

Potentials & Challenges of Remote Work & Remote Education

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Need for Increased Labor Input & Improved Productivity Under Declining Population

From a macroeconomic perspective, as the size of the domestic labor force declines together with a decreasing population, how to maintain labor input, improve productivity and avoid a fall in the economic growth rate is a common challenge for advanced nations. Of course, one tends to long for psychological peace by accepting a contractionary equilibrium due to a low growth rate, but unfortunately it is not acceptable to look away from the harsh reality that the economic power of a resource-poor nation strongly impacts national security. In particular, a 30% decline in population in the next 40 years is officially forecasted in Japan, and it is feared that such a sharp decline in population along with the aging of society will not only be a hinderance to potential economic growth, but may also become a risk to fiscal sustainability (IMF, 2023).¹ In response to such a long-term economic outlook, there have been ongoing positive policy discussions in Japan over the past 10 years to further utilize the elderly and women as a workforce (Cabinet Office, 2014).² The Annual Report on the Japanese Economy and Public Finance, which was published in August this year, consistently mentions measures to promote active participation of women and the elderly who have the will and physical strength (Cabinet Office, 2023).³ It should be noted that there is no official discussion on accepting full-scale immigrant labor, and only a review of the current system on foreign workers is being considered, such as the technical intern training system and specified skill system. Therefore, let us first examine the current situation on the increase in labor input of the elderly and women and the potential for improved productivity.

Increase in Labor Input, Source of Improved Productivity & Other Challenges

First, on the elderly population, not only can they contribute to labor input, but they are thought to contribute to improving productivity by offering their experiences and intangible skills that are difficult to pass on. The manufacturing industry is polarized between large corporations that are utilizing robot arms, for example, to pursue labor saving by automating advanced technologies that have thus far been attributed to individuals called *takumi no waza* (craftsmanship), and small and medium-sized enterprises which are abandoning succession of their businesses. In the non-

manufacturing industry also, intangible skills may exist within the industry or within the company, and if increased employment of the elderly population will allow the passing on of skills or transmission to other industries, then a contribution to improved productivity can be expected.

On the other hand, there may be cases where reskilling is necessary in order to respond to technological advancements. Moreover, the emergence of new technologies that support declining physical strength and cognitive abilities due to aging will be further required to expand the scope of activities for the elderly in the labor market. Technologies that complement physical strength have already been incorporated into society in the form of operational support such as robot suits and serving robots. Complementing cognitive abilities is also expected to accelerate with utilization of general-purpose AI. Automatic driving will still require more time in securing safety, but once it becomes common, it will be an important technological innovation in an aging society. Both are not only improvements in productivity through labor reduction in the form of labor substitution, but also examples of technological innovation aimed at complementing human capital in the form of lowering the threshold of the level of workers' skills. Proximate discussion will also hold true for workers with disabilities.

Lastly, it is most important to extend the health expectancy of the elderly. If work can be continued without stress in healthy everyday lives, maintaining social connectivity will become easier and it can be expected to serve as measures against solitude. To this effect, technological innovation in the health sector becomes important. In other words, for further labor participation of the elderly, while support from a systematic aspect is important, such as correcting the inflexibility of the labor market and achieving labor contracts depending on individual labor productivity and preferences, what is considered to be of basic importance are various technological innovations.

Let us move to the main topic. For the female labor force, there are still many cases of women in Japan whose careers are discontinued after giving birth, while companies and the government strongly expect them to contribute to labor input through continued employment of women after they give birth as well as pursuing full-time employment. In particular, the potential for contributions is thought to be great for improved productivity by utilizing women's advanced skills. According to the labor survey published by the Statistics Bureau of the Ministry of Internal Affairs and

Communications, the female workforce population and the number of female employees has been on an increasing trend in the past 10 years, but its growth rate has been slowing (Statistics Bureau of the Ministry of Internal Affairs and Communications, 2022).⁴ Whether the growing trend will recover in the future with the end of the coronavirus pandemic remains to be seen. While expectations are growing in the business sector and among policy makers, concerns raised by Japanese women from families with small children and the younger generation can be aggregated largely into two points.

First, married women with small children feel strong pressure to have a balance between their role in the household and labor market. Japanese women, who tend to take on all care work within the household (house work, raising children, caring for the elderly) based on the traditional division of labor by gender role, will fall into a situation where they are basically taking on double work and triple work when they begin full-time employment. On the other hand, many unmarried women feel great anxieties over the trade-off between giving birth and formulating a career, and some fear discrimination against women in the workplace while they are still enrolled at universities and graduate schools. This fear has driven some to restrict their work, while others restricted giving birth. In fact, with Claudia Goldin who won the Nobel Economics Prize in 2023 at the top of the list, it has been revealed by data from various countries that many of the wage gaps between men and women of the same educational level and in the same job can be explained by a halt in careers due to giving birth to the first child (Goldin, Kerr, Olivetti, 2021 et al.).⁵ This is called the motherhood penalty, and it has not been resolved even in countries with less gender gaps. This section will focus on hindrances to the increased labor supply of women, and discuss potentials and challenges of remote work and remote education which may serve as the solution.

Labor Supply of Women & Its Dilemma: Japanese-Style Labor Practice & Traditional Gender Norms

On the issue of the labor supply of Japanese women, an international comparison using PIAAC (Programme for the International Assessment of Adult Competencies) data has revealed that the “utilization level” of skills explains the wage gap between men and women in Japan, according to Daiji Kawaguchi and Takahiro Toriyabe (2022).⁶ Of course, there is the issue of contributions to the economy and society through domestic care work not being reflected if a comparison between labor wages is used. However, there are a certain number of women of the younger generation who seek an active place in the labor market having accumulated human capital through higher education. Many of these women are greatly tormented between their high sense of responsibility towards domestic care work and professional work. For example, women working in Japanese companies decline management positions as a consequence of a rational determination based on a practical prediction that balancing long working hours,

which is a Japanese-style labor practice, and domestic care work is impossible. In other words, there is the very simple truth behind this that what men cannot balance in reality, women cannot balance simply by replacing the gender. Thus, the challenges can be aggregated to two points: the Japanese-style labor practice of long working hours and the burden of domestic care work.

Potential for Remote Work: Increase of Labor Supply of Women

Under such current conditions, expanding remote work is expected to perhaps promote the labor supply of women. One of the reasons is if remote work becomes more common, commuting time can be saved. Research which uses the methodology of spatial economics has indicated that commuting time is a big hurdle to full-time employment, especially for married women with small children. According to Mizuki Kawabata and Yukiko Abe (2018)⁷, spatial data analysis using metropolitan area data has shown that there is a significant statistical correlation (negative correlation) between the length of commuting time and the low labor participation rate and low full-time employment rate of married mothers. In contrast, there is very little correlation for unmarried women and married women with no children.

To begin with, the tendency for men and women having strikingly differing preferences for commuting time is not a unique phenomenon to Japan since there is research using data from New York and other cities (Black, Kolesnikova, and Taylor, 2014).⁸ However, there is a need to take into account the current reality in Japan that women are basically the sole bearers of domestic care work coupled with husbands working long hours. First of all, for women in the urban area with pre-school children, securing daycare facilities for their children is still very challenging, and they are unable to leave their children in a location of their choice (the hidden issue of children on childcare waiting lists). With long commuting time added to this, women naturally turn to the choice of abandoning employment itself, citing limitations in physical strength and time as the reason, or refraining from full-time employment altogether. Instead of jobs in metropolitan areas that match the inherent skills of these women, labor supply choices are made under restrictions, where women restrict their commuting time and the time and effort required for child care.

But if commuting time can be saved with the expansion of remote work, there is room for an increase in the number of married mothers who match jobs appropriate for advanced skills. Further, if men were to also enjoy the benefits of expanded remote work, since shortened commuting times will be reflected in longer leisure hours with the family and house chores, a secondary effect may be expected where communication within the household increases and stress is mitigated, thereby increasing the birth rate in a natural setting. The more important point here is, it is not hard to imagine that it will have a positive impact on enhanced expectations for

unmarried people meeting each other and then building families.

Second, the potential for remote work is also important in that it will lead to improvements in living conditions as choices for location of residence expand. Employment opportunities in Japan are overconcentrated in Tokyo, where the younger generation concentrate for employment opportunities. Living expenses in the Tokyo metropolitan area have thus soared and living conditions are far from good. But with remote work becoming available for a wide range of jobs, choosing locations based on both work and living can be separated to a certain extent. This will allow for choosing a more reasonable and better living environment on the one hand, and also for engagement in a profession that takes pride in its high productivity without giving that up. This is also important in the sense of securing a good childcare environment. This is because living conditions and their costs are of high importance in child care, along with the education environment. Thus, there is a possibility that remote work will see the end of the negative correlation between female employment and full-time work in a childcare environment.

Let us think back to the concerns raised by Japanese women of the parenting generation and the younger generation, and consider the impact of remote work. I have a friend of the same generation who is considering going back to work once her youngest child enters primary school. The child is still not completely independent, but continuing to be a housewife will prolong her period without occupation and will leave a sense of anxiety in going back to work. If there is a workplace that allows remote work, the pressure to go back to full-scale full-time employment will be alleviated.

On the other hand, what about students at university who are considering their future careers and life plans? There are many female college students who become conscious of a work-life balance through their job search activities. If there are many workplaces that offer the choice of remote work by utilizing one's skills and interests, concerns about continued labor supply could be resolved. It is expected that by choosing a workplace that enables a work-life balance, higher productivity can be achieved by matching to a suitable job that will fully utilize their skills.

The discussion so far has been from the perspective of expanding the female labor supply and remote work, but as one can imagine, this is not a benefit that can be enjoyed just by women. There are a variety of subjects whose connection with economic conditions and society will improve with remote work being available regardless of gender, age, and disabilities. Of course, there are job types that are not fit for remote work, and moreover, improvements seen in productivity via in-person gatherings for creative job types have been reevaluated after the coronavirus pandemic. But if digitalization proceeds in other job types and processes, as well as expansion of remote work, the needs of both women, who hope for employment and full-time work, and of corporations facing a shortage of human resources will be met.

Challenges of Remote Work: Gender Norms

The coronavirus pandemic produced a unique situation in which many workers in Japan switched to remote work all at once with the State of Emergency declaration. At that time, results from data analysis have shed light on the burden of domestic care work being skewed to married women compared to married men (Sugano, 2021).⁹ In circumstances where men and women were both allowed to work remotely all at once, what was prioritized was the continuation of the employment of husbands and their remote work. To begin with, while the burden of domestic care work has traditionally been biased towards married women in Japan, under normal circumstances, there was public childcare support such as day care and schools. While it was a unique situation when these were shut down, data analysis has made it clear that married mothers with small children were the ones to choose restrictions on employment (Fukai et al., 2023).¹⁰ While there was some degree of differences, similar tendencies were observed around the world. These results suggest that just because workstyles may change as remote work increases, one cannot be too optimistic that this will directly lead to expansion of the labor supply of women. If expansion of remote work is a necessary condition for married women's careers not to be discontinued with childbirth and to avoid their prolonged unemployment, what are the sufficient conditions?

One issue that should be raised is that the gender norm, hitherto respected in Japan, of a traditional gender role-based division of labor is no longer suitable in an age of technological advancement and changes in the labor market. First, there is a need to acknowledge the fact that the one-person service of domestic care work for which Japanese housewives bore the burden during the high economic growth period is impossible to balance with labor for most human beings. Next there is a need to reduce the amount of total domestic care work and lower the expectation of quality. On top of that is the need to share these domestic chores within the household between husband and wife, or use outside contract services. Not all households need to uniformly follow the same social norms, but it is highly likely that this will become the optimal solution for the majority of households.

Of course, this is a grand scenario of changing the social norms, but field experiments conducted in countries like India have shown that impactful interventions do exist (Dhar, Jain, and Jayachandran, 2022).¹¹ But to what extent this leads to a final change in behavior, or to the issue of declining birth rates, will require further verification. The faint hope is a positive impact of revision on the childcare leave system (extension) for men on time spent on domestic work and child care, as was reported in Canada and which Shintaro Yamaguchi (2019)¹² introduces in his book. Meanwhile, double-income has become a common trend for the younger generation in Japan. Even if it was a passive choice based on economic reasons, couples choosing the solution to share domestic care work by cooperating with one another for the happiness of the family will likely grow in

number. What is most important here is for older people to not throw cold water on their rational choices, and to respect their will. There is also a need to completely modify the policies by aligning with the new norms of the younger generation. We should be aware that the successful experiences of the Showa and Heisei eras are now a relic of the past.

Potential of Remote Education: Optimization Through EdTech

In addition to the living environment, what is important in raising children is the educational environment. Specifically, it is thought that a major hindrance to relocating to the suburbs or the countryside is concern over the quality of education. Remote education has the potential to raise the quality of education in non-metropolitan areas to a higher standard. If concerns about the quality of education are alleviated, improvements in lifestyles can be expected with living in a better environment in the suburbs or the countryside, with mothers being employed with remote work if they wish, and with fathers having more leisure time.

Technological advancement which supports the expansion of remote work is also contributing to the expansion of remote education. By chance, it has become apparent under the coronavirus pandemic that technology which connects teachers and tutors who supply education, and pupils and students on the demand side through high-speed low-cost Internet connection has become a reality. Universities around the world in particular made the decision to be fully remote out of necessity, and not only were lecture videos streamed, real-time remote education was achieved utilizing Zoom and Teams. Prior to this also, Japan had been seeing an expansion in offerings of lecture videos by charismatic instructors around private educational institutions such as preparatory schools, and utilization of digital educational materials such as tablets and smartphone apps. These are firmly supported by households as a method that allows access to education of the same quality as in the central metropolitan area even when living in the countryside.

Knowledge of education in the economics field has revealed, through stacks of research using field experiments, that "Teaching at the Right Level" is effective in learning (Banerjee et al., 2007,¹³ 2016;¹⁴ Duflo et al., 2011¹⁵; Muralid-haran et al., 2019).¹⁶ Teaching at the Right Level is a general term used for various topics from dividing students into different classes based on their level of understanding, to finely optimizing the level of seminars and their contents based on AI. For reference, in a study I was a part of in Bangladesh, it was revealed that Learning at the Right Level improved the learning and self-esteem of children (Sawada et al., 2023).¹⁷ It should be noted, however, that these studies were mainly based on the results of experiments in developing countries, and the background of the study was that this emerged as a potential solution to the serious issue of deficiencies in the level of understanding and learning among primary school pupils when they

leave school. In developing countries, from the perspective of access to the Internet and procuring, storing and providing coaching on equipment, there are some regions with limitations to using digital learning materials, and therefore Teaching at the Right Level and learning do not necessarily denote remote education.

On the other hand, in order to achieve Teaching at the Right Level, what is gaining focus in emerging countries and developed countries is EdTech. The definition of EdTech is not fixed, but various technologies have emerged that autoregulate according to the level of understanding and the speed of learning of the students by making use of AI technology. These are considered to be new technologies that work to overcome the differences in the quality of teachers. In addition, it is thought that once it has become established after initial introduction, it will work towards labor reduction. In other words, it is expected that the education burden of teachers will go down and they will play a complementary role by concentrating more on interpersonal support. If the quality of public education goes up, education can be made possible without accruing enormous costs to the public purse. In the Asian region where university entrance examinations carry huge weight, it may not be possible to swiftly improve the huge investment by households in private education, but trying to alleviate the burden of education expenses on households raising children by covering public education with taxes and government bonds is also extremely important from the perspective of resolving the population issue.

Challenges of Remote Education: Digital Divide Between Teachers & Caregivers

It should be noted along with recent research findings that promoting remote education alone will not improve the learning of students without causing educational disparities. As with the challenges of remote work, it came to light in Japan during the coronavirus pandemic that there are disparities among the IT skills of teachers (digital divide), which then caused disparities in responses to remote education between regions and schools (Akabayashi, Taguchi, and Zvedelikova, 2023).¹⁸ What was especially concerning was that the weaker the IT skills of the teacher, the more they were forced to work longer hours. This indicates that introduction of new technology requires support on the teachers' side.

Another point is not limited to remote education, but from the perspective of diminishing education disparities when employing new technologies, support for families is also important. Education is important in improving the quality of future workers as well as the quality of their lives. On the other hand, children from low-income families or with first generation immigrant parents with limited Japanese language skills are likely not able to fully receive support within the family. With the current school system in Japan and the human resource allocation, combined with the working hours of the caregivers and the issue of the language environment,

communication may be hindered. In order to fully utilize remote education and EdTech that schools introduce, whether information can be passed on accurately to children as well as to caregivers, and also whether the differences in the IT skills of caregivers can be supported, are issues that will need to be addressed. If aiming for an inclusive society is the first step to a stable society, I believe there is a need to be reminded that just focusing on the school system is not enough for effective education.

Policy Recommendation

With the aim of raising labor input and productivity, the promotion of remote work for women, whose potential skills have not been fully utilized, should now be a standard practice. At the same time, unless workstyle reforms for men and gender norms are simultaneously updated, this goal will remain far off. Thus, there is no fundamental solution other than to improve Japanese labor practices and alleviate the burden of care work within the family. On education, expansion of Teaching at the Right Level utilizing EdTech should be pursued, and in addition, support is required to improve the digital divide between school teachers. In parallel, for children from low-income families or of first generation immigrant parents, especially those who are likely not able to receive full technical support within the family, there is a need to ensure that education disparities are avoided. Social inclusivity is important when new policies are introduced because education is a public good. Especially in an era when the labor market changes greatly through technological innovation such as AI, there is a need to formulate necessary policy interventions with the aim of transiting to a social equilibrium that market mechanisms alone cannot achieve.

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