.07	0.00	.9967679	1.000211

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Fed & State & Local NC	1.000449	.0005707	1752.98	0.00	.9993201	1.001577
Constant	.0906991	.1896002	0.48	0.633	-.2842468	.4656449

Table A10 Uses & Investments & New Constructions Regression Results

Source	SS	df	MS	# of Observations	=	144
Model	56682110.4	3	18894036.8	F(3,140)	>	109.48
				Prob > F	=	0.0000
Residual	24160911.3	140	172577.938	R-squared	=	0.7011
				Adjusted R-squared	=	0.6947
Total	80843021.8	143	565335.817	Root MSE		415.43

Table A10 Uses & Investments & New Constructions Correlation Results*

Total Uses	Coefficient	Std. Err	t	P>| t |	95% Conf.	Interval
TotalSources	.0074178	.0485474	0.15	0.879	-.088563	.1033986
Totalfixed	2.034913	.1507448	13.50	0.000	1.736882	2.332944
TotalPrivateNC	-4.995182	.5352283	-9.33	0.000	-6.053358	-3.937007
Constant	839.0348	184.8107	4.54	0.000	473.6542	1204.415

Table A11 S&P and Capital and Labor Regression Results

Source	SS	df	MS	# of Observations	=	144
Model	57333282.3	2	28666641.2	F(3,140)	>	1187.21
				Prob > F	=	0.0000
Residual	3404609.12	141	24146.1639	R-squared	=	0.9439
				Adjusted R-squared	=	0.9432
Total	60737891.4	143	424740.5	Root MSE		155.39

Table A11 S&P and Capital and Labor Correlation Results*

S&P	Coefficient	Std. Err	t	P>| t |	95% Conf.	Interval
TotalFixed	1.236056	.0290841	42.50	0.000	1.178559	1.293553
TotalPrivateEMP	-.0004044	.0004528	-0.89	0.373	-.0012996	.0004908
Constant	-1287.681	66.48668	-19.37	0.000	-1419.12	-1156.241

Table A12 GDP and Capital and Labor Regression Results

Source	SS	df	MS	# of Observations	=	144
Model	821208176	2	410604088	F(3,140)	>	1911.41
				Prob > F	=	0.0000
Residual	30289245.1	141	214817.341	R-squared	=	0.9644
				Adjusted R-squared	=	0.9639
Total	851497422	143	5954527.42	Root MSE		463.48

Table A12 GDP and Capital and Labor Correlation Results*

S&P	Coefficient	Std. Err	t	P>| t |	95% Conf.	Interval
TotalFixed	4.479047	.0867494	51.63	0.000	4.307549	4.650544
TotalPrivateEMP	.0044259	.0013507	3.28	0.001	.0017558	.0070961
Constant	5210.141	198.3103	26.27	0.000	4818.095	5602.187

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Table 2 Model Equations Defined and Estimated

#	Mathematical Models	Models with Parameters
1	$GDP = \alpha C + \beta I + \gamma G + \varepsilon NX$	$GDP = 1.069C + 1.032I + 0.576G + 1.038NX + 460.6587$
2	$Totalprofits = \alpha Dividends + \beta Undistributed + \varepsilon$	$Totalprofits = 0.9999Dividends + 1 \times Undistributed + 0.0751$
3	$Totalfixedinvestment = \alpha structureRES + \beta computer + \gamma industrial + \mu transportation + \theta industrial + \rho transportation + \upsilon residential + \varepsilon$	$Totalfixedinvestment = 1.2981structureRES + 0.3426computer + 1.3611industrial + 1.2441transportation + 2.4048software - 1.3251R\&D + 1.0938residential + 192.64$
4	$TotalprivateEMP = \alpha manufacturingEMP + \beta retailtradeEMP + \gamma \inf EMP + \mu financialEMP + \theta edu\&healthEMP + \rho leisure\&hospitalityEMP + \rho otherprivateEMP + \varepsilon$	$TotalprivateEMP = -71.38694manufacturingEMP - 62.4172retailtradeEMP + 26.77608\inf EMP - 16.14133financialEMP + 29.94584professionalEMP - 46.42225edu\&healthEMP + 89.5113leisure\&hospitalityEMP - 77.299otherEMP + 1540820$
5	$TotalprivateEMP = \alpha GoodsEMP + \beta ServicesEMP + \varepsilon$	$TotalprivateEMP = -6.5886GoodsEMP + 42.4262ServicesEMP - 353570.1$
6	$TotalSources = \alpha InternalSources + \beta TotalExternalSources + \varepsilon$	1) $TotalSources = 0.2908InternalSources + 1.7008TotalExternalSources + 608.81$ 2) $TotalSources = -0.1752InternalSources + -0.4044TotalExternalSources + +0.0011915Internal\&ExternalSources + 1410.096$
7	$TotalSourcesofFunds = \alpha InternalSources + \beta NetFundsRaised + \gamma mortgages + \eta Loans\&ShorttermPaper \ \mu OtherMarketFunds + \varepsilon$	$TotalSourcesofFunds = 0.233357InternalSources - 0.4652252NetFundsRaised + 1.584279mortgages + 1.431664Loans\&ShorttermPaper + 0.7059992OtherMarketFunds + 763.3163$

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8	$TotalUsesofFunds = \alpha CapitalExpenditures + \beta FinancialAssetsHoldings + \varepsilon$	$TotalUsesofFunds = 1\times CapitalExpenditures + 1\times FinancialAssetsHoldings + 1.82e(-12)$
9	$TotalNC = \alpha TotalresidentialNC + \beta LodgingNC + \gamma OfficeNC + \eta CommercialNC + \mu ManufacturingNC + \rho GovNC + \varepsilon$	$TotalNC = 0.9998299 TotalresidentialNC + 0.9938325 LodgingNC + 1.004166 OfficeNC + 1.000868 CommercialNC + 1.000089 ManufacturingNC + 0.9984893 OtherNC + 1.000449 GovNC + 0.0906991$
10	$Uses = \alpha Source + \beta FixedInvestment + \gamma NewConstructions + \varepsilon$	$Uses = 0.0074178 Source + 2.034913 FixedInvestment - 4.995182 NewConstructions + 839.0348$
11	$S\&P500 = \alpha Capital + \beta Labor + \varepsilon$	$S\&P500 = 1.236056 Capital - 0.0004044 Labor - 1287.681$
12	$GDP = \alpha Capital + \beta Labor + \varepsilon$	$GDP = 4.479047 Capital + 0.0044259 Labor + 5210.141$