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Is the Stock Market Overvalued?*

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ABSTRACT

The value of U.S. corporate equities is 1.8 times U.S. gross national income. Some stock market analysts have argued that the market is overvalued at this level. We use standard economic theory and find that the market is correctly valued. In theory, the market value of equity should equal the value of productive assets plus the net value of debt. Since the net value of debt is roughly zero, the market value of equity should be approximately equal to the market value of productive assets. We find that the market value of productive assets is roughly 1.8 GNPs and is therefore in line with the current market value of equity.

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1. Introduction

The value of the stock market relative to income has nearly doubled since 1994. In the first quarter of 2000, the stock market value was 1.8 times the U.S. gross national income, or equivalently gross national product (GNP).[1] This number is high by historical standards. The previous post-World War II peak of the stock market value relative to GNP is 1, which occurred in 1968. For the 1946-1999 period as a whole, the value of all U.S. corporations averaged only 0.67 GNPs, so the current value is two and a half times the average of this historical period.

Is the stock market currently too high? Glassman and Hassett (1999) argue that it is not. In fact, they predict a three-fold increase in the value. But others are concerned that the market at 1.8 GNPs is overvalued. In Congressional testimony, Federal Reserve Chairman Alan Greenspan suggested that there was "irrational exuberance" on the part of market participants. Shiller (2000) reiterates this concern and views a 50 percent drop in the value as plausible. Concern of an overvalued market is fueled by the 1990s in Japan when the value of stocks fell dramatically.

We use standard economic theory and find that a value of 1.8 GNPs is justified. An implication of the theory is that the value of corporate equity should be equal to the value of productive assets in the corporate sector.[2] Productive assets include tangible assets like factories, office buildings, and machines. Productive assets also include intangible assets like patents, accounting systems, and firm-specific human capital. The Bureau of Economic Analysis (BEA) provides estimates of tangible corporate assets that are located in the United States. In the 1990s the estimate is slightly above 1 GNP. The BEA does not provide estimates for tangible assets used by foreign subsidiaries or estimates of intangible capital. We use theory to estimate values of these assets. When we do this, we find that the value of assets used by U.S. corporations is approximately 1.8 GNPs, which is the value of their equity.

To estimate the capital of foreign subsidiaries, we use profits of foreign subsidiaries divided by an estimate of the return on the capital. Our estimate is close to 0.4 GNPs. To estimate intangible capital, we use data on corporate profits and tangible capital, and an estimate of the return on capital used in the corporate sector. We have direct evidence on some of the intangible capital, for example R&D, but we can use indirect evidence on corporate profits to determine the magnitude of all intangible capital. We argue that corporate profits are larger than can be justified with tangible capital alone. If we redo the national accounts with intangible capital included, we can derive formulas that allow us to residually determine the magnitude of this capital. We find that it is roughly .4 GNPs.

Adding together the values of corporate tangible assets located in the United States, assets of foreign subsidiaries, and intangible capital gives us the value of productive assets in the corporate sector. This value is 1.8 GNPs. As theory predicts, the value of the stock market is 1.8 GNPs. Thus, the stock market is correctly valued.

Theory also predicts a low equity premium as we find that average real returns on both stocks and bonds should be roughly 4 percent. These findings depend importantly on assumptions about the financial instruments currently available and the current nature of the U.S. tax system.

The point of our paper is to show that the current stock market value is justified. An issue is why the value of the market was so much lower relative to GNP in the past. This is an interesting question but not one that our model is designed to address. To address it, additional features must be incorporated into the model that we use. These include the nature of the U.S. tax system and financial institutions and how they have changed over time. Adding such features significantly complicates our analysis of the current period but is necessary for anyone interested in the history of U.S. financial markets.