論文の内容の要旨

論文題目　Theory and Measurement on Productivity and Living Standard
(生産性と生活水準に関する理論と測定)

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It is rather well-known that there are large differences in the living standard across countries where the living standard is measured by per capita income. Parente and Prescott (2000) write, “[T]he typical person living in a rich country, such as the United States or Switzerland, is twenty to thirty times richer than the typical person living in a poor country, such as Haiti or Nigeria” (p.1). Moreover, Prescott (2002) reports that there is approximately a 30%–40% difference in the per capita income even among highly developed countries. Even within a politically stable, mature country, the per capita income growth has changed dramatically over time. According to Hayashi and Prescott (2002), the average annual growth rate of the Japanese per capita income, which was 3.6% during the 1980s, dropped to 0.5% during the 1990s. This decline in growth cannot be explained by the end of the catch-up process of the Japanese economy with the U.S. because the average annual growth rate of the U.S. per capita income during that period was 2.6%. What is the cause of the differences in per capita income across countries and the stagnation in per capita income?

One of the main causes of the differences and stagnation in per capita income is aggregate productivity (as is the claim of the above authors): differences in aggregate productivity and a decline in the aggregate productivity growth. Based on this observation, many theoretical models have been proposed to explain the differences and changes in aggregate productivity. In the Parente and Prescott (1999) model, a monopoly right granted to industry insiders prevents the adoption of better technology. Hayashi and Prescott (2008) argue that due to institutional reasons, a barrier to labor mobility was erected between the agricultural and non-agricultural sectors in prewar Japan. Further, Caballero et al. (2008) argue that during the Japanese stagnation of the 1990s, the forbearance lending of banks shifted resources from healthy firms to zombie firms, which in turn dominated the economic sectors. In the Kiyotaki and Moore (1997) model, the differences in the degree of borrowing constraint between firms can shift resources from high productivity firms to low productivity firms. All of these phenomena cause the decline in aggregate productivity. Restuccia and Rogerson (2008) point out that many of the models that explain the difference or change in aggregate productivity, including those mentioned above, can be characterized as the theory of resource misallocation. This theory states that frictions due to various reasons prevent the efficient use of resources, resulting in a low aggregate productivity.

Then, to what extent does resource misallocation affect aggregate productivity and explain its difference across countries? Chapters 2 and 3 deal with these problems. In Chapter 2, I propose a simple accounting framework that measures the effect of resource misallocation on the aggregate productivity from data. This framework is based on a multi-sector general equilibrium model with sector-specific frictions in the form of taxes on sectoral factor inputs. This framework does not need to assume a

specific form of preferences or aggregate production functions. Moreover, this framework is consistent with the framework that is commonly used in productivity analysis. On applying this framework to the data among developed countries, I find that the effect of resource misallocation is quantitatively large and explains on average 25% of the differences in the aggregate productivity among developed countries.

Chapter 3 investigates the applicability limit and possible effects of the resource misallocation theory. In particular, this chapter examines the extent to and the conditions under which resource misallocation negatively affects aggregate productivity. I answer the first question by analytically deriving the minimum aggregate productivity when frictions are modeled as the taxes levied on a firm's output and the range of these taxes is provided. With regard to the second question, I find that the lower limit of the minimum aggregate productivity is the productivity under perfect substitute goods and constant returns to scale technology. Further, except for specific parameter values where the misallocation effect on the aggregate productivity is small, the minimum aggregate productivity is achieved when the proportion of firms in the lowest tax level is small or when the productivity level of these firms is low.

Chapter 4 is different from the above two chapters and develops a new method in the measurement of living standard. Price index plays a critical role for the measurement of per capita real income, which is a widely used measure of living standard. Usually, this price index is defined as being consistent with the static consumption theory (see, e.g., Bureau of Labor Statistics, 2007).

However, real income is not an ideal measure of living standard from the viewpoint of the dynamic household decision problem. If a household is active for more than one period then it should yield utility not just from today's income but also from future incomes. Thus, for a household living for more than a period, real wealth (including both financial and human wealth) is a better indicator of living standard.
As in the case of the real income measurement, the price index of wealth plays a critical role on evaluating the living standard of a household living for more than one period, and should be consistent with the dynamic consumption theory. Alchian and Klein (1973) point out these problems and propose a dynamic version of the price index, the dynamic cost of living index (DCOLI). Motivated by this, many methods for the measurement of DCOLI have been proposed. However, previous studies do not take into account human wealth and are restricted to the log preference. Chapter 4 develops a new measure of DCOLI that resolves these problems and rests with the dynamic household decision problem, and constructs our version of DCOLI from the U.S. data.

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