

WIL as Human Capital Investment; an economic analysis

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According to Nobel laureate Gary Becker, education is investment to ourselves, which raises one's productivity and thus the remuneration. Better known as Human Capital Theory, this concept describes its mechanism within the framework of economic analysis. The investment in human capital does continue after graduation in the form of On-the-job Training, generating upward-sloping wage profile. Work-integrated-learning positions itself between education and OJT, being more practical than the former and the more academic than the latter. Yet, among the literature on human capital theory, there is hardly a paper that explicitly deals with WIL. At the same time, among the coop-education and WIL literature, it is difficult to find papers on the theoretical analysis of WIL. As they are the two sides of the same coin, integrating these approaches no doubt benefits the both sides.

Alongside the theoretical issue, there is a practical need to explain a rather reluctant attitude towards WIL in few countries such as Japan, which is somewhat puzzling midst its global popularity. The attempt is made to explain theoretically why it is not popular instead of calling for the cultural uniqueness of the country.

This theoretical paper attempts to elaborate WIL within the framework of labour economics as investment in human capital alongside education and OJT. After briefly introducing the economic analysis of education and OJT and their implications, we try to answer questions such as; What are the main functions of WIL? What sort of skills WIL should teach: general or firm-specific? Who pays for WIL? Is WIL a substitute for or a complement of education and OJT? Referring to the actual WIL programmes in West and in Japan, the paper concludes with an attempt to seek the best form of collaboration among the participants of WIL, i.e. students (employees), educational institutions and employers.

1. Introduction

2. Human capital theory: Education & OJT

- (1) Education as an investment
- (2) On-the-job Training

3. WIL: More than education and less than OJT?

- (1) WIL as education
- (2) WIL as OJT

4. Applications:

- (1) Why WIL
- (2) Why isn't WIL popular in Japan?

5. Conclusion: Towards a new style of WIL

1 Introduction

According to Nobel laureate Gary Becker, education is investment to ourselves, which raises one's productivity and thus the remuneration. Better known as Human Capital Theory, this concept describes its mechanism within the framework of economic analysis. (See Becker (1974)) Empirically this is known to generate distinct wage profiles for different educational credentials. The investment in human capital does continue in employment after graduation in the form of On-the-job Training, generating upward-sloping productivity curve, which in turn would generate upward-sloping wage profile.⁽¹⁾

Work-integrated-learning positions itself between education and OJT, being more practical than the former and the more academic than the latter. Yet, among the literature on human capital theory, there is hardly a paper that explicitly deals with WIL. At the same time, among the coop-education and WIL literature, it is difficult to find papers on the theoretical analysis of WIL. As they are the two sides of the same coin, integrating these approaches no doubt benefits the both sides.

This theoretical paper attempts to elaborate WIL within the framework of labour economics as investment in human capital alongside education and OJT as follows. Section 2 introduces the orthodox economic analyses of education and OJT and their implications. This is followed in Section 3 by attempts to fit WIL into this human capital framework, in order to answer questions such as; What are the main functions of WIL, What sort of skills WIL should teach: general or firm-specific, Who pays for WIL? Is WIL a substitute for or a complement of education and OJT? In Section 4, we apply the economic theory to analyse the actual WIL programmes and a particular attention is drawn to the Japanese case, where WILs are not as popular as in the rest of the world. Section 5 concludes the paper with an attempt to seek the best form of collaboration among the participants of WIL, i.e. students (employees), educational institutions and employers.

2 Human capital theory: Education & OJT

(1) Education as an investment

According to the theory, one would pay for the education up to the point where the present value of the costs equate to the present value of the stream of income generated by the educational achievement. Take university education, for example; the costs consist of the actual costs such as tuition fees and the opportunity costs such as a stream of income of a high school leaver which a university graduate had to give up. Empirical studies are available to prove the validity of the educational investment. The

Mincerian wage function determines the annual rate of return to education by regressing the years of education to annual earnings. (Mincer (1974)) Or an internal rate of return, a familiar concept in investment literature, may be derived for the case of education by equating present values of costs and benefits of education. The internal rate of return to education usually falls between 5 to 10 %, being greater than that of typical financial investment. (See, for example, Sveinbjorn et.al (2002)) However, many question the meaning of such economic returns to education. Indeed, an R^2 value to check the fitness of a Mincerian wage equation tends to be quite low, suggesting that education does not play the main role in determining one's future earnings. However, an existence of various types of educational loans must mean that individuals as well as governments recognize the economic merit of education.

The educational credential is also known to act as a signalling device, since the future employee's productivity is not revealed before the employment takes place. (See, for example, Spence (1973)) It is a proof of his/her ability at workplace. The empirical difficulty, however, is to verify whether education raises productivity as in the human capital theory or reveals it as in the signalling theory, since in either case education is likely to raise earnings. Still, it is probably safe to say that it has the both elements.

(2) On-the-job Training

By and large everyone faces an initial period of difficulty when he/she starts working, which will gradually sooth away, and then the wage will eventually start rising. This suggests "there are certain skills you can only learn at workplace so that the longer you work the more productive you become," and this is the idea of "On-the-job Training" or "Learning-by-doing." Becker (1964) divided OJT into two types: general training and firm-specific training. General training is a training of skills which can be used in any firm and therefore the trained worker can raise his/her productivity in any firm, while firm-specific training cannot raise the worker's productivity other than in the training firm.

This argument raises an issue about the incidence of OJT costs. The basic idea is as follows. If OJT is general then the worker can use the skill wherever he/she goes and thus it is worthwhile for the worker to pay for it --- on the contrary, the training firm will not be able to recover the investment if the worker decides to leave and so there is no merit in paying for it. If, on the other hand, OJT is specific then it will not be in the interest of the worker to pay for it as this OJT does not affect his/her productivity anywhere else and thus it would be the firm to pay for the training. This distinction, however, is a highly theoretical one and in reality any OJT is likely to be a combination of both elements. ⁽²⁾

2 WIL: More than education and less than OJT?

Work Integrated Learning refers to a range of concepts in study-work collaboration. For the purpose of our discussion, we define WIL as a programme consisting of three stages; pre-work placement lectures, work placement, and post-work placement lectures, through which a student receives guidance from his/her educational institution as well as the work placement firm.

(1) WIL as education

So how can we fit WIL in the framework of economic analysis? First, consider its educational aspect. Higher education programmes with WIL require more time, typically a year more, to complete the career. This means an increase of direct as well as opportunity costs --- i.e. university fees and foregone earnings.⁽³⁾ And one would expect some increase in the future earnings because of this further human investment.

It was pointed out that education acts also as a signalling device, for the students to show what he/she can do once employed. Working at the firm as a part of WIL while one is a student is obviously a better signalling device than the educational credential, as he/she deals with task similar to what would be required once employed. The only problem is, however, a number of work placement experiences is limited --- typically in one or two firms.

(2) WIL as OJT

Second, consider the OJT aspect of WIL. As explained earlier this learning-by-doing is an important part of work. But what is actually learned here? Is it general or firm-specific skill? One way to see this is to check who pays for the training. The usual practice is that the trainees are paid somewhat below what a wage of a graduate. This suggests that OJT is general in its nature. It may sound somewhat odd that WIL has a long and established history among engineering careers, where the required skills seem more specific than general. One explanation would be what is taught at WIL is a general, or more commonly known as generic, skill which is needed to perform the specific tasks.

To sum up, WIL acts as human capital investment in education by sacrificing about a year of working life and as a signalling device to show one's productive capacity at work, as well as OJT in general skills.

3 Applications:

(1) Why does WIL exist?

The previous section explained the economic functions of WIL. But we still need to

justify its existence --- namely, why is not the combination of education and OJT sufficient for supplying appropriate labour force? Ideally, a future worker would learn theory at university and get practice at work. The merging of the theory and practice was done through OJT by using his/her own generic skills. The educational credential was used as a signal for the firms to find out who have these generic skills. ⁽⁴⁾

All these have changed with an increasing demand for higher education and the consequential changes in the quality and quantity of labour supply in recent decades. For example, the university enrolment rate for both male and female in Japan has more than doubled from 23.6% in 1970 to 51.5% in 2005 according to the Ministry of Education. At the same time, the demand for labour also has changed qualitatively --- with the shift towards service industry, more general business skills are required. For example, the percentage of labour force in tertiary industry has risen from 47% in 1970 to 65% in 2000 according to the Ministry of Internal Affairs and communications. Thus the primary purpose of higher education is no longer to supply social and business leaders but to supply general labour force with high quality. And this means education serves to equip them with employability and generic skills, which were considered to be the graduate's natural qualities in the past. With this scenario, education needs to be supplemented by activities such as WIL to acquire employability and generic skills.

More and fierce competitions for university entry have also changed the way people respond to educational credentials. Getting into university is a goal for itself, for which a student needs academic competence and not employability and generic skills. This is a much too familiar scenario in Far Eastern countries such as Japan, Korea and now China. As a result, the educational credential may not be the right signalling device for employment and generic skills. Instead, firms find it more effective to monitor the students at their own places in the form of WIL.

As WIL's role of OJT, consider its merits to firms. The firms receiving WIL students often comment that the merits of having WIL students are three-fold: (1) they bring to the firm fresh and different ideas, (2) their lower salaries help reducing labour costs, and (3) they can be potential employees in future. While the third merit has been discussed above in relation to signalling, the first two are concerned with OJT costs. Bringing new ideas may be thought of as OJT to the existing workers given costlessly instead of costly Off-the-job training. Paying of lower salaries is possible because it is general training. Besides, if this was offered to a new employee, it might be difficult to "charge" the employee, since the wage net of training cost might fall below the minimum wage. Thus WIL is an effective way to cut labour costs.

In sum, WIL is a useful and necessary system for smooth operations of job matching

as well as development, alongside education and OJT.

(2) Why isn't WIL popular in Japan?

In the developed world even compared with other Asian countries, WIL is almost uniquely unpopular in Japan. A typical WIL in Japan would last for mere two weeks without any payment to the trainee student. While it is easy to reason it with her cultural uniqueness, is there economic rationale behind this? One explanation is that many Japanese firms are characterized by Internal Labour Market. (See Doeringer and Piore (1971)) One of the main features of ILM is lifetime employment, and a newly employed worker would start at the "port of entry" and receive "promotions" along a "job ladder" with the wage rising with age by "job ranking" until the mandatory retirement, which is in Japanese case sixty years old in the majority of firms.⁽⁵⁾ The generic skills can be taught on OJT because the lifetime employment means the firm can have workers lifetime to teach and recover the cost of OJT unlike a student on WIL for a year.

Then the question is, "Why does a Japanese employee stick to one company?" According to the government figure, Japanese employees tend to stay in one company more years than their Western counterpart.⁽⁶⁾ Apart from the paternalism of Japanese firms, the insufficient government support for those out of work e.g. unemployment benefit, may contribute to this situation.

Finally, signalling by WIL may not be necessary, as firms have extensive OJT programmes, and academic programmes at universities are less theoretical than in other countries so that the credentials act to signal the generic skills.

5 Conclusion: Towards a new form of WIL

There is no doubt that the demand for higher education continues to grow globally. Yet firms are facing more business uncertainties with Japan as no exception and thus reluctant to offer extensive OJT. This generates even greater skill gap between what firms look for and what graduates can offer. And the role of the educators is to close this growing gap using more extensive WIL.

As explained earlier, the realization of return to educational investment is a long term process and it is not simple to quantify the outcome, which often results in underinvestment --- this is one of the reasons why free education exists particularly at primary and secondary education with governmental supports. As for OJT, not knowing who benefits from it, there is also a tendency of underinvestment. To the extent that WIL is a combination of education and OJT, it does face the same problem. In other words, more investment on WIL will raise the social optimum --- it would benefit not only the students through higher wages, but firms through higher productivity and

educational institutions through more educational activities, and most of all society as a whole.

I conclude my argument by proposing two policies. First, students, firms and educational institutions are entitled to receive and thus should demand financial support from the government, as it benefits the society at large --- it could be in the form of subsidizing students, universities, or firms. Second, WIL should be structured to responds to the need of the society at large by emphasizing generic skills rather than concentrating on somewhat business or engineering-oriented hard skills, encouraging all academic disciplines to participate in WIL.

(Footnotes)

(1) This is true, however, on the condition that workers are paid according to their productivities --- it is also argued that upward-sloping wage profile is the company's effort to keep workers for a long enough period to recover the human investment on them.

(2) Furthermore, between general and firm-specific skills, there is transferable skill, which is applicable within the same type of jobs. (See Stevens (1994))

(3) In many cases, these costs are covered by reduced tuition fees as well as by internship salaries.

(4) Of course, certain vocational programmes have always been in existence but the popularity is much grown recently.

(5) According to the Ministry of Welfare, Health and Labour, 86.6% of firms with a mandatory retirement system set the age at sixty in 2007.

(6) According to the Cabinet Office' 2006 report, the number of consecutive years in the same company is 12.0 years compared with 6.6 years of USA, 8.0 years of UK and 10.6 years of EU average, and the proportion of employees in the same company for more than 10 years is 47% compared with 26.2% of USA, 32.1% of UK and 41.5% of EU average.

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