



Diploma as signal? Estimating sheepskin effects in the Philippines



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ABSTRACT

The screening theory of education argues that education does not necessarily enhance worker's productivity, but serves only as a signal of worker's pre-existing ability. Empirical studies found that the mere possession of a diploma increases wages disproportionately than without it, or the so-called sheepskin effects. Using a sample of urban non-agricultural wage workers in the Philippines, this paper finds substantial sheepskin effects for holding a tertiary diploma, even after controlling for individual heterogeneity. While returns to tertiary education are lower in the competitive (private) sector, there is evidence of diverging age-earnings profiles between tertiary and secondary graduates, indicating a productive value higher education.

1. Introduction

According to economic theory, workers are paid according to their marginal productivity. That is, the wage that the worker earns is equal to the output that the worker can produce. In reality, however, a worker's productivity is difficult to measure, and employers often rely on proxies of productivity when making decisions about wages. One of the most obvious indicator of productivity is the level of education. The human capital theory says that individuals accumulate skills and knowledge while in school, which directly increase their productivity (Schultz, 1961; Becker, 1962; and Mincer, 1974).

Empirical studies have confirmed the existence of positive and significant returns to education (for instance, Psacharopoulos, 1972, 1985, 1994; Psacharopoulos and Patrinos, 2004; Peet et al., 2015). These studies found that higher education levels are associated with higher wages; returns are higher in less developed than in developed economies; and while average levels of educational attainment in the world increase over time, the returns have declined only modestly, indicating that demand for educated workers has also been increasing.

The screening theory of education, on the other hand, says that education increases wages not only because it enhances workers' productivity, but because it serves as a signal of worker's pre-existing abilities (Phelps, 1972; Arrow, 1973; Spence, 1973). A number of empirical studies have supported this view and found that the mere possession of a diploma increases wages disproportionately than without it, or the so-called sheepskin effects (for instance, Hungerford and Solon, 1987; Shabbir, 1991; Belman and Heywood, 1991, 1997; Jaeger and Page, 1996; Park, 1999; Gibson, 2000; Mora, 2003; Schady, 2003; Crespo and Reis, 2009).

The proponents of the human capital theory refute the signaling effects of education and argue that these effects, if they do exist, eventually decline as employers have more information about the worker's actual productivity (Layard and Psacharopoulos, 1974; Patrinos, 1996; Denny and Harmon, 2001; Bauer et al., 2002; Silles, 2008; Arabsheibani and Manfor, 2001). Specifically, Psacharopoulos (1979) distinguished a weak from a strong version of the screening hypothesis, when employers pay higher starting salary for the more educated (weak) or even after the worker has been with them for some time (strong).

Thus far, whether or not diplomas reflect productivity or serve only as signal remains as an empirical question. Investigating the existence of sheepskin effects in the returns to education has important policy implications, especially in developing countries where education is viewed as a means to reduce inequality. Governments tend to allocate substantial amount of resources to expand access to basic education. If diplomas are used by employers only as signals of productivity, then policies that primarily aim to increase enrollment rates are less effective than those that also aim to improve school retention to allow students to graduate.

This paper aims to estimate the sheepskin effects in the Philippines, with a special focus on tertiary diplomas. The Philippines is an interesting case to analyze sheepskin effects of a tertiary diploma because it has a relatively high proportion of tertiary educated workers given its level of economic development. Tertiary education is seen as a prerequisite to high-paying jobs. While the government is investing more resources to expand access to elementary and secondary education, these policies may have little traction to improve equality in opportunities, as only those who are able to possess tertiary diplomas can earn

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disproportionately higher income.

A previous study estimating sheepskin effects in the Philippines using 1998 data found evidence of these effects for elementary, secondary, or tertiary diplomas (Schady, 2003).¹ However, the Philippine labor market has undergone significant changes since then, with many workers moving away from the traditional (non-wage, rural) to the modern (wage, urban) employment. This calls for new evidence to better inform policy-making. Moreover, recent nationally-representative household surveys on the labor force has more information on the actual year of completed schooling, which can yield more precise estimates.

Furthermore, this paper tests whether or not the estimates of the sheepskin effects support the weak or strong version of the screening hypothesis. Following Psacharopoulos (1979), it compares the rate of return to diploma years across the relatively competitive (private) and non-competitive (public) sectors. The screening is likely to be strong in the public sector where wage rates are defined according bureaucratic set of rules, which can deviate from the workers' productivity.

The following section presents the Philippines context; Section 3 describes the data; section 4 discusses the estimation strategy; Section 5 presents the results; and section 6 provides conclusions and policy implications.

2. Education and labor market outcomes in the Philippines: an overview

The Philippines boasts as having a relatively high proportion of tertiary educated labor force given its level of economic development. About 25 percent of the labor force reached tertiary education in 2015, which is higher than what would have been predicted given countries' level of GDP per capita (Fig. 1). Not only has the labor force become more educated over time, there has also been a shift, albeit slowly, from the traditional non-wage rural employment to a modern wage urban employment, especially among the younger workers.²

A considerable share of tertiary educated workers hold jobs that require little skills (Fig. 2). About 40 percent of workers who completed tertiary education are employed in middle- to low-level occupations, some of them work as service workers and laborers. The situation is amplified among those who obtained tertiary education but did not graduate, majority of them (70 percent) are employed in low- to middle-skill occupations. This implies that the increase in the supply of tertiary educated workers over the years do not match with an increase in demand of their skills.

Despite this, workers who obtained a tertiary diploma enjoy significantly higher wages than those who did not. In high-skill occupations, tertiary diploma holders are paid higher than workers who are not, even if they do the same types of tasks (Table 1). Among managers and professionals, those who obtained a tertiary diploma earns about 1.5 times higher than those who did not, indicating that employers in the Philippines may only be using tertiary diploma as a screening device, even if these tasks can be performed even by those who do not have tertiary diplomas.

Obtaining a tertiary education, however, is not affordable for an average Filipino family. Majority of workers (95 percent) who obtained tertiary education come from families whose per capita income falls within the upper 60 percent of income distribution (Fig. 3). As in the case of other developing countries, the priority of the Philippine

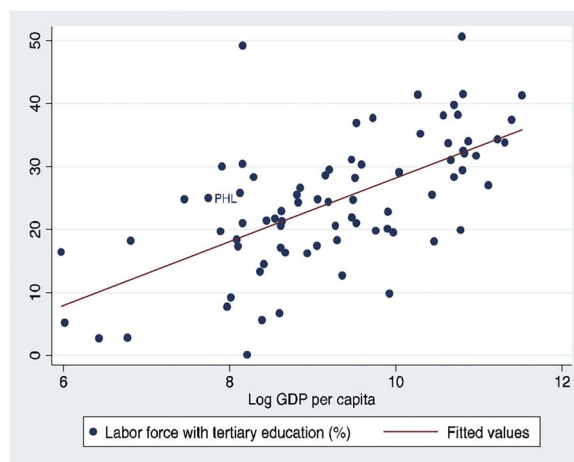


Fig. 1. Labor force with tertiary education and log GDP per capita, 2012. Source: World Development Indicators; Author's calculations.

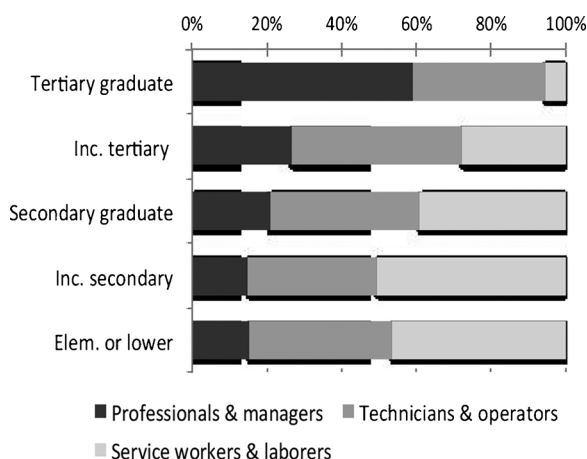


Fig. 2. Distribution of employed workers by highest education obtained. Source: Labor Force Survey 2015; Author's calculations.

Table 1
Average hourly wage of male and female workers (Philippine pesos). Source: Labor Force Survey 2015; Author's calculations.

Highest education level obtained	Managers & professionals		Technicians & operators		Service workers & laborers	
	Male	Female	Male	Female	Male	Female
Incomplete elementary	44	32	38	20	28	24
Complete elementary	58	35	36	23	31	25
Incomplete secondary	54	57	39	23	32	25
Complete secondary	68	56	43	34	37	29
Incomplete tertiary	70	70	49	43	40	31
Complete tertiary and above	109	102	68	63	47	38

Note: t-tests of difference in average hourly wages between males and females are all significant at least at 5% level.

government is to expand access to elementary and secondary education, with a view to increase equality of economic opportunities, while it delegates much of the provision of higher education to the private sector.

To a large extent, the obtaining higher education separates oneself

¹ Earlier studies analyzing education and labor market outcomes in the Philippines found that education is the most important factor that contributes to earnings differentials, and that the wage premium for having an education increases with the education level obtained (Tan and Paqueo, 1989; Hossain and Psacharopoulos, 1994; Gerochi, 2002; Lou and Terada, 2009), but these studies did not specifically estimate sheepskin or diploma effects.

² See Rutkowski et al. (2016) for an elaborate discussion of recent employment situation in the Philippines.

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