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論 文 内 容 の 要 旨

The formation and accumulation of human capital is a significant source of the country's wealth and growth. The human capital policy has been implemented to improve the skill formation of its people and promote the country's growth. As human capital is formulated over the life cycle by education and training at home, schools and firms, the policy should be targeted to different stages of individual's life cycle and different subjects that provide education and training. This dissertation mainly analyzes the effect of education at home over a longer period of time, with particular attention to the role of family environment and individual behavioral characteristics.

If the differences in schooling and earnings originate from family income and background, the family origin inequality will perpetuate to the next generation, which may become the vicious cycle of the disadvantage. In other words, children from the most disadvantaged families are most likely to attend the lowest performing schools and to achieve the poorest academic outcomes, which lead to the lowest labor

productivity. It is then very significant to find a way to break the links between education and disadvantage of family background, in order to lessen the social inequality. Thus, this dissertation examines the extent to which family background affects the difference in individual academic and labor market outcomes.

A central premise of this dissertation is that effective policy concerning human capital and labor market outcomes is based on empirically grounded studies of the sources of the problems that the proposed policies address. Based on comprehensive empirical analyses, this dissertation aims to investigate the strategies through which the quality of skills can be improved in order to reduce the inequality stemming from the gaps in academic attainment. The contributions of this study are as follows. First, it uses data from three countries, namely Korea, Japan, and the US, and gives a comparative perspective on the study of determinants for educational outcomes and career success. In particular, the comparative analyses of non-cognitive skills based on the survey data collected using the same method in the same year complement the extant literature that focuses almost exclusively on the case of one particular country. Second, various empirical methods are applied to discuss human capital and labor market outcomes, with properly taking into consideration potential problems derived from the unobserved individual factors, the sample selection bias, and the measurement error.

Dissertation Structure

As one of the important family background factors in an early period of child's development, this dissertation focuses on one of the family background factors in an early period—maternal employment at the time the child is three years old (Chapter 1). Maternal employment affects child's early education in an opposite direction, as it tends to decrease the time allocated to child care. However, at the same time, it can raise the household earned income, which allows for a higher monetary investment in education. The estimation results based on the Korean longitudinal data indicate that maternal employment is positively associated with a child scoring lower in tests, which suggests that additionally earned income may be used for children's education.

To examine the importance of factors operating during the early childhood years in explaining minority-majority gaps in socioeconomic attainment, this dissertation analyzes the effect of age at school entry relative to the peers in the same class (referred to as *relative age*) (Chapter 2). The difference in the level of development of physical and human capital on school entry has been shown to have a statistically significant effect on the educational attainment and its impact is persistent. The analyses conducted in this part of the study are based on the Korean survey data. The results indicate that relatively older female students outperform the younger cohort in academic outcomes.

As a decisive factor in determining socioeconomic success, cognitive skills have been strongly emphasized in many studies. However, it has been found that non-cognitive abilities also affect both the success in the labor market and in schooling. Some recent studies have shown evidence of the importance of non-cognitive skills in explaining the variation in educational attainment, even when cognitive skills are held constant. Thus, given that it is an important determinant of academic and economic success, this dissertation focuses on the role of non-cognitive skills (Chapter 3). Results obtained from the Japanese and the US survey data show that non-cognitive skills influence the schooling, wages, and career promotion even when controlling for a variety of behavioral characteristics in addition to economic variables. Interestingly, educational attainment and occupational success depend on different facets of Big 5 personality traits and the role of personality trait varies between countries and genders.

The gap in educational attainment implicitly leads to the inequality in labor market outcomes, employment status and earnings in particular. Aside from the difference in scholastic ability, behavioral attributes in adolescent periods are also important determinants affecting employment and wage differences. This dissertation examines the effect of temporary employment in the Japanese labor market on employment

transitions focusing on individual time preferences (Chapter 4). Investments in one's career involve a trade-off between immediate costs and later rewards, and thus, individual heterogeneity in time preferences may explain the behavioral patterns of labor force. The results indicate that temporary employees have a tendency toward impatience and time-inconsistent preferences. In addition, those who have held temporary job are less likely to move into full-time job positions; nonetheless, no significant wage differences are observed.

Along with the hypothesis guiding the analyses reported in the previous chapter, whereby human skills are developed at an early stage and persist into adulthood, this dissertation focuses on predetermined ability fixed *in utero*—testosterone-driven attributes associated with success in male-to-male physical competition (Chapter 5). A putative marker of prenatal exposure to testosterone is the second to fourth digit length ratio (2D:4D), which is known to be sexually dimorphic and a negative correlate of athletic performance. The present study investigates the associations of 2D:4D with measures of power as another possible testosterone-associated trait, using ability in sumo wrestling as a proxy for male physical competitiveness. The results suggest presence of significant negative associations between 2D:4D and the athletic prowess of sumo wrestlers. The results of this chapter can be interpreted as another evidence for the positive connection between predetermined, innate ability and skill formation, which are affected by the mother's prenatal environment.

The main aim of these five chapters is to examine the importance of early childhood intervention in education and training and investigate the correlations between (non)-cognitive skills and behavioral characteristics that are largely formed at early age and (un) observed family background. A wide range of analyses examining factors affecting educational and labor market outcomes will lay groundwork for more consistent, reliable and comprehensive studies on education and training. Furthermore, comprehensive empirical researches about the relationship between human capital and the family background will shed light on the nature of, relevance of, and the effect of early interventions on educational and labor market outcomes in the application of policy, which in turn, will contribute to the development of theoretical frameworks that underpin public policy development.

論文審査の結果の要旨

本論文は、人的資本形成と教育・労働市場における成果に関するテーマについて、日本、韓国、米国のマイクロデータを用いた5編の実証分析により構成されている。

第1章では、子供が幼児の時に母親が働いていたことが、その後18歳までの試験の成績にどのような影響を与えるか、という興味深いテーマを韓国のパネルデータを用いて実証している。分析の結果、子供の教育水準が高い場合は、母親が働いていたことが子供の成績に悪影響を与えるが、教育水準が低い場合は、逆に好影響を与えることが明らかになった。これは、教育水準が低いグループでは母親の収入増が成績に与えるプラス効果が、家庭内教育の時間減少が成績に与えるマイナス効果を上回り、教育水準が高いグループでは逆であるためであると解釈している。

第2章では、同一の学年コホートの中での年齢の違い（早生まれか遅生まれか）が、中等教育時の成績に与える影響およびその持続性について、韓国のデータを用いて実証している。親の教育観や選好などの観測できない要因による内生性を考慮したとしても、同一コホートの中での年長であること（遅生まれ）は、中等教育時の成績および大学入学試験の成績にプラスの効果を与えるが、それは様々な理由により女子についてのみみられるという興味深い分析結果を得ている。

第3章では、個人の性格や行動特性、すなわち主要5因子性格（Big Five Personality）および行動特性（リスク回避度、時間割引率、自信過剰度）によって測定される非認知的スキルが、学校における成績および勤労成績の差を説明できるかという点を、日本と米国のマイクロデータを用いて実証している。その結果、非認知的スキルは、行動特性や経済状態などの要因をコントロールしてもなお、教育、賃金および昇進に統計的に有意な影響を与えており、また学校の成績や職業上の成功が異なる性格特性に依存していること、また性格特性の影響が、国によってまた男女の性別によって異なることを明らかにしている。

第4章では、派遣労働の経験がその後の転職に与える影響について、時間選好に焦点を当てて実証分析している。

日本のデータを用いた計量分析の結果、派遣の経験がある労働者は、忍耐力が弱く双曲割引の時間選好を持っていること、その後正規雇用に就く可能性が小さいことなどを明らかにした。日本においては、派遣労働の経験が正規雇用への踏み台としての役割を果たしておらず、ステップアップにつながらないという意味で袋小路のようになっていることを示唆している。

第5章では、独自に収集した142人の大相撲力士の人差し指と薬指の長さの違い（2D:4D）のデータセットを用いて、それが力士の階級や勝率に影響しているか実証分析を行っている。本分析は、肉体的、精神的発達に決定的に重要な役割を果たす胎児期からのテストステロン（ステロイド男性ホルモンの一種）の分泌が、2D:4Dとなって現れるという先行研究の結果に基づいて行われたもので、実証の結果は、各力士の2D:4Dが戦績に関係していることを示しているが、同時に持久力を要するスポーツよりも相撲のような瞬発力・爆発力を要するスポーツにおいてその影響力は相対的にみて小さいことも示唆している。

以上のとおり、本論文は、人的資本形成および労働市場における成果をめぐる5つのテーマに関する極めて興味深い実証分析を行った研究論文で、この分野の先行研究を十分消化したうえで、注意深く構築された仮説を高度な計量経済分析によって検定することにより信頼できる結果を得ており、この分野の研究に新たな知見を加え、重要な学術的貢献をしているものと評価することができる。よって、審査委員会は一致して、この学位請求論文が、博士（国際公共政策）の学位を授与するに十分値するものであると判断する。