# Labor productivity and school reform in Kazakhstan

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***Abstract:*** *By specializing, workers can boost economic growth. But they could be hindered by high coordination costs, which discourage firms from screening, and by low production of knowledge, due to low incentives for learning.*

***Keywords***: *education, shirking, division of labor, specialization, screening*

## Introduction

Adam Smith (1776) in his magnum opus*, The wealth of nations,* states that “the greatest improvement in the productive powers of labor, and the greater part of the skill, dexterity, and judgment with which it is anywhere directed or applied, seem to have been the effects of the division of labor.” How important is the division of labor (known today as “specialization”) to economic growth in Kazakhstan?

Borland and Yang (1991, p. 475) developed a formal version of the proposition, from Smith (1776) and Allyn Young (1928, p. 539), that increases in the division of labor will raise the rate of economic growth as long as specialization has evolved sufficiently and can continue. This in turn depends on transaction efficiency, which is affected by government policies, institutional arrangements and urbanization (Borland and Yang, 1991, p. 478). Becker and Murphy (1994, p. 1138) propose that specialization is limited not solely by the extent of the market but by costs of coordinating specialized workers.

As human capital grows, teams get larger and workers become expert over a smaller range of skills (p. 1146).

In Kazakhstan, production of knowledge is weakened by insufficient incentives, due to a sluggish labor market, and by needlessly high transaction costs, which slow evolution of the division of labor.

## Forces that affect the division of labor

The increasing returns from concentrating on a narrow set of tasks raise the productivity of a specialist above that of a jack-of-all-trades. Workers divide the production process into specialized parts that each performs herself. The final good emerges from the team. Members must cooperate, so transaction costs are inevitable.

Becker and Murphy (1994) illustrate coordination costs: “If each historian specialized in the events of only a few years, they would become more expert on developments during these shorter time periods. But since events over a few years are not isolated from those in prior and subsequent years, each one would then have to coordinate his research with that of several other specialists” (p. 1143).

Throttling entrepreneurship, and weakening market capacity to coordinate transactions, will lower specialization in centrally planned economies (Becker and Murphy, 1994, p. 1144). The comment is crucial since post-Soviet Kazakhstan has retained a needlessly large role of the state. Further, since teams may include workers in different firms, coordination costs also depend on market efficiency, contract

enforcement, trust among workers, and stable and effective laws (pp. 1141, 1157). Formal and informal institutions become indispensable.

Kazakhstan’s weakness is its inability to assist division of labor, exacerbated by needlessly high transaction costs (imposed by, for example, red tape or distrust among firms). Becker and Murphy (1994) argue that companies are less vertically integrated when it is cheaper to coordinate specialized team members through market transactions. To cut transaction costs, firms locate near each other and specialize (p. 1144).

Infrastructure facilitates communication between firms, reducing coordination costs.

## Knowledge and specialization

Greater knowledge raises the benefits from specialization and thus raises the optimal division of labor. Increased specialization in turn increases benefits from investments in knowledge, allowing an economy to continue to develop (Becker and Murphy, 1994, p.

1157).

Engineers of the early 19th century were not highly specialized. But growth of industries based on new scientific technologies led to many engineering specialties. The British Institute of Civil Engineering started in 1818; mechanical engineers started their own society in 1847; electrical engineers, in 1871; automobile engineers, in 1906; and so on until chemical and other specialized societies had emerged (Buchanan, 1989). Much growth in specialization has been due to extraordinary growth in knowledge (Becker and Murphy, 1994, p. 1145). In Kazakhstan, impediments to education and to the absorption of knowledge retard the division of labor. The labor market fails to provide incentives to invest in good education and new skills.

## The state of the labor market and the incentives it creates

The problem may lie in screening and monitoring, which affect the incentives of individuals to acquire education. Needlessly large transaction costs reduce monitoring and screening by firms. The principal-agent problem, which is the core of shirking, gets little attention. In addition, the general quality of education leaves much to be desired, as individuals who enter the labor market know little about how to use their skills. As Stiglitz (1973b, p. 11) argued, training for one machine does not equip one for operating another. This imposes training costs on firms – costs that might crowd out investment in screening. Indeed, skills taught in schools fail to match those required in the labor market, partly because schools act on outdated information. General education and skills must be strategically placed in order to absorb technologies.

Akerlof (1984, p. 82) and Stiglitz (1987) suggest that employees who feel unfairly treated will not only fail to indulge in the game but may help change its rules so that its outcome is less advantageous to the firm. Akerlof (1980, 1982) and Schlicht (1981a, 1981b) develop theories of the employer-employee relationship in which psychological and sociological considerations lead to a dependence of productivity on wages. Akerlof (1984) describes some experiments in which different workers are assigned identical jobs and paid identical wages but believe that they are either under- or overpaid. These perceptions may curtail productivity. Absence of screening eliminates competition and rewards for the skilled who feel underrated and perform worse.

Individuals differ in their comparative skills and in the ease with which they learn skills (Stiglitz, 1973b, p. 10). If the firm can identify the proper characteristics of

individuals and assign each worker to her proper place, then -- following Adam Smith’s thought -- productivity will increase. Stiglitz (1973b, p. 3) argued that schools are major institutions for providing information about the individual, about his capabilities, strengths and weaknesses. Able individuals have an economic incentive in being identified, since assigning each to her own specialization increases her production and wages (p.5). This requires screening for ability. But bureaucratic costs make screening too expensive for some firms.

The full screening equilibrium benefits able individuals since they receive greater wages – but it reduces wages of the less able (Stiglitz, 1973b, p. 6). It is in the interests of poorer workers to obscure identification of the best workers (p.14). Corporate insiders may prevent screening in order to avoid competition. Moreover, if students know nothing about their abilities, which is common in Kazakhstan, then no screening may occur even if it would increase net national product (p. 16).

## Conclusion

Specialization boosts economic growth, but several forces could slow down this evolution: High transaction costs among firms, which increase coordination costs and decrease screening; low production of knowledge, due to low incentives to learning; and insufficient screening, which slows down specialization and weakens incentives to get a good education. What can be done?

First, education should improve. Many researchers argue that the quality of schooling is more important than the quantity; the latter is measured, for example, by years of attainment. Barro and Lee (1998) discuss cross-country aggregate measures of the quality of education. Hanushek and Kimko (2000) find that scores on international examinations – indicators of the quality of schooling capital – matter more than years of attainment for subsequent economic growth. Firms, in turn, may rely more heavily on quality of education indices to predict performance, e.g., test scores, creating incentives to perform better in school (Stiglitz, 1973a, p. 293). Generally, the educational process can be improved by making resources available to students. These resources can be measured by such indicators as the pupil-teacher ratio, expenditure per pupil, the teacher’s salary and educational attainment, and availability of teaching materials. Fuller (1986) reviews studies that show a positive relationship between pupil achievement and the availability of textbooks and related materials. Barro and Lee (1998, p. 6) expected the pupil-teacher ratio to correlate negatively with test scores, because students can learn more rapidly by interacting more often with teachers. Moreover, teachers in large classes tend to focus on rote learning, not problem-solving skills (Psacharopoulos and Woodhall, 1985, p.176). Nutrition of children is an important factor too; Pollitt (1990) summarizes nine studies that report a significant relation between protein-energy malnutrition and cognitive test scores of student performance. The teacher’s salary and highest degree earned could be indicators of her quality. Higher salaries attract qualified and productive teachers who help students achieve. Several studies show that teacher quality strongly affects student achievement (Behrman and Birdsall, 1983; Card and Krueger, 1990).

Second, general transaction costs should be reduced and communication networks improved via development of infrastructure. This will reduce the coordination costs of specialization.

Third, one way to provide incentives to get a good education is by screening and demanding skilled performance. Foreign firms, with their own standards of working, may lead the way for home firms (Sachs and Warner, 1995, p. 2).

Quality education and new knowledge are vital to economic growth. However, in developing economies, educated people often leave the country. This shifts the focus to the provision of incentives to stay.

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