Formal Education Versus Learning-by-Doing

1. Introduction

Presentation
- During the past few decades, more and more individuals have chosen to reinforce their effort in formal education. Mincer (1962) shows that educational choices are perfectly efficient in the absence of on-the-job training. Firms have to pay for the cost of creating jobs that are in high demand. Therefore, the question is whether or not subsidies to education would be beneficial.

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- However, because sectors interact, the optimal value of tightness is smaller than the decentralized equilibrium value. In the absence of a reward, the return to education (the opportunity to get a better-paying job) would be too weak thus leading to a reduction in formal education. The recent trend towards longer education is restored (despite the tax).

2. Analytical Framework

A hierarchical search-matching model
- Sector 1 offers low-skill, better-paying jobs to educated/trained workers.
- One E.T.S. matching function for each sector.

Figure: Workplace.squareups

Formal Education

Career path of a worker entering the labor market
- Decides on her formal education effort
- If she is PASS: Enters the pool of applicants for low-skill jobs, then she searches for a sector-2 job (p_2(x_2))
- She learns by doing and becomes trained (x_2)
- If she is SUCCESSED: Enters the pool of applicants for high-skill jobs, then she searches for a sector-1 job (p_1(x_1))
- She learns by doing and becomes trained (x_1)
- Keeps her sector-1 job and she permanently leaves the market (y = 0)

Low-skill workers

State 2 employment

Trained workers

High-skill workers

State 1 employment

3. Decentralized Equilibrium

Sector 1
- Private Surplus S_1 of a match
- Private Surplus of a match with a trained worker

Equilibrium equation

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Optimal policy in sector 1
- Determined by maximizing (\theta): \pi_S = \theta - \alpha_1 \sigma_1' (\pi_1 + \pi_2)

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4. Efficiency

The efficiency criterion, the social surplus, S, is set by a social planner (Hosios (1992), Plassard (2000)). (\alpha_1) measures the cost of formal education, under the Hosios condition:

High-skill job creation
- Sign of the derivative of the surplus \pi_S with respect to \pi_1:

5. Optimal Public Policy

The laissez-faire education is not an optimum. A well-financed Taxes and Subsidies Policy (TSP) can decentralize the social optimum.

Taxes Sector 1
- By comparison between (1) and the optimal condition (5), a tax \lambda would restore the sector efficiency if it is equal to:

Subsidizing Sector 2
- \tau_2 is allocated to sector 2 firms when a worker quits her low-skill job:

Subsidizing Sector 1
- \tau_1 is allocated to sector 1 firms when a worker quits her low-skill job:

Rewarding Educational Success
- \tau_2 is allocated to (contract) workers whose educational effort is successful:

6. Conclusion

Workers do not choose the right amount of formal education when faced with this tradeoff.
- Low-skill job creation and educational choices are partially efficient.
- The social optimum is inefficient (too high) due to a hold-up mechanism created by high-skill firms.
- A well-financed Tax and Subsidy Policy restores the market efficiency.
- A tax is levied in high-skill firms.
- A compensatory transfer to subsidize low-skill jobs (the worker of which quits).
- A compensatory transfer, a reward aiming at encouraging educational effort.
- Subsidizing formal education can be rationalized without credit constraints.

At first glance, the idea of rewarding educational success might look counterintuitive as one could point out that educational effort is lower in a social optimum. The reason for this is that without subsidies, private educational choices are no longer efficient for the optimum value of tightness \pi_1 (computed with the tax \tau) which is smaller than the decentralized equilibrium value. In the absence of a reward, the return to education (the opportunity to get a better-paying job) would be too weak thus leading to a reduction in formal education. The recent trend towards longer education is restored (despite the tax).

The efficient educational effort is restored.