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Why aren't Sri Lankan women translating their educational gains into workforce advantages?

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EXECUTIVE SUMMARY

The last two decades have seen a phenomenal rise in girls' education and a concomitant decline or stagnation in labor market outcomes for women, especially in female labor force participation in central and southeastern Europe, East Asia, Southeast Asia, and South Asia.

This paper focuses on Sri Lanka, a country with a long record of gender equality in education enrollment and high female completion rates, which has also been characterized by low and stagnant female labor force participation. It remains a puzzle why Sri Lanka has been unable to translate its high girls' education gains into female labor force participation. This paper examines whether clues to the answer lie in (1) gender differences in skill acquisition, which have implications for education policy; (2) differences in the way the labor market values identical skills in men and women, with implications for labor market policy interventions, or (3) in the gender division of labor in the household, which has implications for family-friendly and social policies. The paper analyzes the 2012 World Bank STEP Skills Measurement survey, a rich data set that includes self-reported measures of cognitive and non-cognitive skills for all individuals of working age, to address these questions.

The results indicate that although women have higher measured cognitive skills than men and the same level of skill as men in the non-cognitive ones that the market values—such as being agreeable and good at decision-making and risk-taking—the market treats men and women with the same skills differently. This discrepancy is intensified among labor market entrants—men and women aged 20-29 years. While there remains scope for the acquisition of skills rewarded in the labor market, it is clear that skill acquisition alone will not eliminate gender gaps in earnings. Further research will be needed to explore whether the differential returns are owing to occupational segregation by gender, or whether *employers* treat the same skills differently depending on whether they are displayed by men or women. The experimental literature in Europe and the U.S. (reviewed in the paper) suggests that affirmative action-type policies may be justified in both cases.

Results also find that higher returns to cognitive and non-cognitive skills are associated with a greater number of years of formal schooling. For boys and girls to take advantage of this association, they may need to stay in school longer than the compulsory requirement of upper secondary school completion. Sri Lanka's policy initiatives to extend compulsory schooling to senior secondary level are supported by this evidence. The nuanced nature of these results implies that any education policy approach to improving skill acquisition with a view to improving labor market outcomes must seriously consider gender in its design. Surprisingly, technical and vocational education (TVET), training, and apprenticeships have no independent effect over and above the effect of schooling, suggesting that their role in enhancing earnings may be less than is typically assumed.

The results also indicate that for women, being married and having young children reduces the probability of paid employment significantly. Being married increases the probability of male participation in paid work and having young children has no effect at all on whether men engage in paid work. These results suggest inertia in cultural norms regarding the division of household work.

Evidence from Europe and the U.S. suggests that affirmative action-type policies and family-friendly policies that increase the availability and reduce the cost of child care have succeeded in increasing female labor force participation. In the context of these results, this would be an important policy avenue for further exploration for Sri Lanka.

The results also indicate that average returns to women from cognitive skills would increase by 75 percent if women who are inactive, in unpaid work, or unemployed were to engage in paid work. This finding implies that women who are *not* in paid employment have higher levels of cognitive skills that are rewarded by the market than those in paid employment, suggesting a loss to the economy in productive human resources. It underlines the necessity to consider the policy options described above in order to help bring more women into the labor force and promote fairer treatment when there, thereby creating favorable conditions for future generations of women to enter the labor market.

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INTRODUCTION

Over the last two decades, two key trends have emerged concerning female empowerment. On the one hand, there has been much progress toward achieving gender parity in primary and secondary education in most regions in the world (Winthrop and McGivney 2014). On the other hand, persistent gender disparities are evident in the labor market.

The International Labor Organization (ILO 2015) reports that the labor force participation rate around the globe is 77 percent for men and 50 percent for women. This disparity is even more acute in certain regions. For instance, in South Asia, the corresponding labor force participation rates are 81 and 32 percent, respectively. In the Middle East and North Africa (MENA), they are 75 and 22 percent. Similarly, these disparities are evident in unemployment rates in some regions, for example, unemployment for women in MENA is 21 percent compared to 9 percent for men.

In many parts of the world, these disparities have not declined over time. Female labor force participation and female employment as a percentage of the population have been stagnant or declining in central and southeastern Europe, East Asia, Southeast Asia and South Asia, while rising (slowly) in Latin America, the Middle East, sub-Saharan Africa, and the developed world (ILO 2015).

Despite the more recent and rising secular trend in education for girls, labor force participation and employment are still low among younger females. For example, in the Arab world, one in three women between the ages of 23 and 29 participate in the workforce, compared to eight out of 10 men.

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This gender disparity in the workforce occurs despite a narrow gender gap in secondary and tertiary completion rates (63 percent for men, 50 percent for women), and a situation where women outnumber men in high-income Arab countries (Crabtree 2012). These striking numbers give rise to the question: Why has gender parity in education not translated to gender parity in labor force participation and employment?

Increasing female participation in the labor force is a vital task from both equity and efficiency perspectives. First, women have the equal right to gainful employment that men have and the economic empowerment that this brings. This fact is recognized and enshrined in numerous United Nations declarations. Second, rising female education enrollment and completion rates indicate that states, families, and individuals are investing more in girls' education and can reasonably expect economic returns to their investment. Indeed, the 2015 McKinsey Global Institute Report claims that advancing women's equality can add $12 trillion to global growth (McKinsey Global Institute 2015). Additionally, feedback effects from labor market outcomes to educational investments may occur: If educated girls face barriers in accessing jobs, their families may be reluctant to invest in education for them, thus perpetuating gender inequality in education. For countries with aging populations (e.g., East Asia), higher levels of female labor force participation can help stem the decline in the working population, raise productivity, and provide the manpower and additional taxes necessary to support the growing aging population, as has been recognized in Europe (Boeri et al. 2007)

This paper focuses on Sri Lanka, a country with a long record of gender equality in education and high female completion rates, which has also been characterized by low and stagnant female labor force participation. In fact, female enrollment has long surpassed male enrollment in secondary school, and women have recently overtaken men in tertiary education, yet female unemployment remains twice as high as male unemployment (Gunatilaka 2013; Chowdhury 2013). This paper attempts to address the puzzle of why Sri Lanka has been unable to translate girls' education gains into better workforce outcomes.

It begins by providing background on the Sri Lankan context, then reviewing the conceptual framework for the determination of labor market outcomes drawing from the economics of gender and labor markets, particularly from new perspectives on gender (Bertrand 2011). The related empirical literature is briefly reviewed, after which the methodology is introduced, along with the data set used in the analysis, followed by a discussion of results and conclusions with policy implications.

BACKGROUND

Trends in education and labor market outcomes in Sri Lanka

Sri Lanka's achievements in girls' education can be traced back to the colonial period, when the establishment of single-sex schools promoted education for females, though arguably only for those from the elite classes. However, the largest impetus to girls' education is attributed to the free education reforms, known as the Kannangara reforms of the 1940s, around the time of national independence. First, the compulsory use of the "mother tongue" as the language of instruction in schools ensured that education was non-elitist. Second,

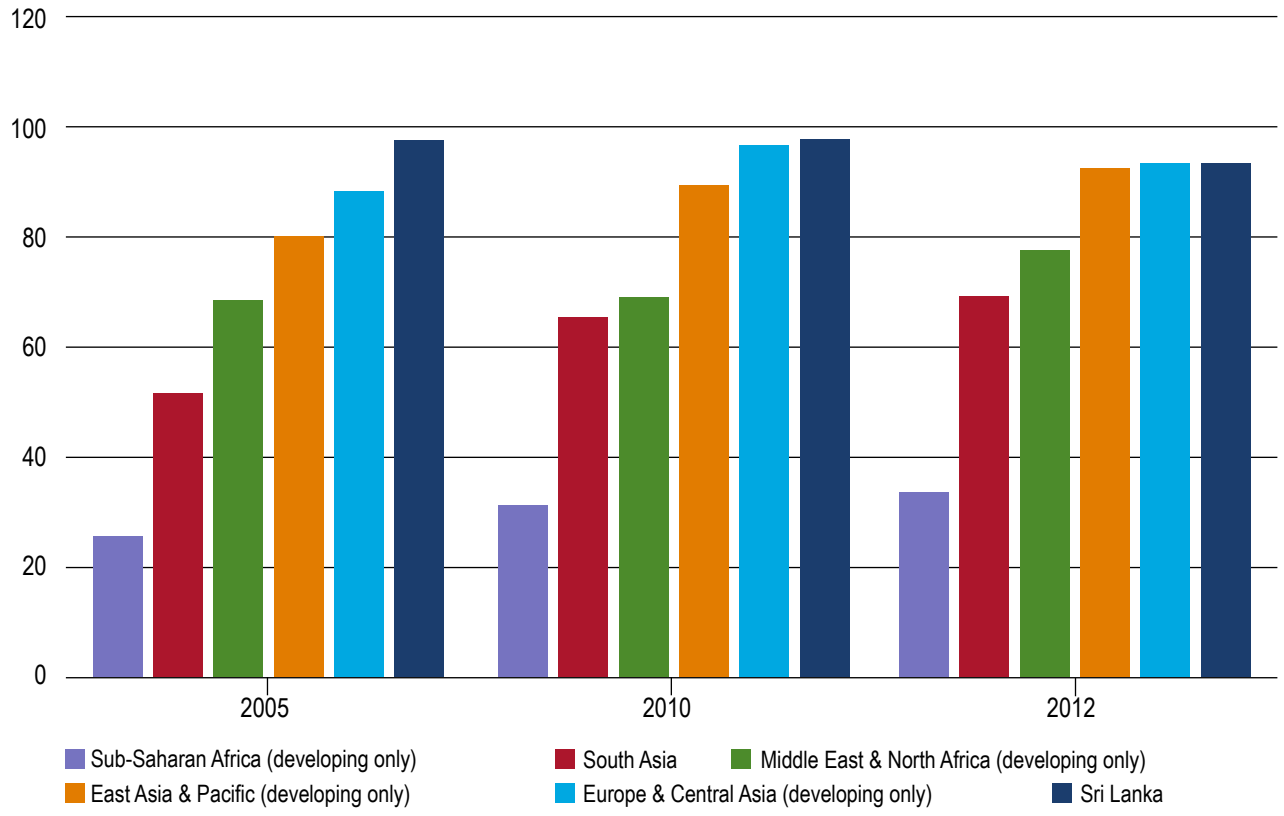
the development of an extensive non-fee-levying state-provided school network ensured that education was accessible to many. With the direct costs of schooling vastly reduced and a wide network that reduced time and distance to schools, parents could be more easily persuaded to send their girl children to school.

Indeed, some writers attribute the spectacular increase in female literacy from 42 percent in 1946 (compared to 70 percent male literacy in the same year) to its present-day level (92 percent in 2013, according to the Department of Census and Statistics, 2014) to the 1940s educational reforms (Wickramagamage 2012). Gender ratios confirm Sri Lanka's achievements in girls' education with near parity in primary grades, and higher female enrollment in secondary school for several decades. Girls now also outnumber boys in tertiary education (University Grants Commission 2014).

Sri Lanka's progress has been remarkable: The country had achieved a female lower secondary school completion rate of 98 percent in 2005, surpassing all developing country regional averages and continues to surpass them (Figure 1).

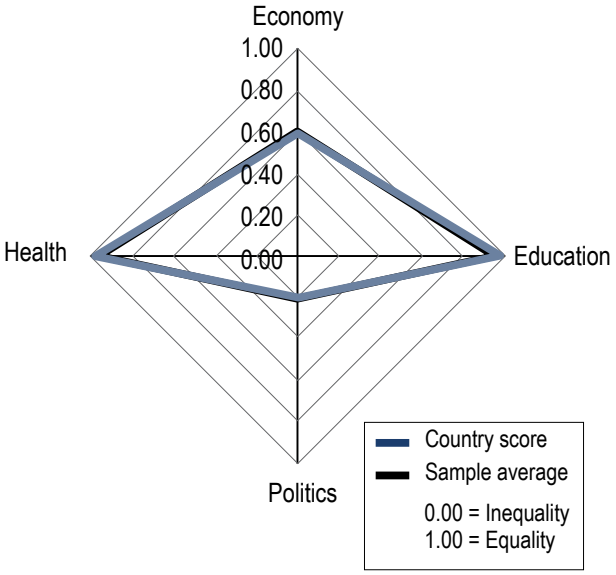
Sri Lanka's record in girls' education is matched by its record in women's health and fertility rates, and the positive effect of the former on the latter is well documented. Sri Lankan women's health achievements include a life expectancy that has

FIGURE 1. ACHIEVEMENTS IN GIRLS' EDUCATION, SRI LANKA AND COMPARATOR REGIONS



Series: Lower secondary completion rate, female (% of relevant age group)
Source: World Development Indicators.
Created on: 08/27/2015

Figure 2. Sri Lanka's Gender Gap Index 2014, country score vs. sample average

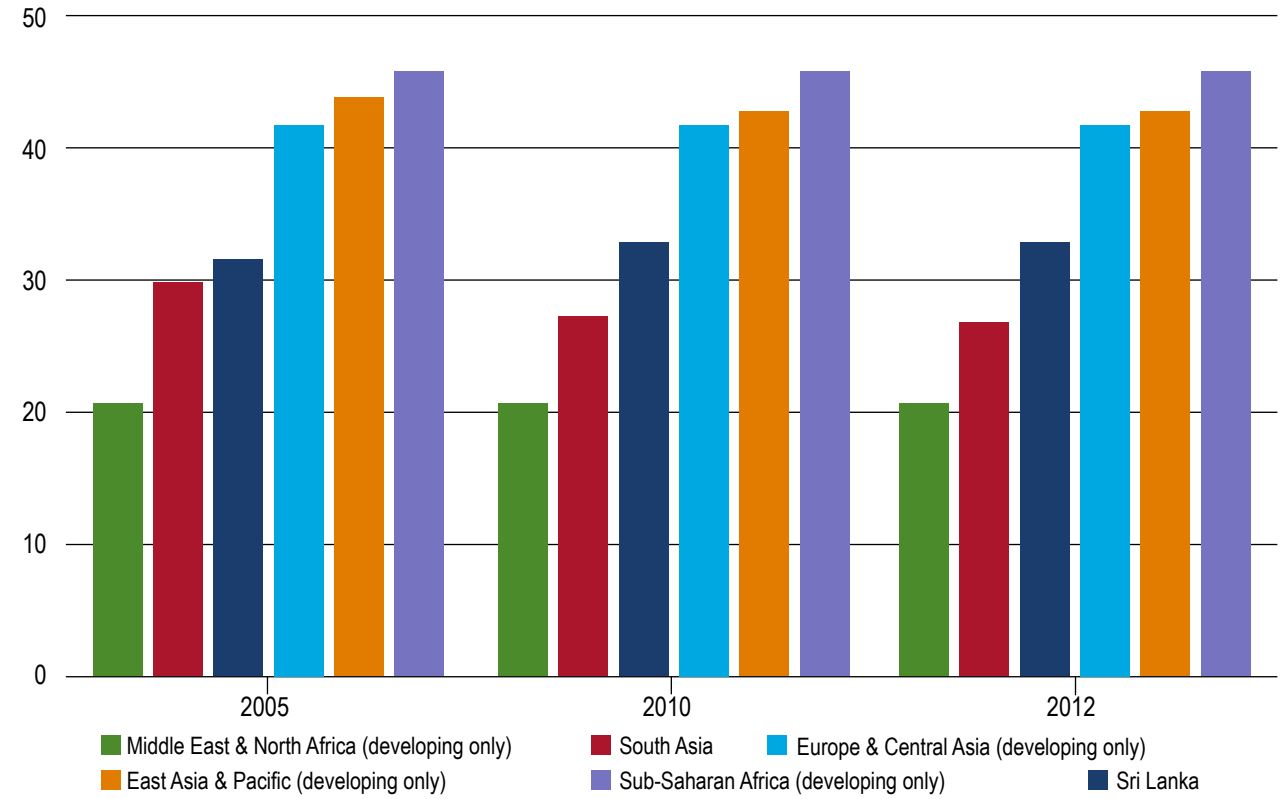


Source: World Economic Forum 2014. The Global Gender Gap Report. Geneva: World Economic Forum.

been higher than that of men since the 1960s, and decreased fertility and maternal mortality rates.[1] In addition, the last complete census (2012) found that there were 107 females to every 100 males, reflecting that, unlike its neighbor, India, Sri Lanka does not face a major problem of "missing women."

Despite these impressive achievements in girls' education and women's health, Sri Lanka does not perform well in the Global Gender Gap Index, ranking 79 out of 142 countries, in 2014 (World Economic Forum 2014). This low ranking is due to its poor performance in the dimensions of economic participation and political empowerment compared to its excellent performance in educational attainment and health (Figure 2).

Figure 3. Female share of labor force, Sri Lanka and comparator regions



Series: Labor force, female (% of total labor force)
Source: World Development Indicators.
Created on: 08/27/2015

[1] Sri Lanka's maternal mortality rate is 29 per 100,000 live births, and its total fertility rate is 2.3 compared to South Asia's maternal mortality rate of 190 per 100,000 live births and total fertility rate of 6.0 (World Economic Forum 2014, World Bank 2014).

Sri Lanka's female labor force participation rate has remained between 35 and 40 percent over the last decade, compared to the near-constant male participation rate of 75 percent (Department of Census and Statistics 2014). Similarly, the female unemployment rate has remained twice as high as the male unemployment rate from the mid-1980s (21 percent for females and 11 percent for males) to the present (6 percent for females and 3 percent for males in 2013 (Department of Census and Statistics 2014).

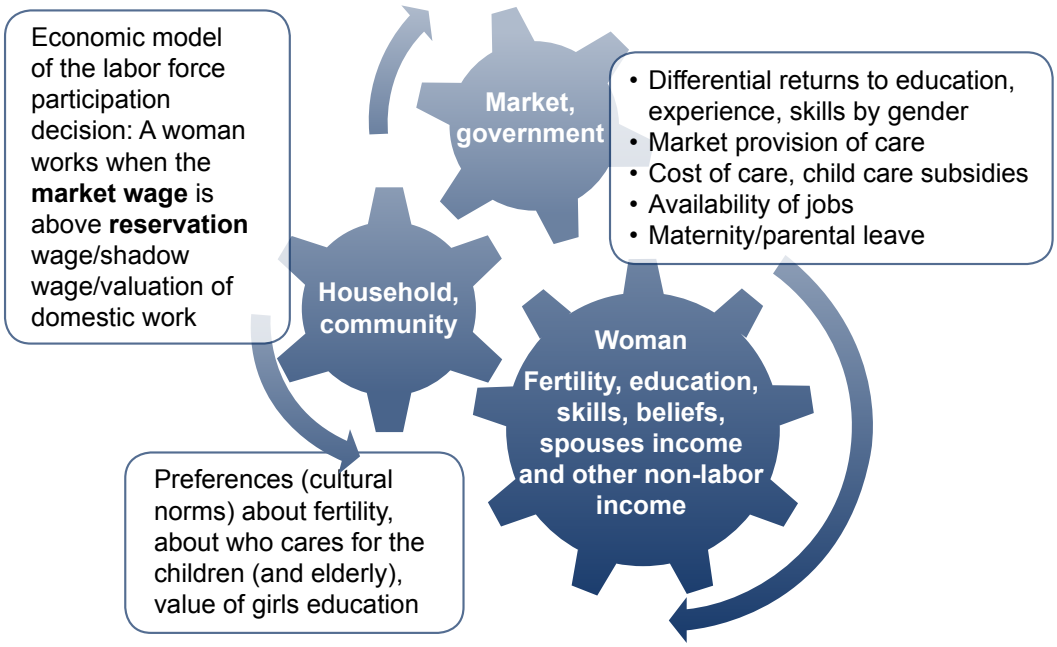
Figure 3 compares Sri Lanka's female share of the labor force with the same comparator regions included in Figure 1. Startlingly, Sri Lanka no longer leads, rather it is surpassed by sub-Saharan Africa, Europe and Central Asia, and East Asia and the Pacific, remaining stagnant at one-third of the labor force. The overall female labor force share in South Asia declines during this period.

Why has Sri Lanka failed to translate its education (and health) achievements into female economic participation? This is a question that has been the focus of recent policy attention (WeiB 2014), driven partly by the realization that Sri Lanka may have reached the end of its demographic dividend and will soon face a labor shortage (Madurawala 2012). It must also be motivated by the understanding that as more women complete secondary and tertiary education than men, there are state and private resources invested in education that do not yield expected returns if educated women remain out of the workforce. Before I attempt to address this question, I turn to the theoretical framework underlying women's labor market participation and employment outcomes.

Female labor force participation: The conceptual framework

Figure 4 presents a visualization of how the female labor force participation decision is made: In an interaction of factors that are individual-specific, yet influenced by households, communities, labor and product markets, and government policy.

Figure 4. The female labor force participation decision: A conceptual framework



According to economic theory, an individual chooses to work in the labor market only if it makes sense to her to do so, i.e., if the costs outweigh the benefits. Costs and benefits may be thought of in monetary terms or non-pecuniary terms. An obvious monetary benefit that accrues from working is the income it brings. The net effect of wage income on a person's decision to work, or the number of hours they choose to work is ambiguous. On the one hand, an increase in wages increases the opportunity cost of not working, i.e., makes it less attractive *not to work*. Therefore, individuals substitute work for "leisure," i.e., higher wages have a *substitution effect* that leads to an increase in hours worked. Individuals may also cut back on the hours they work, reducing overtime or moving from full-time work to part-time work, owing to the *income effect* of an increase in wages, which yields more income per hour or day of work.

The standard neoclassical model recognizes that labor force participation decisions are made within households and are influenced by the labor force participation of other household members, the wages they earn, any non-labor income the household commands, and household preferences about who works and who does not. An individual may reduce their hours worked, or choose not to work at all, when other members' wages or household non-labor income rises: There is an income effect. If an increase in a married man's wages causes him to work longer hours and spend fewer hours in "leisure"; his spouse may increase or decrease her labor supply depending on whether her leisure complements or substitutes for his leisure: There is a cross-substitution effect.

Economic theory has long recognized that the choice individuals face is not only between paid work and leisure: Some of what individuals do with their time if they are not working for pay constitutes non-market work or domestic work or "household production" (Mincer 1962; Becker 1965). The presence of small children or elderly disabled people in the household requiring care increases the economic value of domestic work.

Gender asymmetry in labor supply decisions arises from social and cultural norms that support traditional gender roles, assigning these tasks to females and thereby influencing the female labor supply decision. For females to engage in work outside the home, the unpaid care work they do at home needs to be replaced by paid care work that the market provides, so the availability and cost of market-provided child care or elder care has an important effect on labor force participation.

Childbirth (and often child care of pre-school children) also causes women to leave the labor force, temporarily or permanently. The resulting intermittency of work experience is said to affect the career choices women make and lead them to choose careers where human capital depreciation matters less (Polachek 1981). Maternity leave policies, while designed to allow women to stay in the labor force, often have ambiguous effects; for example, they deter employers from hiring women, given the additional cost of doing so. Part-time work, which allows women flexibility in combining market and non-market work, may be preferred by women for this reason.

When a woman's educational attainment is higher, or she has better cognitive or non-cognitive skills, or she has training and experience that make her more productive (or signal higher productivity), the wages that she can command in the labor market are higher, and make it more

attractive for her to work in the market rather than in unpaid work at home. As noted above, the decision will be influenced by the availability and cost of child care and elder care as well as prevailing cultural norms. Restrictive social norms that prescribe that a woman not work outside the home impose a non-pecuniary cost to non-market work that perhaps can only be overcome at very high wages. Thus, any exploration of the link between girls' education and female labor force participation needs to be contextualized in this framework of preferences, costs, and constraints.

In the section below, I begin with a framework for linking education and labor market outcomes, focusing on implications for policy intervention. I then review the literature, first providing context for the education-labor market outcomes puzzle, and then providing illustrations for the education-labor market linkages framework, drawing from the larger body of work in developed countries, where developing country knowledge is thin. I end with insights drawn from new theoretical perspectives in gender that focus on personality psychology economics and the related empirical literature.

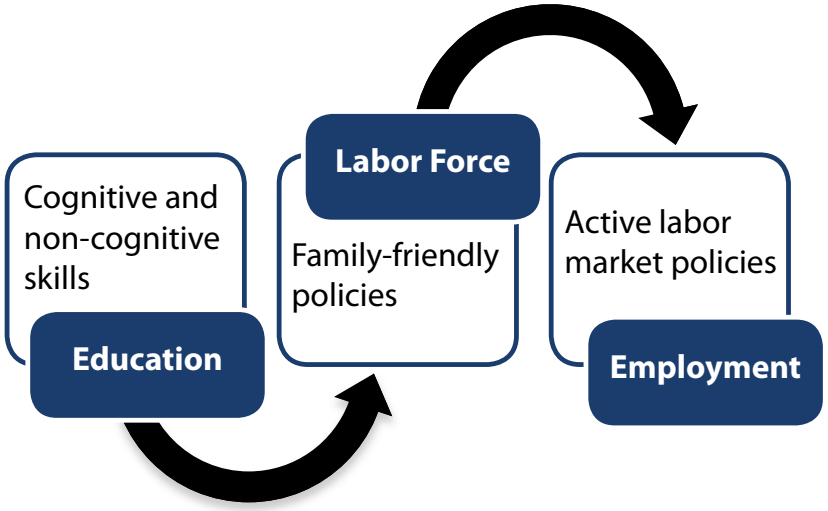
Education and labor market outcomes: Linkage and policy prescriptions

Figure 5 presents a simplified framework for understanding the link between education and labor market outcomes. The purpose of this figure is to highlight the entry points for policy interventions.

Education has the potential to help women transition to the labor force through higher wages and entry into higher-earning occupations. Returns to education for employed women are typically high in developing countries and in many cases exceed those of men (World Bank 2012). However, as noted in the previous section, this situation is not the case everywhere: There is still the puzzle of increased educational attainment and stagnant labor force participation, accompanied in some countries by high unemployment.

There are two possible explanations for this phenomenon. The first is the mismatch argument: In general, there is a mismatch between the types of skills that education provides and that the market demands, for both boys and girls. Although this

FIGURE 5. LINKING EDUCATION TO LABOR FORCE PARTICIPATION AND EMPLOYMENT



is an argument that addresses unemployment, it can also explain low labor force participation if individuals outside the labor force are actually discouraged workers who tend to be labor market entrants and women. The prescribed policy intervention is then a particular type of active labor market policy, i.e., training and vocational education programs (TVET), and apprenticeships that focus on improving the skills and employability of the unemployed. A second strand of thinking, along the argument of mismatch, focuses on skills acquisition within the formal education system or prior to entering it. These could be both cognitive and non-cognitive skills. In both cases, the diagnosis and policy prescriptions are not necessarily gender-specific and can be applied equally to boys and girls.

The second argument is more gender specific and focuses on the constraints that may prevent educated women from entering the labor force. This argument draws on the conceptual framework described above and depicted in Figure 4, and focuses on fertility and inertia in social norms that support traditional gender roles that assign a disproportionate share of child care (and the care of the aged) to women. Policy interventions focus on public provision or subsidization of child care, tax benefits for child care, maternity benefits and parental leave, and equal opportunity legislation. These are given the umbrella term “family-friendly policies” in Figure 5.

Education, development, labor force participation, and the U-shaped curve

The U-shape theory has dominated the discussion of female labor force participation in developing countries. First exposited by Sinha (1975), it argues that female labor force participation follows a U-shape through the process of development. In the early stages of economic development, with rising industrialization and urbanization, men take the jobs in industry, and women leave the dwindling agriculture sector to engage in home production. Alternatively, as male incomes rise, females substitute home production for labor force participation due to the income effect of their spouse’s income (Goldin 1994). It is only when the services sector expands that females re-enter the labor market, with education playing a role in drawing women up the U-shaped female labor force participation curve (Boserup 1970). Some cross-section examinations of this theory that examine the relationship between growth, education, and female labor force participation are optimistic that with educational expansion the downward sloping part of the U curve may even be eliminated (Lincove 2008).

However, results of country-specific studies provide evidence that supports the U-shaped relationship, at least in the short-run, and indicate that as development leads to the increase of male incomes, this trend may have the effect of reducing the probability of females working (Gaddis and Klasen 2013). Other studies have found threshold effects in the relationship between education and labor force participation: The probability of women joining the workforce increases beyond the secondary level (Aslam et al. 2008; Chamlou et al. 2011; Lincove 2008; Mammen and Paxson 2000). Existing evidence from Sri Lanka also suggests that education variables are critically significant to the participation decision, and the U-shaped relationship is discernible. Women with secondary education and Ordinary levels are less likely to participate in the labor market than women with primary education, but those with a university education are more likely (Gunatilaka 2013).

By increasing the reservation wage of women, education may also increase non-participation in the labor force, especially if it turns out that educated women marry educated (and therefore higher-income-earning) men as Klasen and Pieters (2012; 2013) found in their examination of the stagnation of female labor force participation in India between 1987 and 2009, a period of high growth. Their results are consistent with those of an earlier ethnographic study by Kumar and Vlassoff (1997), which found that the effect of girls' education in both the states of Rajasthan (highly patriarchal, less developed) and Maharashtra (less patriarchal, more industrialized) was negligible because of the "power of gender ideology and practice, lack of economic opportunities for women, and largely irrelevant content and poor quality of education … it is only in theory that education is seen as a means of financial independence for girls; in practice girls are educated to secure a husband, not to get a job," (as cited in Malhotra et al. 2003). Lincove (2008) suggests that home production (improving child health, educating sons) may actually be the target of female schooling for some countries. These findings suggest that policy prescriptions may need to focus on addressing inertia in social norms.

Cultural norms or higher reservation utility (Blau 1991) interact with practical considerations of caregiving. Gender roles have often determined that women spend more time compared to men in caregiving, both for young children and aged parents (Maurer-Fazio et al. 2011). To design successful policy interventions, it is important to identify the key institutional barriers that prevent mothers, daughters, and partners from engaging in the labor market. Institutional barriers may take the form of social norms or the absence of policies and programs that address the constraints that women face as mothers, daughters, and partners. In the first case, a better understanding of the mechanisms that form, change, and transmit gender role attitudes is necessary. In the latter case, a better understanding of the impact of policies such as child-support programs or parental leave is important (Campos-Vazquez and Velez 2013; Klasen and Pieters 2013; Maurer-Fazio and Connelly 2011; Del Boca and Locatelli 2006).

A growing literature since the 1980s has analyzed the effect of young children on married women's labor force participation. Blau and Robins (1988) predicted that 87 percent of married women in the U.S. would be employed if child care costs were zero. Connelly (2010) calculated that this would decline to 47 percent if all women had to pay for child care. She also predicted that, as more women join the labor force, the opportunities for informal child care will decline and that this trend would slow the rate of female labor force participation. In a meta-analysis of 37 studies from developed countries, Akgunduz and Plantenga (2013) found large variation in labor force participation elasticities, with some studies showing substantial participation gains from lowering child care prices and others showing insignificant effects. The authors argues that it seems "overly optimistic to base labor market policy and projections on implementing price based policies like child care subsidies" in developing countries. "In countries with low female labor market participation, the elasticity is small despite also having relatively lower social spending and part-time rates, owing presumably to more structural and cultural reasons. Simple transplantation of high rate countries' policies with regards to female participation is unlikely to pay off at the level that it might have for the benchmark countries."

More recent literature also investigates the influence of elder care on female labor force participation. Ettner (1995) finds that, in the U.S., co-residence with a disabled parent leads to a significant reduction in work hours, due primarily to withdrawal from the labor force. As countries such as China (and to a lesser extent, Sri Lanka) move into the demographic transition phase where the population is aging, women contemplating entering the workforce must face the dual challenge of child care and elder care. Evidence from urban Chinese households indicates that grandparents help in the caregiving of young children, increasing the labor force participation of prime age women (Zhang 2004; Maurer-Fazio and Connelly 2011). However, co-residence with an adult in need of care reduced these women's labor force participation (Maurer-Fazio et al. 2011; Liu, et al. 2010). Evidence from a qualitative study in Sri Lanka indicated that child care figured in the decision of women to leave the workforce, but that the lack of informal child care (grandparents or female relatives) was more of a factor in the decision than the cost of formal child care (Madurawala 2009).

Role of skills

Recent and ongoing research in the U.S. and OECD countries indicates that both cognitive and non-cognitive (hard and soft) skills are key determinants of adult earnings, with important policy consequences. Using the OECD survey of adult skills (PIAAC) over the full lifecycle in 23 countries, Hanushek et al. (2013) show that, on average, a one standard deviation increase in numeracy skills is associated with an 18 percent wage increase among prime-age workers, with a range from 12 to 28 percent. Heckman et al. (2006) find that both non-cognitive and cognitive ability affects the acquisition of skills, productivity in the market, and a variety of behaviors, and that schooling raises measured cognitive ability and measured non-cognitive ability. Key is the understanding that cognitive and non-cognitive skills can be shaped, and that investment in both cognitive and non-cognitive skills early in life increases the benefits of education later in life (Kautz et al. 2014). Heckman et al. (2006) find evidence of gender differentials in the effects of non-cognitive skills on certain behaviors, which partially explains gender differentials found in the Perry Preschool program in the U.S., which were responsible for raising female employment at age 27 and reducing female high school dropout rates compared to male's.

Similar studies are few in developing countries owing to the paucity of data on cognitive and non-cognitive skills. In their seminal paper, which examines the link between cognitive skills, individual earnings, income distribution, and economic growth, Hanushek and Woessmann (2008) summarize the results of existing studies on Ghana, Kenya, Morocco, Pakistan, South Africa, and Tanzania and tentatively conclude that the returns to cognitive skills may be even larger in developing countries than in developed countries. Through their empirical analysis they find that cognitive skills have powerful effects on individual earnings, the distribution of income, and economic growth, and that the relative situation in developing countries is much worse than that based on school enrollment and attainment—that is, educational attainment has a positive impact on aggregate growth only if it raises the cognitive skills of students, and that this does not happen "with sufficient regularity in many developing countries." A feature that is lacking in these studies, however, is the absence of gender disaggregated analysis.[2]

[2] Gender is included as a control, usually as a dummy variable, but differential results by gender are not explored in these empirical studies.

An early study by Alderman et al. (1996) is an exception. They find that gender gaps in school enrollment and cognitive achievement are high in rural Pakistan, primarily due to local school access problems, and estimate that increasing local school access could reduce the gender gap by as much as 40 percent. More recent studies by Aslam, Kingdon, and Söderbom (2008) find that in Pakistan, cognitive skills have payoffs for both men and women in terms of occupational choice, but that these are larger for men. They conclude that for education to become a strong pathway to gender equality, attitudinal changes towards the gender division of labor and participation of women in the paid labor force must first occur.

Among the sparse literature linking cognitive skills and gender equality are two studies in Pakistan and in Ghana (Kingdon and Söderbom 2008; Kingdon and Söderbom 2007). In Pakistan, the authors found that cognitive skills have big payoffs for both men and women, that literacy promotes entry into more lucrative jobs, and that the payoff is larger for men. Conditional on occupation, literacy was associated with higher earnings, and this was greater for women than for men. Similarly, in Ghana, literacy and numeracy both strongly promote entry into the lucrative parts of the labor market for both men and women and, conditional on occupation, literacy has a moderately large payoff for both genders.

Aslam et al. (2012) for Pakistan and Díaz, Arias, and Tudela (2012) for Peru are two of very few studies done in developing countries that analyze labor market returns to non-cognitive skills. Aslam et al. (2012) find that without conditioning on schooling or cognitive skills, positive socialization and behavioral effects have a positive effect on wages, and that these are strongly associated with schooling.[3] Díaz, Arias, and Tudela (2012) find that both cognitive and non-cognitive skills are associated with higher earnings.[4] Both studies control for gender, but only as a dummy variable.

New perspectives on gender

The final thread in this literature review draws from new perspectives on gender from economics and psychology that provide important insights into the link between girls' education, female labor force participation, and employment. This literature is best described by Bertrand (2011) in her chapter "New Perspectives on Gender" in the *Handbook of Labor Economics,* which reviews (1) risk attitudes (2) attitudes towards competition, (3) social preference (akin to altruism) and (4) attitudes towards negotiation, and their empirical implications for labor market outcomes. She examines the evidence for whether these attributes stem from nurture or nature, which has important implications for policy. Bertrand (2011) also reviews the literature that examines how gender identity is formed, whether it influences women's labor market decisions, and whether it drives psychological attributes that influence labor market outcomes.

These new perspectives on gender have critical implications for policy prescriptions. A case in point is the literature that examines the gender gap in competition and attempts to relate it to the gender gap in risk-aversion and male overconfidence. Specifically, the research finds that fewer top-performing (high-ability) women and too

[3] Their work is based on the RECOUP data set, a purpose-designed household survey administered to 1194 urban and rural households in 2006/2007, and uses seven measures of "personality traits," which they divide into "positive" and "negative" traits.
[4] They use the Big Five factors model of personality traits and the grit personality trait to study the effects of non-cognitive measured skills on earnings.

many low-ability men enter competitive environments. Exploring further, Niederle and Vesterlund (2007) find that the gender gap in competition is only partially explained by male overconfidence and is not explained by gender differences in risk attitudes or women's greater aversion to negative feedback (Borghans et al. 2008a; 2008b), and is best interpreted as women having less of a taste for competition. Gneezy, Niederle, and Rustichini (2003) find that women do as well as men in single-sex tournaments. Niederle and Vesterlund (2007) find that women are willing to enter competitive environments in quota-like affirmative-action-type settings. Based on these results Bertrand (2011) reaches the tentative conclusion that although the research agenda is new, and results are too thin to be conclusive, this literature seems to imply support for affirmative action-type policies on efficiency grounds (in addition to equity considerations).

Similarly, whether gender differences in preferences and personality traits have their roots in nature or nurture matters for policy. If the latter, then there is a role for well thought-out educational reforms to address gender gaps in attitudes and non-cognitive skills like risk aversion, for example. On the other hand, if nature were at the root of gender differences in the willingness to operate in a competitive environment, affirmative action policies may be the best way to ensure that higher-ability women are included in competitive settings (Bertrand 2011). Evidence from a case study of the patriarchal Maasai in Kenya and the matriarchal Khasi in India supports the theory that gender differences are rooted in environment (Gneezy, Leonard, and List 2009), as does evidence from single-sex vs. mixed schools in England, where girls in mixed schools were more risk averse and less willing to compete than their single-sex school counterparts (Booth and Nolen 2009).

Gender differences in cognitive skills may also arise from nurture rather than nature. Bertrand (2011)'s review cites field research with the Karbi (patrilineal) and Khasi (matrilineal) in India that suggests that gender differences in spatial abilities (cognitive) are also environmentally determined. Studies that analyze cross-country variation in the gender gap in math scores find that when controlling for sexism (using measures such as the World Economic Forum's Gender Gap Index) the male-favoring gender gap in math becomes smaller and the female-favoring gap in reading becomes larger, providing support for the theory that an environment of gender inequality can foster gender disparities in skills.

Bertrand (2011) also reviews the field evidence that is consistent with a higher level of altruism and stronger preferences for redistribution among women. While she draws from recent evidence in the context of political preferences of women in developed countries, it is worth noting that this tendency has already been well-established with regard to consumption in household settings in developing countries: Women are more likely than men to spend their income on "public" consumption goods within the household, like food and education or health services, whereas men are more like to spend their income on "private" goods, like cigarettes and alcohol (Thomas 1990). Bertrand concludes that the evidence suggests there might be true psychological differences between men and women in the strength of their social preferences, which may lead women to settle for lower wages. The literature also suggests that individuals that exhibit more greed and less altruism earn more.

Bowles, Gintis, and Osborne (2001) and Borghans et al. (2008a; 2008b), analyze how a broader set of personality traits and characteristics affect behaviors and labor market outcomes. The most common approach in the literature is to consider personality traits part of an individual's set of productive traits, just like cognitive skills, and to value them directly in the market. Systematic gender differences in traits can translate into differences in earnings, partially through occupational segregation. Personality traits can also influence earnings through preferences, including risk aversion and the taste for competition. However, evidence on gender differences in negotiation skills and in how employers view these skills suggests that labor market returns to these skills can differ by gender in a way that is similar to "discrimination" in the previous generation analyses of gender wage gaps.

The "Big Five" traits of extraversion, agreeableness, conscientiousness, neuroticism, and openness are the most commonly used inventory of personality traits (Digman 1989). Table 1 provides the description of the Big Five traits, as defined by the American Psychological Association.

Agreeableness and neuroticism are most consistently associated with gender differences (women more than men) (Bouchard and Loehlin 2001), while some research finds the same for extraversion and openness (Mueller and Plug 2006). This research also suggests that there are positive returns to being open for both men and women, that men earn a premium for being antagonistic (i.e., not agreeable) and that women earn a premium for being conscientious (Mueller and Plug 2006).

New perspectives on gender identity provide new theoretical underpinnings for women's behavior

Table 1. The Big Five traits

Trait	Definition of trait*
I. Openness to experience (intellect)	The tendency to be open to new aesthetic, cultural, or intellectual experiences.
II. Conscientiousness	The tendency to be organized, responsible, and hardworking.
III. Extraversion	An orientation of one's interests and energies toward the outer world of people and things rather than the inner world of subjective experience; characterized by positive affect and sociability.
IV. Agreeableness	The tendency to act in a cooperative, unselfish manner.
V. Neuroticism (emotional stability)	Neuroticism is a chronic level of emotional instability and proneness to psychological distress. Emotional stability is predictability and consistency in emotional reactions with absence of rapid mood changes.

* From the American Psychological Association Dictionary (2007).

in relation to labor market outcomes. Akerlof and Kranton (2000) propose a model where identity directly enters the utility function so that economic actions can in part be explained by a desire to conform with one's sense of self, and can be used to explain why women who are employed in the labor market still do a disproportionate share of non-market work. Research by Fortin (2005) uses the World Values Survey that elicits information on egalitarian (or otherwise) social attitudes and social representation of women as homemakers and men as breadwinners, and attitudes such as "mother's guilt" and finds that these attitudes are closely associated with the female labor force participation decision. Using a World Bank data set that collected information on attitudes towards

women's work outside the household, Chamlou et al. (2011) found a strong negative and statistically significant association between traditional social norms and the participation of women in the labor force. Studies that examine the intergenerational transmission of gender role attitudes (Farre and Vella 2013; Fernandez, Fogli, and Olivetti 2004), find evidence that female labor force participation is associated with having parents (mothers or mothers-in-law in the former case) with less traditional views of the role of women. As with risk attitudes and attitudes toward competition, girls who attend single-sex schools are less likely to hold stereotypical views of gender roles even after they no longer attended these schools.

I summarize the value of insights from this literature in exploring the relationship between girls' education and labor market outcomes. Cognitive and non-cognitive skills may differ by gender, and environmental factors may play a role in doing so. The market may value certain skills over others, and there is a role for education policy to ensure that both boys and girls acquire skills that matter for labor market success in later life. However, employers may treat men and women with the same skills differently. When non-participation in the labor market in general, or in competitive settings in particular, stems from gender differences in (over) confidence, or taste for competition, the resulting self-selection is non-optimal because higher-ability women are excluded (or exclude themselves). This too highlights the need for interventions that address these particular skills and attitudes, and education policy plays a role. Social norms play a role in forming gender identity and intergenerational transmission of attitudes is evident, suggesting multiplier effects from intervention in one generation. All of these research insights suggest that there are gains to be made from family-friendly labor market policies such as child care support in the form of state provision, subsidies to employers or tax benefits to families who use child care, and parental leave and benefits.

This literature provides a clue to the Sri Lankan puzzle: Despite higher educational attainment, are women disadvantaged in the labor market because they lack the cognitive and non-cognitive skills that men have? Or does the fault lie in a market that may be gender biased in the way it rewards skills? Or is inertia in social norms to blame? While the empirical results discussed above relate mainly to developed countries, new information on cognitive and non-cognitive skills collected in the World Bank Skills Toward Employment and Productivity Survey provides a unique opportunity to explore these issues in a developing-country setting. While country studies have explored the implications of this data in a general way, to the best of my knowledge, this data has not been used to explore the specific question of skills and female labor market outcomes in a gender-analytic framework.[5] I use this data to examine whether clues to the answer lie in (1) gender differences in skill acquisition, which has implications for education policy; (2) differences in the way the labor market values identical skills in men and women, with implications for labor market policy interventions or (3) in the gender division of labor in the household, which has implications for family-friendly and social policies. In the next section, I set out the methodological approach and describe the data.

[5] Links to country studies based on the STEP survey datasets are available at http://microdata.worldbank.org/index.php/catalog/step

DATA AND METHODOLOGY

Methodology

The model used in the analysis derives from the conceptual framework outlined in Hanushek and Woessmann (2008) from a simple underlying model of human capital,

$$y = \Upsilon H + \varepsilon \quad [1]$$

where individual earnings (y) are a function of individual labor market skills or human capital (H). The stochastic term (ε) represents idiosyncratic earnings differences, presumed to be orthogonal to H.

It is well recognized that human capital is a latent variable, and that the standard Mincer formulation with its assumption that schooling attainment is the sole systematic source of skill differences is problematic (Hanushek and Woessmann 2008). An entire branch of research that examines skills (and education) production suggests that skills are affected by family inputs, the quantity and quality of school inputs (which can be expressed as a function of schooling attainment), individual ability, and other relevant factors such as labor market experience, training, health, etc. Thus, it is inappropriate to use a single input into skills, such as schooling attainment as a measure of *H* in equation [1] to estimate the impact of human capital on earnings, and it is unlikely that the stochastic term is orthogonal to school attainment since it includes other determinants of skills. Additionally, doing so ignores the problem of omitted variable bias related to ability. Therefore, I do not attempt to model skills as reflecting ability or establish a causal relationship between skills and ability.

Hanushek et al. (2013) also show that an extension to the Mincer model that adds school quantity to an estimation of y based on using *C* as a true measure of human capital,

$$y = \Upsilon C + \beta S + \varepsilon \quad [2]$$

is a case of errors in measurement of multiple regressors and that nothing can be said about the direction or magnitude of the bias. This is because assessments of skills are error-prone measures of H, and there are complementarities between skills and formal schooling: As Heckman and others (in Kautz et al. 2014) have shown, "skills beget skills," and schooling could proxy for an additional component that is relevant for earnings (Cunha and Heckman 2007).

Following Hanushek et al. (2013), I use a Mincer-type equation as the baseline empirical equation, where C represents *measured* skills instead of years of schooling (S) and E refers to a measure of experience. I refer throughout the analysis to Υ as "returns" to skills, but acknowledge that the term is used in a loose sense. Equation [3] also uses a log-linear form, and I note that this no longer derives from a theoretical investment framework as in Mincer (1974).

$$\ln y_i = \beta_0 + \Upsilon C_i + \beta_1 E_i + \beta_2 E_i^2 + \varepsilon_i \quad [3]$$

The empirical model I use in most of the analysis differs from Hanushek et al. (2013) and most of the literature. It is an expansion of equation [3] in that it is fully interacted with gender. This decision derives from the conceptual framework and empirical literature that indicated that the market may value the same skills differently, depending on the gender of the worker. Thus, the estimates throughout the analysis are based on equation [4]

where the subscript *g* indicates that the analysis is conducted separately for male and females:

$$\ln y_i = \beta_{0g} + \Upsilon_g C_{ig} + \beta_{1g} E_{ig} + \beta_{2g} E_{ig}^{\ 2} + \varepsilon_i \qquad [4]$$

Data

The paper uses data from the household survey of the 2012 Skills Toward Employment and Productivity Survey (STEP), conducted as part of a World Bank multi-country analysis. The survey has a sample size of 2,989 households (reflecting a response rate of 63 percent) and provides detailed information on education, training, cognitive, non-cognitive, and technical skills, as well as basic demographic information on family background, employment, and wages. It is representative at urban and rural levels and covers all provinces in the country.[6] Sampling was conducted in four stages: (1) 200 Grama Niladhari divisions (GNs) or small, administrative divisions were segmented into smaller geographical areas (the primary sampling units or PSUs), and one PSU per GN was randomly selected; (2) a cluster of dwellings was randomly selected from each selected PSU; (3) 15 households were randomly selected from each cluster in each selected PSU; and finally, (4) one person aged between 15 and 64 years was randomly selected from each household for a one-on-one interview. World Bank (2013) provides a detailed description of the survey design and sampling methodology.

Regression sample, variable definitions, and descriptive statistics

Hanushek et al. (2013) make the point that returns to skills are best captured for prime-aged workers. Given the relatively small size of our sample, and characteristics of the Sri Lankan labor market, I use a broader definition. However, the STEP survey oversamples labor market entrants, i.e., 15-29 year olds, who are the focus of policies related to training and employment. Therefore, I conduct the analysis separately for labor market entrants (20-29 years) and for all individuals (20-64 years). I exclude 15-19 year olds in order to minimize selection of individuals who are still studying. Thus, all the analysis is conducted separately for the full sample and the entry sample.[7]

While my research's primary interest is in the estimation of returns to skills, I control for location and labor market characteristics. I restrict the regression sample to all those in paid employment, which includes employees and the self-employed.

I do not conduct the analysis separately for employees and the self-employed because these two categories reflect occupational choice, and sample separation on this basis would be prone to selection bias. Moreover, separate regressions for employee and self-employed samples failed the test of structural independence (the null of identical slope and intercept coefficients could

[6] The STEP multi-country survey was planned to be implemented only in urban areas. However, as the rural population in Sri Lanka accounted for more than 84 percent of the population, it was implemented in both urban and rural areas. It is also worth mentioning that the sampling frame was based on the sampling frame designed for Sri Lanka's 2012 Census of Population, which is the first "true" census to be conducted in 30 years, i.e., since the census of 1981, as the adverse security situation in the Northern and Eastern provinces precluded enumeration of the entire population. The universe for the survey comprises all non-institutionalized persons aged 15-64 (inclusive) years living in urban and rural locations, in every district in the country. The population excludes: foreign diplomats and non-nationals working for international organizations; people in institutions such as hospitals or prisons; collective dwellings or group quarters; persons living outside the country at the time of data collection, e.g., students at foreign universities, and persons who are unable to complete the STEP assessment due to a physical or mental condition, e.g., visual impairment or paralysis.

[7] These decisions are supported by the results of tests for structural independence, i.e., a fully interacted model by gender, and separately, a fully interacted model by age.

not be rejected). Similarly, joint independence of the slope coefficients could not be established for full-time status, urban location, or Western province, although intercepts were significant. They are included in the model as dummy variables.

Variable definitions

Cognitive skills are measured in this survey through intensity of use (reading and writing) and complexity of use (numeracy), as described in Table 2. Pierre et al. (2014) justify intensity of use as a proxy for complexity. In addition, the survey also implements a reading assessment, from which a measure of core literacy is obtained (details can be found in Pierre et al. 2014).

Non-cognitive skills measured in the survey include the Big Five skills of extraversion, agreeableness, conscientiousness, neuroticism, and openness, as well as measures of grit, hostility bias, decision-making, risk aversion, and time preference. The measures of non-cognitive skills are indices constructed from a battery of questions as presented in Table 3. Score categories range from 1 ("almost never") to 4 ("almost always"). Measures are recoded and averaged such that each index increases in the characteristic. For example, a greater score of extraversion implies a more extroverted personality, while higher hostile attribution indicates a greater tendency to think of others as being hostile to oneself.

The measure of risk aversion is constructed from a lottery choice task, where respondents were given a series of choices between a safe amount and a lottery. The safe amount remains constant while the lottery varies. The constructed index increases in risk-taking. Time preference is measured from a hypothetical payoff where the respondents were given a series of choices for whether they would prefer to receive smaller payments sooner versus larger payments later. Scores increase as responses increase in delayed gratification.

All skills measures are standardized with mean zero and a standard deviation of 1 in the entire STEP sample of 15-64 year olds. This allows for ease of interpretation: Coefficients can be interpreted as a percentage "return" to a given measured skill.[8]

Table 2. Self-reported cognitive skills

Use of reading and writing skills	Intensity of use	Level
Does not read/write	Does not use	0
Reads/writes documents of 5 pages or less	Low	1
Reads/writes documents of 6 to 25 pages	Medium	2
Reads/writes documents of more than 25 pages	High	3
Use of numeracy skills	**Complexity of use**	**Level**
Does no math	Does not use	0
Measures or estimates sizes, weights, distances; calculates prices or costs; performs any other multiplication or division	Low	1
Uses or calculates fractions, decimals or percentages	Medium	2
Uses more advanced math such as algebra, geometry, trigonometry	High	3

Source: Pierre et al. 2014

[8] Although the STEP survey measured a range of technical skills, I do not include them in the analysis as they are observed only for employed individuals.

TABLE 3. BEHAVIORAL AND PERSONALITY TRAIT MEASURES

Behavior & personality trait	Question in Module G	Items
Openness	Q.1.03	Do you come up with ideas other people haven't thought of before?
	Q.1.11	Are you very interested in learning new things?
	Q.1.14	Do you enjoy beautiful things, like nature, art and music?
Conscientiousness	Q.1.02	When doing a task, are you very careful?
	Q.1.12	Do you prefer relaxation more than hard work?
	Q.1.17	Do you work very well and quickly?
Extraversion	Q.1.01	Are you talkative?
	Q.1.04	Do you like to keep your opinions to yourself? Do you prefer to keep quiet when you have an opinion?
	Q.1.20	Are you outgoing and sociable, for example, do you make friends very easily?
Agreeableness	Q.1.09	Do you forgive other people easily?
	Q.1.16	Are you very polite to other people?
	Q.1.19	Are you generous to other people with your time or money?
Emotional stability (neuroticism)	Q.1.05	Are you relaxed during stressful situations?
	Q.1.10	Do you tend to worry?
	Q.1.18	Do you get nervous easily?
Grit	Q.1.06	Do you finish whatever you begin?
	Q.1.08	Do you work very hard? For example, do you keep working when others stop to take a break?
	Q.1.13	Do you enjoy working on things that take a very long time (at least several months) to complete?
Hostile attribution bias	Q.1.07	Do people take advantage of you?
	Q.1.22	Are people mean/not nice to you?
Decision-making	Q.1.15	Do you think about how the things you do will affect you in the future?
	Q.1.21	Do you think carefully before you make an important decision?
	Q.1.23	Do you ask for help when you don't understand something?
	Q.1.24	Do you think about how the things you will do will affect others?

Source: Pierre et al. 2014

The measure of experience I use is a measure of actual experience in months and includes experience in the current job as well as experience in the previous (last) job, and is observed only for those currently employed. Full-time status is defined as working 30 hours or more a week. The definition of informality is a common one to all STEP surveys and is based on the number of employees.

The survey collects detailed information on formal education, and technical and vocational education and training. The measures used in this

study are of years of formal education, dummy variables for any technical and vocational education, and apprenticeships and training received.

Urban locations refer to towns and cities that are geographically dispersed throughout the provinces, but are distinguished from rural areas in having better infrastructure, education, and health facilities. The Western province, comprising the three districts of Colombo, Gampaha, and Kalutara includes both urban and rural areas. It has a higher population density than other provinces, better road and electricity infrastructure, and a higher concentration of industrial investment—producing over 40 percent of the country's GDP (World Bank 2007).

Descriptive Statistics

Table 4 provides descriptive statistics of the regression sample of individuals in paid employment, by gender and age, for all the variables used in the analysis. The average male in the sample is 40 years old, while the average female is 42 years old. In the entry sample, the mean age for both men and women is 25. Seventy-five percent of women in the sample are married, compared to 80 percent of men. Men in the entry sample are less likely to have children in the household (31 percent) than women (45 percent), but this is not the case for the full sample. For both samples, an equal proportion of men and women are located in the Western province, but a greater proportion of females are in the urban sector in the entry sample. As expected, more males are in full-time employment than females, however, this difference disappears in the entry sample. Surprisingly, women are *not* overrepresented in informal employment, as is often the case in developing countries (Buvinic, Furst-Nichols, and Koolwal 2014); in the entry sample, males are more likely to be in the informal sector.

The sample reflects Sri Lankan females' gains in educational attainment: Females have more years of education than males in both the full sample and the entry sample. A larger proportion of females than males in paid employment have completed upper secondary and tertiary education. There is no significant difference between genders in terms of having had technical and vocational education or an apprenticeship. However, a greater proportion of females than males reported having had some training in the past year.

Females have higher mean standardized scores than males for self-reported measures of numeracy, writing, and reading. In the full sample, there is no gender difference between scores for core literacy; however, in the entry sample, females have higher mean scores. In general, mean scores are higher in the entry sample relative to the full sample. Assuming that cognitive skill acquisition does take place within formal schooling, these features are consistent with educational expansion, i.e., greater formal school completion rates among young men and women and with higher female completion rates in formal schooling among younger cohorts.

Descriptive statistics for non-cognitive skills in the full sample indicate that males have greater emotional stability and grit, but also greater hostile attribution bias. There are no gender differences in any of the other measures of non-cognitive skills that I examine. The first two results are consistent with the experimental and negotiations literature in developed countries (Bertrand 2011). The sample in this research shows no evidence of the gender differences in agreeableness and risk-taking that is found in this literature (Bertrand 2011).

TABLE 4. DESCRIPTIVE STATISTICS: INDIVIDUALS IN PAID EMPLOYMENT

VARIABLES	(1)	(2)	(3)	(4)
	20-64		20-29	
	Male mean (sd)	Female mean (sd)	Male mean (sd)	Female mean (sd)
Log of hourly earnings	4.737 (0.946)	4.456 (1.069)	4.809 (1.040)	4.540 (1.004)
Experience	184.185 (139.150)	144.308 (125.700)	64.307 (49.528)	48.663 (40.758)
Full-time status	0.740 (0.439)	0.575 (0.495)	0.747 (0.436)	0.662 (0.476)
Informal	0.648 (0.478)	0.608 (0.489)	0.608 (0.490)	0.450 (0.501)
Urban	0.414 (0.493)	0.420 (0.494)	0.337 (0.474)	0.487 (0.503)
Western	0.427 (0.495)	0.375 (0.484)	0.428 (0.496)	0.438 (0.499)
Numeracy	0.094 (0.916)	0.202 (0.865)	0.066 (0.932)	0.347 (0.829)
Reading	-0.079 (0.969)	0.066 (1.007)	0.050 (0.957)	0.427 (0.917)
Writing	0.013 (0.931)	0.177 (1.009)	0.037 (0.972)	0.645 (1.166)
Core literacy	-0.080 (1.039)	0.009 (1.000)	0.129 (0.915)	0.404 (0.676)
Extraversion	0.020 (1.003)	0.027 (1.030)	-0.038 (0.997)	-0.108 (1.119)
Conscientiousness	0.150 (0.980)	0.041 (0.944)	0.105 (0.953)	-0.050 (0.994)
Openness	0.070 (0.972)	-0.023 (1.015)	0.198 (0.936)	0.277 (0.812)
Emotional stability	0.147 (0.986)	-0.031 (1.060)	0.022 (0.977)	-0.138 (0.904)
Agreeableness, cooperation	0.013 (0.994)	0.069 (0.951)	-0.037 (0.952)	0.187 (1.013)
Grit	0.173 (0.969)	0.054 (0.972)	0.042 (1.018)	-0.031 (0.933)
Decision-making	0.007 (1.003)	0.012 (0.946)	-0.080 (1.017)	0.014 (0.864)
Hostile attribution bias	0.134 (0.976)	-0.088 (1.026)	0.066 (0.844)	-0.096 (1.021)
Risk-taking	-0.063 (0.993)	-0.030 (0.955)	0.050 (1.076)	-0.096 (0.913)
Time preference	-0.057 (0.973)	-0.043 (0.981)	0.034 (1.038)	-0.068 (0.972)
Age, years	39.618 (11.231)	41.608 (11.050)	25.205 (2.830)	25.738 (2.718)
Number of years of education	9.252 (3.374)	10.022 (3.798)	9.994 (2.771)	11.038 (2.533)
Has TVET	0.161 (0.367)	0.190 (0.393)	0.199 (0.400)	0.212 (0.412)
Participated in a training course in last 12 months	0.064 (0.245)	0.116 (0.320)	0.060 (0.239)	0.175 (0.382)
Has completed an apprenticeship	0.217 (0.413)	0.190 (0.393)	0.235 (0.425)	0.212 (0.412)
Number of own children under 6 years	0.451 (0.636)	0.327 (0.551)	0.349 (0.571)	0.450 (0.654)
Married	0.799 (0.401)	0.751 (0.433)	0.422 (0.495)	0.537 (0.502)
Observations	778	510	166	80

Notes: (1) Columns [1] - [4] are unweighted means for the regression sample with standard deviations in parenthesis.
(2) The sample is of all employed individuals, age, and gender as indicated.

Table 4 shows that there is a male-favoring gender gap in wages in the full sample of individuals in paid employment, which is consistent with earlier estimates of gender wage gaps for Sri Lanka (Gunewardena et al. 2009). Converting from log hourly earnings into hourly earnings in Rupees (Rs.), females aged 20-64 earn approximately Rs. 86 ($1.45) per hour, while hourly earnings are Rs. 114 ($1.90) for males in the same age group. Females aged 20-29 earn hourly earnings of Rs. 94 ($1.57), while the corresponding hourly earnings for males in the same age group is Rs. 121 ($2.02).[9] Higher average hourly earnings for the entry category most likely reflect the higher average educational attainment of this group. The average gender gap in earnings is approximately 25 percent for the entire sample and 22 percent for entrants.

RESULTS AND DISCUSSION

In this section, results from estimating equation [3] are presented and discussed, beginning with the baseline models—equations [3] and [4]—estimated for numeracy, followed by estimates for equation [4] for the other three measures of cognitive skills, and for two sets of non-cognitive skills. The discussion of these results are followed by the discussion of results from models that combine all skills, and compare returns to skills across various estimations, including the traditional Mincer earnings functions. Finally, I present and discuss estimates from a model that attempts to control for selection bias. Estimates from the first stage regressions in the last set of models are interpreted as probabilities of selection into paid employment.

Cognitive skills

Numeracy, baseline, all

Table 5 presents the baseline model, with numeracy representing the measure of *C* in equation [1]. The first column provides estimates for the entire sample of 20-64 year olds, without separation or controls for gender and age (equation [3]). Returns to numeracy are significant and positive, resulting in a 13 percent increase in hourly earnings.

All other coefficients are significant and have the expected signs. Returns to experience are significant, positive, and decreasing; hourly earnings for full-time status are lower than for part-time status; informality reduces earnings; and being in an urban location or in the Western province increase earnings significantly.

Numeracy, baseline, by gender

Columns (2) and (3) provide estimates for the same sample, for males and females, respectively (equation [4]), and columns (4) and (5) for young males and young females (labor market entrants) respectively. Returns to numeracy are large and significant for both male samples: One standard deviation increase in measured numeracy increases hourly earnings by 17 percent for all males and by 19 percent for young males respectively, and by 9 percent for all females, but do not increase earnings for young females. While I know of no other study in the skills literature that allows for returns to differ by gender, the literature consistently reports lower earnings to females

[9] One USD = approximately Rs. 60 at purchasing power parity exchange rates in 2012 ("Sri Lanka Implied Purchasing Power Parity (PPP) Conversion Rate" 2015).

Table 5: Returns to cognitive skills: Numeracy

VARIABLES	(1)	(2)	(3)	(4)	(5)
		20-64		20-29	
	All	Male	Female	Male	Female
Experience	0.001***	0.000	0.002**	0.006	0.012*
	(0.000)	(0.000)	(0.001)	(0.004)	(0.006)
Experience squared/1000	-0.002**	-0.001	-0.003*	-0.026	-0.112***
	(0.001)	(0.001)	(0.002)	(0.025)	(0.038)
Full-time status	-0.881***	-1.001***	-0.976***	-1.240***	-1.018***
	(0.061)	(0.077)	(0.093)	(0.190)	(0.260)
Informal	-0.352***	-0.245***	-0.611***	-0.070	-0.367
	(0.052)	(0.063)	(0.085)	(0.139)	(0.259)
Urban	0.140***	0.075	0.353***	0.100	0.123
	(0.053)	(0.062)	(0.090)	(0.166)	(0.240)
Western	0.197***	0.241***	0.034	0.066	0.123
	(0.052)	(0.062)	(0.083)	(0.153)	(0.231)
Numeracy	0.132***	0.171***	0.094*	0.193***	-0.026
	(0.027)	(0.029)	(0.049)	(0.061)	(0.129)
Constant	5.146***	5.470***	5.032***	5.496***	5.135***
	(0.078)	(0.102)	(0.116)	(0.223)	(0.351)
Observations	1327	805	522	171	82
Adjusted R-squared	0.184	0.229	0.223	0.261	0.267

Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1
Notes: (1) Least squares regression (unweighted).
(2) The dependent variable is the natural logarithm of gross hourly earnings.
(3) Sample: All employed individuals (ages as shown).

(represented as a dummy variable in models with pooled male and female samples), which is consistent with my result.

Returns to experience are significant for females but not for males. That males do not have returns to experience finds a parallel in Hanushek et al. (2013) where replacing years of education with cognitive skills leads to the elimination of returns to experience for samples of both males and females in some countries (Australia, Austria, Denmark, Germany, Italy, and the U.K.). This result suggests that returns to experience for males are strongly associated with higher measured cognitive skills. A potential explanation is that males with low measured cognitive skills are in jobs such as manual labor where earnings do not increase with experience.

Other results are in line with expectations. Full-time hourly earnings are lower for both males and females. Females in the informal sector have hourly earnings that are 61 percent lower than their formal sector counterparts, while the penalty for male informal sector workers is only 25 percent.

The returns to geography have an interesting gender dimension. Females (in the full sample) in urban sector employment earn 35 percent more than those in rural employment, while there is no significant difference for males. The reverse is true regarding employment in the Western

province, i.e., males in the Western province have a 24 percent premium to being in the Western province. A potential explanation is that the service economy is larger in urban centers, and females may be able to access jobs in these sectors as, for example, teachers or clerks in formal employment. In the Western province, which is where 40 percent of the country's GDP is generated, males' returns are higher, even after controlling for urban location. The implications of these results are that rural females are the most vulnerable in terms of earnings, and that the Western province may be a magnet for male migration as anecdotal evidence suggests. However, this effect disappears in the entry cohort, suggesting greater mobility for young (and probably unmarried) women.

Robustness to alternative measures of skills

I next focus on alternative skill measures to numeracy. Appendix Tables A1-A3 present detailed regression results for reading, writing, and core literacy, and Table 6 summarizes these results alongside differences in skill endowments obtained from Table 4.

In Table 7 and Appendix Tables A4-A6, I present these same estimates for each of the sub-samples along with a model that controls for all other measures of non-cognitive skill. The purpose of this exercise is to test the robustness of my results to alternative measures of skills as well as to observe changes in other locations and control variables. I discuss here the results from Table 7, which presents the results of my sample of interest, females aged 20-64. Columns (2) to (4) in each of these tables present the same estimates as in Table 6 and Appendix Tables A1-A3. The first column in each of these tables includes all cognitive skills together.

For females aged 20-64, Table 7 demonstrates that returns to the different measures of skill vary, with the highest returns being to writing (20 percent), followed by core literacy (16 percent), reading (13 percent), and numeracy (9 percent). When all cogni-

Table 6: Summary results: Cognitive skills

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Female	Male	Female	Male	Female	Male	Female	Male
	20-64				20-29			
VARIABLES	Mean		Returns		Mean		Returns	
Numeracy	0.203	0.092	0.094*	0.171***	0.350	0.069	-0.026	0.193***
	(0.864)	(0.917)	(0.049)	(0.029)	(0.824)	(0.930)	(0.129)	(0.061)
Reading	0.066	-0.081	0.132***	0.152***	0.428	0.048	0.015	0.226***
	(1.006)	(0.968)	(0.045)	(0.033)	(0.911)	(0.955)	(0.115)	(0.076)
Writing	0.179	0.011	0.204***	0.168***	0.655	0.039	0.089	0.193**
	(1.010)	(0.930)	(0.043)	(0.036)	(1.162)	(0.969)	(0.087)	(0.084)
Core literacy	0.010	-0.084	0.161***	0.087***	0.408	0.132	-0.216	-0.015
	(0.999)	(1.043)	(0.047)	(0.030)	(0.673)	(0.913)	(0.197)	(0.092)
Observations	511	781	513	787	81	167	82	169

Notes: (1) Columns [1], [2], [5], and [6] are unweighted means for the regression sample with standard deviations in parentheses.
(2) Columns [3], [4], [7], and [8] provide estimates from separately estimated models.
(3) The dependent variable is the natural logarithm of gross hourly earnings.
(4) The sample is of all employed individuals, age, and gender as indicated.
(5) *, **, and *** represent p values below 0.10, 0.05, and 0.01 respectively.
(6) Numbers in parentheses indicate robust standard errors.

tive skills are included in the model, i.e., controlling for other (measured) cognitive skills, there are no returns to (measured) cognitive skills of numeracy and reading (intensity of use), but writing and core literacy have significant, though smaller, returns.

In the male full sample (Table A4), returns to self-reported skills of numeracy, reading, and writing literacy are all significant, and when controlling for each other become smaller but remain significant, except for returns to core literacy.

That those estimates of returns to skill become smaller when controlling for each other suggests that skills are partially associated with each other, i.e., those who have acquired higher numeracy skills also have higher literacy skills. However the effect of reading and writing literacy does not completely disappear for men, when controlling for numeracy and core literacy, whereas for women the effect of numeracy (and reading) skills on earnings completely disappears when controlling for writing and core literacy. This result suggests that females are not independently

Table 7: Returns to cognitive skills: Females, aged 20-64

VARIABLES	(1) All	(2) Numeracy	(3) Reading	(4) Writing	(5) Core literacy
Experience	0.001	0.002**	0.002**	0.002**	0.002*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Experience squared/1000	-0.002	-0.003*	-0.003*	-0.003	-0.002
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Full-time status	-0.967***	-0.976***	-0.960***	-0.967***	-0.974***
	(0.094)	(0.093)	(0.092)	(0.092)	(0.094)
Informal	-0.469***	-0.611***	-0.563***	-0.481***	-0.587***
	(0.089)	(0.085)	(0.087)	(0.089)	(0.087)
Urban	0.315***	0.353***	0.335***	0.327***	0.358***
	(0.089)	(0.090)	(0.087)	(0.087)	(0.089)
Western	0.044	0.034	0.066	0.041	0.024
	(0.086)	(0.083)	(0.083)	(0.083)	(0.084)
Numeracy	0.016	0.094*			
	(0.051)	(0.049)			
Reading	0.009		0.132***		
	(0.056)		(0.045)		
Writing	0.166***			0.204***	
	(0.051)			(0.043)	
Core literacy	0.103**				0.161***
	(0.050)				(0.047)
Constant	4.963***	5.032***	5.013***	4.954***	5.034***
	(0.118)	(0.116)	(0.115)	(0.116)	(0.119)
Observations	511	522	522	520	513
Adjusted R-squared	0.246	0.223	0.232	0.243	0.236

Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1
Notes: (1) Least squares regression (unweighted).
(2) The dependent variable is the natural logarithm of gross hourly earnings.
(3) Sample: All employed individuals (ages as shown).

rewarded for numeracy skills in the market, a result that is worthy of further exploration.

Females aged 20-29 have no returns to any of the cognitive skills (Table A5) even though they have higher measured skills than their male counterparts (Table 6), whereas males in the entry sample do as well or slightly better than in the full sample, for the self-reported measures of cognitive skill. They do not have returns to core literacy (Table A6). These results suggest that cognitive skill acquisition alone may not be a solution to workforce empowerment for women.

I turn next to estimating returns to skills for measures of non-cognitive skills.

Non-cognitive skills

In this set of regressions I alternately use a single measure of non-cognitive skill to represent C in equations [3] and [4]. Summary results are presented in Table 8, and detailed regression results are presented in Tables A7-A10 (Big Five) and A11-A14 (grit, decision-making, hostile bias, risk-taking, and time preference). The purpose in this exercise is to identify which skills reward women in the labor market and to identify if, as Bertrand (2011) suggests, returns to skills differ by gender.

Columns 2 through 6 in Table A7 indicate that a one standard deviation increase in the measure of openness increases hourly earnings for women aged 20-64 by 21 percent. A similar increase in measures of extraversion, and emotional stability increase hourly earnings by 10 percent. However, women are neither rewarded nor penalized for conscientiousness and agreeableness (Table A7), grit, decision-making, hostile bias, risk-taking, or time-preference (Table A11). Controlling for other measured non-cognitive skills reduces the magnitude of returns to measured skills of openness and emotional stability, and the return to extraversion completely disappears (column 1).

Males in the same age group have earnings premiums of 12 percent for agreeableness, 9 percent for openness and decision-making, 7 percent for hostile attribution bias, 12 percent for risk-taking, but have a negative return to emotional stability, i.e., they are rewarded for neuroticism (Tables A8 and A12). Controlling for other Big Five non-cognitive measures reduces the premium to openness and agreeableness, but does not change the premium to neuroticism. Note that agreeableness measures the tendency to act in a cooperative, unselfish manner, while hostile attribution bias measures the tendency to believe others are hostile toward you. Premiums to both of these are not inconsistent. The result that both men and women are rewarded for openness is consistent with Mueller and Plug (2006), although, unlike those authors, I do not find any gender differences in the distribution of these attributes (Table 8, column 1).

For younger males, agreeableness is the only skill out of the Big Five that has a return (14 percent). They are rewarded for decision-making (21 percent) and risk-taking (20 percent), and the reduction in returns to these skills is in the order of about 1 percent when other skills are controlled for. Younger females also receive a premium for openness but have negative returns to grit, and no returns to any of the other non-cognitive skills.

In general, these results are consistent with the point made by the new perspectives on gender reviewed by Bertrand (2011): Males and females are rewarded differently in the market for the same skills. These results are possibly the first piece of evidence from

Table 8: Summary results: Non-cognitive skills

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Age 20-64				Age 20-29			
	Female	Male	Female	Male	Female	Male	Female	Male
	Mean		Returns		Mean		Returns	
Extraversion	0.024	0.026	0.103**	0.043	-0.098	-0.038	0.147	0.076
	(1.027)	(0.999)	(0.041)	(0.031)	(1.116)	(0.990)	(0.092)	(0.078)
Conscientiousness	0.054	0.162	0.065	0.006	-0.027	0.134	0.009	0.025
	(0.946)	(0.977)	(0.045)	(0.033)	(1.009)	(0.963)	(0.096)	(0.099)
Openness	-0.038	0.061	0.209***	0.090***	0.267	0.201	0.190*	0.068
	(1.031)	(0.979)	(0.039)	(0.030)	(0.812)	(0.935)	(0.105)	(0.071)
Emotional stability	-0.028	0.155	0.096**	-0.055*	-0.128	0.031	-0.047	-0.073
	(1.060)	(0.988)	(0.038)	(0.030)	(0.903)	(0.988)	(0.103)	(0.072)
Agreeableness, cooperation	0.063	0.012	0.061	0.116***	0.185	-0.037	0.030	0.135*
	(0.950)	(0.988)	(0.042)	(0.029)	(1.006)	(0.941)	(0.095)	(0.076)
Grit	0.070	0.180	0.004	0.045	-0.009	0.062	-0.164*	0.091
	(0.973)	(0.969)	(0.042)	(0.035)	(0.949)	(1.029)	(0.094)	(0.090)
Decision-making	0.005	0.002	-0.011	0.090***	0.011	-0.081	0.077	0.209***
	(0.947)	(1.008)	(0.044)	(0.031)	(0.859)	(1.013)	(0.121)	(0.077)
Hostile attribution bias	-0.087	0.119	-0.026	0.067**	-0.110	0.053	0.046	0.085
	(1.028)	(0.978)	(0.041)	(0.028)	(1.023)	(0.868)	(0.096)	(0.076)
Risk-taking	-0.034	-0.059	0.033	0.121***	-0.103	0.054	-0.094	0.201***
	(0.952)	(0.997)	(0.041)	(0.032)	(0.909)	(1.076)	(0.113)	(0.063)
Time preference	-0.038	-0.064	-0.000	0.037	-0.044	0.030	-0.090	0.017
	(0.984)	(0.971)	(0.043)	(0.029)	(0.989)	(1.037)	(0.091)	(0.059)
Observations	521	801	522	804	81	171	82	171

Notes: (1) Columns [1], [2], [5], and [6] are unweighted means for the regression sample with standard deviations in parentheses.
(2) Columns [3], [4], [7], and [8] provide estimates from separately estimated models.
(3) The dependent variable is the natural logarithm of gross hourly earnings.
(4) The sample is of all employed individuals, age, and gender as indicated.
(5) *, **, and *** represent p values below 0.10, 0.05, and 0.01 respectively.
(6) Numbers in parentheses indicate robust standard errors.

a developing country context that adds to a growing literature (which has been restricted to developed countries) that suggests that the emphasis on skills acquisition as a means to improve labor market outcomes for females may be misplaced. The answer to gender equality in the workplace may instead lie in addressing structural inequality in the market.

Cognitive and non-cognitive skills

I next examine returns to skills while controlling for all other measures of cognitive and non-cognitive skills and present results for all four sub-samples in Table 9. A comparison of Table 9 with previous results indicates the robustness of the estimates of returns to cognitive skills to the different specifications: For women aged 20-64, the return to writing remains significant and roughly of the same order of magnitude—13 to 16 percent—in both specifications. For men in the same age group, the estimates on numeracy and reading remain significant and of the same order of magnitude—8 to 11 percent and 7 percent, respectively. For entry-level females, the result

of no returns to cognitive skills remains robust across specifications, while for male entrants the return to reading—with an earnings premium of 17 percent—remains robust.

Robustness in estimates of returns to non-cognitive skills is somewhat evident: For females in the full sample, emotional stability and openness have earnings premiums of 17-19 percent and 7 percent, respectively. For males in the full sample, agreeableness earns a reward of a 9-10 percent increase in earnings and risk-taking a premium of 10 percent. However, the premiums to hostile attribution bias and neuroticism disappear with the inclusion of additional controls of all measured skills. For female entrants, the estimates on openness and grit remain significant. However, openness has a premium of 19 percent when controlling only for other Big Five skills, which increases to 30 percent when controlling for other cognitive and non-cognitive skills as well. The estimate of a negative return to grit similarly increases from 20 percent to 41 percent when controlling for all other skills. Younger males have an earnings premium to decision-making and risk-taking (18-19 percent) that is robust to the inclusion of additional controls.

Skills, formal and vocational education, training, and apprenticeships

In Tables A15-A18, I compare returns to skills estimates with models that include other measures of human capital: Years of formal education, dummy variables for vocational education, training received, and apprenticeships engaged in during the last 12 months. The purpose of this exercise is to explore whether these inclusions change the size of estimates on skills. If they do, it would indicate that skills operate through these other measures of human capital. The first three columns of each table focus on cognitive skills, and the last three columns focus on non-cognitive skills.

In all estimates, the returns to schooling are positive and significant, generating an earnings premium of approximately 7 percent, except in the case of female entrants, where the premium is higher in the estimation of returns to cognitive skills only. In all estimations, controlling for schooling reduces the size of the estimates on cognitive skills, indicating that schooling at least partially explains the return to the skill, i.e., cognitive skill acquisition takes place within formal schooling. Returns to cognitive skill that are not explained by schooling may be due to idiosyncratic variation in the quality of the skill. Moreover, adding TVET, training, and apprenticeship does nothing to change this, and the coefficients are not significant in the estimates presented in the third column. This is consistent with the empirical literature on TVET that shows that returns to training are at best ambiguous (The World Bank 2011a; Ribound, Savchenko, and Tan 2007; Dundar et al. 2014; Tan 2004).

Females, aged 20-64, cognitive skills

Adding the number of years of education as a control to the estimation of returns to skills reduces the return to writing from 18 percent to 11 percent. This change implies that formal schooling plays a role in the acquisition of cognitive skills for these females. It also implies that 11 percent of this return is unexplained, which could arise from idiosyncratic variation in the quality of the skill. Controlling for skills acquired, one year of education has a 7 percent return in terms of earnings.

Females, aged 20-64, non-cognitive skills

Controlling for education reduces the return to openness, implying that schooling plays a role in

TABLE 9: RETURNS TO SKILLS: ALL MEASURES

VARIABLES	(1) Females Aged 20-64	(2) Males Aged 20-64	(3) Females Aged 20-29	(4) Males Aged 20-29
Experience	0.001	0.001	0.014*	0.005
	(0.001)	(0.000)	(0.007)	(0.004)
Experience squared/1000	-0.001	-0.001*	-0.118**	-0.024
	(0.002)	(0.000)	(0.049)	(0.025)
Full-time status	-0.965***	-0.993***	-1.004***	-1.300***
	(0.094)	(0.080)	(0.262)	(0.199)
Informal	-0.489***	-0.160**	-0.492*	-0.002
	(0.088)	(0.067)	(0.281)	(0.151)
Urban	0.333***	0.056	0.105	0.150
	(0.085)	(0.063)	(0.239)	(0.170)
Western	0.029	0.241***	0.107	0.046
	(0.085)	(0.063)	(0.252)	(0.146)
Numeracy	-0.000	0.108***	-0.117	0.084
	(0.052)	(0.031)	(0.150)	(0.067)
Reading	-0.009	0.073**	-0.121	0.165*
	(0.056)	(0.036)	(0.151)	(0.090)
Writing	0.134***	0.056	0.226*	0.038
	(0.050)	(0.040)	(0.120)	(0.104)
Core literacy	0.070	0.039	-0.267	-0.092
	(0.052)	(0.031)	(0.206)	(0.089)
Extraversion	0.045	0.033	0.260**	0.040
	(0.045)	(0.030)	(0.104)	(0.077)
Conscientiousness	0.010	-0.018	-0.022	-0.046
	(0.050)	(0.032)	(0.117)	(0.082)
Openness	0.182***	0.002	0.309**	-0.080
	(0.051)	(0.035)	(0.127)	(0.078)
Emotional stability	0.076**	-0.020	-0.108	0.003
	(0.039)	(0.030)	(0.102)	(0.069)
Agreeableness, cooperation	0.049	0.086***	0.014	0.049
	(0.055)	(0.033)	(0.114)	(0.075)
Grit	-0.077	-0.004	-0.413***	0.036
	(0.048)	(0.037)	(0.110)	(0.082)
Decision-making	-0.094*	0.031	0.061	0.151*
	(0.051)	(0.034)	(0.166)	(0.080)
Hostile attribution bias	0.003	0.041	0.047	0.046
	(0.043)	(0.030)	(0.124)	(0.083)
Risk-taking	0.038	0.102***	-0.134	0.169***
	(0.040)	(0.034)	(0.100)	(0.063)
Time preference	0.007	0.011	-0.038	-0.034
	(0.043)	(0.030)	(0.105)	(0.060)
Constant	5.000***	5.406***	5.050***	5.534***
	(0.118)	(0.105)	(0.385)	(0.240)
Observations	510	779	80	167
Adjusted R-squared	0.269	0.256	0.375	0.312

Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1
Notes: (1) Least squares regression (unweighted).
(2) The dependent variable is the natural logarithm of gross hourly earnings.
(3) Sample: All employed individuals.

inculcating openness. The penalty for grit disappears when controlling for education. However, the penalty for decision-making is unchanged, when education controls are introduced. The idea that the market should penalize grit is counterintuitive and not found in the literature. However, that the negative coefficient for grit moves closer to zero when a control for education is introduced implies that grit and schooling are substitutes. One could speculate that women with fewer years of formal schooling are able to make up for the loss in earnings by undertaking work that pays more but requires more grit, such as factory work, for example.

Males, aged 20-64, cognitive and non-cognitive skills

Controlling for years of education reduces the return to numeracy for males, and the return to reading disappears, with no change when additional controls for TVET, training, and apprenticeship are included. This implies that returns to numeracy are at least partially explained by schooling, while the return to reading is completely explained by schooling. Among non-cognitive skills, however, there is no change in the return to agreeableness, when schooling, TVET, training, and apprenticeship are controlled for, indicating that agreeableness is not acquired with formal or non-formal schooling.

Females, aged 20-29, cognitive and non-cognitive skills

Among labor market entrants, for young women, controlling for education and other measures of human capital have no effect on the (zero) returns to cognitive skills. However, returns to formal schooling are independently significant, with one year of schooling increasing earnings by 7 percent. Among non-cognitive skills, the returns to extraversion increases when schooling controls are introduced, implying a negative relationship between the returns to schooling and the returns to extraversion. This suggests that they are substitutes in the labor market. The result for openness and grit are similar to the larger sample of females and can be interpreted in the same way.

Males, aged 20-29, cognitive and non-cognitive skills

When schooling is added to the cognitive skills regression, the returns to reading and numeracy disappear completely, implying that the 8 percent return to a year of schooling includes the "lost" returns to reading and numeracy, or to put it another way, all acquisition of reading literacy and numeracy are associated with schooling, if not acquired with schooling. This contrasts with the results for female entrants, who receive returns to schooling, but no returns to skill. Among non-cognitive skills, returns to decision-making and risk-taking also become smaller when years of education are added to the non-cognitive skills regression, implying a positive association with schooling.

These results suggest that the cognitive skills that yield returns to men (numeracy) and women (writing) are associated with formal schooling, except in the case of young women. The relationship between non-cognitive skills and schooling is more complex. The results for females indicate a positive association between openness and schooling, and the male results indicate no association between agreeableness and schooling, which contrast with the literature (Almund et al. 2011), who find a negative association between schooling and these two Big Five skills. Finally, it is worth reiterating the gender-specific nature of my results: Male entrants to the labor market have returns to risk-taking and decision-making

skills that are associated with schooling, while this is not observed for female entrants. The latter could indicate a missing link in in the formation of these skills in girls' education in Sri Lanka, and ties in with the literature that explores skill formation in schools (Bertrand 2011).

Skills, geography, and labor markets

In Appendix Tables A19-A22, I test if skills and returns to skills are associated with labor market and geographic location. For example, if more highly skilled men and women are in full-time and formal employment or in urban and Western province locations, they may receive higher returns that are not captured in the regressions so far, because these factors are controlled for. On the other hand, exclusion of these variables may overstate the returns to skill if returns have a geographic or sectoral bias. Column (3) and (6) in Tables A19-A22 include labor market and geographic location variables (as has been done all along) and are the same set of estimates presented in columns (1) and (4) of Tables A15-A18.

Results for women aged 20-64 indicate that returns to cognitive skills, and returns to openness among non-cognitive skills, are robust to the change in model specification. However, the negative returns to grit and decision-making disappear, when geographic controls are excluded from the model, suggesting an association between location and returns to grit and decision-making.

For males aged 20-64, omitting location from the model has the effect of increasing the returns to numeracy, and core literacy becomes significant (column 1, compared with columns 2 and 3). This suggests that returns to numeracy and core literacy *are* associated with geography, but only for men. Among non-cognitive skills, returns to extraversion and openness are also sensitive to the exclusion of these variables, and similarly suggest that returns are higher in urban locations and in the Western province.

For labor market entrants, results remain robust to model specifications without geographic locational and labor market variables, indicating that returns to this age group are less affected by geography, for both young men and young women.

Returns to skills taking non-employment into account

The previous analysis was based on ordinary least squares regression, and the results were conditional on being in paid employment. However, if, as is highly likely in the case of employed females, there is sample selection bias, these estimates will be biased. To correct for bias, I follow Heckman's two-step method, and present the results in Tables A23.[10] The exclusion restrictions (variables that influence the probability of being employed, but do not influence earnings) that I use are the number of young children in the household that the individual is a parent of, and that the individual concerned is currently married or co-habiting. As all regressors should be observed for all individuals, i.e., those employed, as well as those unemployed and out of the labor force, I use age as a proxy for experience, rather than actual experience and omit the dummy variables for full-time employment and informality.

[10] I conduct the analysis for all sub-samples. However, I only present the results that indicated selection bias for women in the full sample in Table A23.

The results of the models indicate that selectivity is an issue for the female full sample, but not for young females (entrants) or for either of the male samples. This is consistent with the literature and suggests that the constraints to labor force participation are greater for older (and therefore more likely to be married) women. The empirical results discussed thus far hold for all of my sub-samples, except the female full sample. I discuss below the implications for my results.

Correcting for selection bias yields higher returns to skill for writing for females and emotional stability, while decision-making, which previously had no return now yields, a return (column 2). These results suggest that if women in the 20-64 age group who are *not* in the labor force or who are unemployed or in unpaid employment *were* in the labor force, average returns to these skills would rise. The implication is that women who are *not* in paid employment have the characteristics or (cognitive and non-cognitive) skills required to earn even higher earnings than those who are in the market, and is indicative of selection out of paid employment by women with higher skills. This brings us to the question as to what might lead women to do so.

The first step model of selection into paid employment from unemployment, inactivity, or unpaid family work is of interest as an approximation of the female labor force participation decision. Being married or cohabiting reduces the probability of selecting into employment for females, as does the number of young children one has.

For males, being married has the opposite effect, and there is no effect of children on the male participation decision at all. These results suggest that inertia in cultural norms that consider married females to be primarily homemakers and males to be primarily breadwinners play a major role in determining if women engage in paid employment.

Skills, both cognitive and non-cognitive, play a role in the selection of women into paid employment. Numeracy skills and writing skills, as well as conscientiousness and emotional stability, are positively associated with workforce participation, while decision-making is not. These results indicate that all cognitive skills play a role in getting women into the workforce even if they are not both rewarded in terms of higher earnings (writing yields returns, but numeracy does not). Similarly, grit may help to get women hired, but is not rewarded with higher earnings.

I now turn to the policy implications of my results.

SUMMARY AND CONCLUSIONS

I attempted, in this paper, to address the puzzle of why Sri Lankan women, whose educational attainment is higher than that of men, are underrepresented in the workforce. Drawing on the human capital and skills and new perspectives in gender literatures, I attempted to see if skills—both cognitive and non-cognitive—were the missing piece of the puzzle. I used a recent World Bank data set on skills for employment and productivity (STEP) and a gender-analytic framework to address the question. I first examined the distribution of skills between men and women, and then looked at how the labor market rewarded these skills. I then examined returns to cognitive and non-cognitive skills, first separately, and then controlling for all skills, years of education, technical and vocational training, apprenticeship, and location. Finally, I attempted to

correct for selection bias and examined the effect of selection bias in the sample of all women. I now summarize results and attempt to draw some conclusions that may be relevant for policy.

The results indicate that women in Sri Lanka have higher measured cognitive skill than men, and are not very different than men in terms of possession of non-cognitive skills that the market values. Rather, the results show that the market treats men and women with the same skills differently: Men get paid more. In addition, among labor market entrants, although women have higher mean cognitive skills, they do not earn any returns to cognitive skills, suggesting a role for policy intervention in the labor market.

Differential returns are evident in relation to non-cognitive skills as well. Results show that women are just as extraverted, open, agreeable, good at decision-making and risk-taking as men but are only rewarded for openness and are penalized for their decision-making ability. On the other hand, men are rewarded for all these qualities as well as for being neurotic (the opposite of emotional stability) and for displaying hostile attribution bias. Similarly, although there is no difference between male and female labor market entrants in terms of non-cognitive skills, younger females do not earn any return to non-cognitive skills except for openness and are penalized for having grit. Younger males on the other hand, are rewarded for agreeableness, decision-making, and risk-taking. These results suggest that skills acquisition alone will not eliminate gender gaps in earnings. Further research will be needed to explore whether the differential returns are owing to occupational segregation by gender, or whether *employers* treat the same skills in differently depending on whether they are displayed by men or women. The experimental literature in Europe and the U.S. (reviewed in the paper) suggests that affirmative action-type policies may be justified in this context. Either way, it is likely that education policy to enhance skill acquisition among both boys and girls will need to be supplemented by labor market policies to ensure gender equity.

Research findings indicate that women have more years of formal schooling and training, less experience, and are no different to men in terms of technical and vocational education (TVET), or having engaged in an apprenticeship. Examining the link between schooling, TVET, training and apprenticeship, the paper finds that returns to measured cognitive skills decrease when controls for the years of education are included in the model, suggesting that higher values of measured cognitive skills are associated with more years of schooling. Specifically, cognitive skills that yield returns to men (numeracy) and women (writing) are associated with formal schooling, except in the case of women aged 20-29. However, TVET, training, and apprenticeships have no independent effect over and above the effect of schooling, suggesting that their role in enhancing earnings may be less than is typically assumed.

The relationship between non-cognitive skills and schooling is more complex than that between cognitive skills and schooling. Results for women find that returns to openness and emotional stability decrease when controls for years of education are included, indicating that these skills are associated with schooling—women who stay longer in school are more open, have greater emotional stability, and, thus, are rewarded with higher earnings in the labor market. For men, the parallel effect is in risk-taking; men who stay longer in school and have greater risk-taking characteristics

earn higher rewards in the labor market. Among entrants, the paper finds that male entrants to the labor market have returns to risk-taking and decision-making skills that are associated with more schooling. Among younger females, returns to openness are completely explained by schooling, and negative returns to grit decrease in magnitude when controlling for schooling, indicating that schooling offsets the (peculiar) labor market penalty for grit. These results suggest that for both men and women, formal schooling is related developing the non-cognitive skills that are rewarded in the labor market. For boys and girls to take advantage of this association, they may need to stay in school longer than the compulsory requirement of upper secondary school completion. Policy initiatives to extend compulsory schooling to senior secondary level are supported by this evidence. The nuanced nature of these results implies that any education policy approach to improving skill acquisition with a view to improving labor market outcomes must seriously consider gender in its design.

The paper also finds that urban women have an earnings premium relative to rural women, which is suggestive of access to good jobs for women in an urban location, most likely in the service sector. For men, however, the parallel premium is in the Western province, relative to the rest of the country. Geographical segmentation of the labor market suggests that rural women may be disadvantaged given low mobility, especially if they bear a greater responsibility for the care of young children. Both men and women have higher hourly earnings in part-time work, but women are the only ones who have an earnings penalty for engaging in informal sector work. There is some evidence that returns to skills are associated with urban and Western province locations for men, but not for women.

The results also indicate that for women, being married reduces the probability of being in paid employment and having young children reduces the probability of paid employment by 17 percent. Being married increases the probability of male participation in paid work and having young children has no effect at all on whether men engage in paid work. Again, these results suggest inertia in cultural norms regarding the division of household work. Evidence from Europe and the U.S. suggests that affirmative action-type policies and policies that increase the availability and reduce the cost of child care have succeeded in increasing female labor force participation. In the context of these results, this would be an important policy avenue for further exploration for Sri Lanka.

The results also indicate that average returns to women from cognitive skills would increase by 75 percent if women who are inactive, in unpaid work, or unemployed were to engage in paid work. This finding implies that women who are not in paid employment have more cognitive skills that are rewarded by the market than those in paid employment, providing a stronger motivation to consider policy options that will bring these women into the paid workforce.

Simply put, young women entering the labor force experience lower returns to skills (except for openness) and greater penalties when working in the informal sector than men. While writing and openness are rewarded in the full sample for women and both are associated with schooling, it is not surprising that greater skills acquisition for women (as I noted in the descriptive statistics) has not led to a closing of the gender gap either in earnings or employment. While there remains scope for the acquisition of skills rewarded in the labor market, it is clear that skill acquisition alone is not a solution to workforce empowerment for women in Sri Lanka.

As described and explained above, these results suggest identify potential areas of intervention and thus policy recommendations in three major spheres vital to women's engagement in economic activity: education, family-friendly social policy, and the labor market. Clearly, the education system appears to have done well by both men and women, in terms of cognitive skills acquisition, though many of these skills are not rewarded in the labor market. Thus, as explored above, education policies can help girls acquire skills that are rewarded in the labor market, especially risk-taking and decision-making. Importantly, these policies will not be enough, as the evidence also shows that even if they have these skills, they may not be equally remunerated as men. Thus, education reform policies or programs that attempt to address non-cognitive skill acquisition need to be informed by gender aspects in their design.

As noted above, education policies cannot stand alone in resolving this challenge: Labor market regulations need better enforcement to prevent discrimination. As I explain above, in order to reduce earnings bias against women, affirmative action-type policies—which have been somewhat successful in the developed world—are needed and may also help accelerate change in cultural norms as they have in some developed countries (Boeri et al. 2007).

Similarly, social and family policies can also address inertia in cultural norms that consider married females to be primarily homemakers and males to be primarily breadwinners. Provision of (subsidized) day care, active labor market policies that inform women about job openings and career opportunities (to counteract segregation into low paying jobs) as well as mentoring/coaching schemes especially for younger women can potentially encourage female participation in the workforce and help bring more women into the labor force and promote fairer treatment when there, thereby creating favorable conditions for future generations of women to enter the labor market.

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APPENDIX: REGRESSION TABLES

TABLE A1: RETURNS TO COGNITIVE SKILLS: READING LITERACY

VARIABLES	(1)	(2)	(3)	(4)	(5)
		20-64		20-29	
	All	Male	Female	Male	Female
Experience	0.001***	0.001	0.002**	0.005	0.012*
	(0.000)	(0.000)	(0.001)	(0.004)	(0.006)
Experience squared/1000	-0.002***	-0.001**	-0.003*	-0.021	-0.109***
	(0.001)	(0.001)	(0.002)	(0.024)	(0.038)
Full-time status	-0.867***	-0.982***	-0.960***	-1.305***	-1.022***
	(0.061)	(0.079)	(0.092)	(0.195)	(0.266)
Informal	-0.305***	-0.197***	-0.563***	-0.029	-0.368
	(0.054)	(0.067)	(0.087)	(0.141)	(0.256)
Urban	0.128**	0.058	0.335***	0.076	0.117
	(0.052)	(0.062)	(0.087)	(0.158)	(0.243)
Western	0.221***	0.263***	0.066	0.108	0.132
	(0.053)	(0.063)	(0.083)	(0.154)	(0.235)
Reading	0.137***	0.152***	0.132***	0.226***	0.015
	(0.028)	(0.033)	(0.045)	(0.076)	(0.115)
Constant	5.116***	5.427***	5.013***	5.516***	5.126***
	(0.079)	(0.104)	(0.115)	(0.227)	(0.350)
Observations	1323	801	522	170	82
Adjusted R-squared	0.187	0.223	0.232	0.270	0.267

Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1
Notes: (1) Least squares regression (unweighted).
(2) The dependent variable is the natural logarithm of gross hourly earnings.
(3) Sample: All employed individuals (ages as shown).

TABLE A2: RETURNS TO COGNITIVE SKILLS: WRITING LITERACY

VARIABLES	(1)	(2)	(3)	(4)	(5)
		20-64		20-29	
	All	Male	Female	Male	Female
Experience	0.001***	0.000	0.002**	0.005	0.011*
	(0.000)	(0.000)	(0.001)	(0.004)	(0.006)
Experience squared/1000	-0.002***	-0.001*	-0.003	-0.018	-0.102***
	(0.001)	(0.000)	(0.002)	(0.025)	(0.037)
Full-time status	-0.858***	-0.962***	-0.967***	-1.284***	-1.066***
	(0.061)	(0.078)	(0.092)	(0.195)	(0.280)
Informal	-0.269***	-0.192***	-0.481***	-0.034	-0.379
	(0.054)	(0.066)	(0.089)	(0.142)	(0.256)
Urban	0.125**	0.058	0.327***	0.082	0.113
	(0.053)	(0.063)	(0.087)	(0.178)	(0.240)
Western	0.201***	0.244***	0.041	0.058	0.178
	(0.052)	(0.062)	(0.083)	(0.152)	(0.229)
Writing	0.174***	0.168***	0.204***	0.193**	0.089
	(0.028)	(0.036)	(0.043)	(0.084)	(0.087)
Constant	5.083***	5.409***	4.954***	5.527***	5.104***
	(0.078)	(0.102)	(0.116)	(0.224)	(0.351)
Observations	1323	803	520	170	82
Adjusted R-squared	0.193	0.226	0.243	0.258	0.277

Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1
Notes: (1) Least squares regression (unweighted).
(2) The dependent variable is the natural logarithm of gross hourly earnings.
(3) Sample: All employed individuals (ages as shown).

TABLE A3: RETURNS TO COGNITIVE SKILLS: CORE LITERACY

VARIABLES	(1)	(2)	(3)	(4)	(5)
		20-64		20-29	
	All	Male	Female	Male	Female
Experience	0.002***	0.001	0.002*	0.005	0.013*
	(0.000)	(0.000)	(0.001)	(0.004)	(0.007)
Experience squared/1000	-0.002***	-0.001**	-0.002	-0.026	-0.122***
	(0.001)	(0.000)	(0.002)	(0.026)	(0.046)
Full-time status	-0.853***	-0.942***	-0.974***	-1.275***	-0.986***
	(0.062)	(0.080)	(0.094)	(0.193)	(0.258)
Informal	-0.342***	-0.255***	-0.587***	-0.112	-0.355
	(0.053)	(0.067)	(0.087)	(0.147)	(0.248)
Urban	0.138***	0.067	0.358***	0.147	0.076
	(0.053)	(0.064)	(0.089)	(0.167)	(0.253)
Western	0.176***	0.219***	0.024	0.051	0.125
	(0.053)	(0.063)	(0.084)	(0.156)	(0.232)
Core literacy	0.118***	0.087***	0.161***	-0.015	-0.216
	(0.027)	(0.030)	(0.047)	(0.092)	(0.197)
Constant	5.132***	5.435***	5.034***	5.573***	5.227***
	(0.079)	(0.105)	(0.119)	(0.231)	(0.382)
Observations	1300	787	513	169	81
Adjusted R-squared	0.181	0.206	0.236	0.250	0.287

Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1
Notes: (1) Least squares regression (unweighted).
(2) The dependent variable is the natural logarithm of gross hourly earnings.
(3) Sample: All employed individuals (ages as shown).

TABLE A4: RETURNS TO COGNITIVE SKILLS: MALES, AGED 20-64

VARIABLES	(1) All	(2) Numeracy	(3) Reading	(4) Writing	(5) Core literacy
Experience	0.000	0.000	0.001	0.000	0.001
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Experience squared/1000	-0.001*	-0.001	-0.001**	-0.001*	-0.001**
	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)
Full-time status	-0.980***	-1.001***	-0.982***	-0.962***	-0.942***
	(0.079)	(0.077)	(0.079)	(0.078)	(0.080)
Informal	-0.154**	-0.245***	-0.197***	-0.192***	-0.255***
	(0.068)	(0.063)	(0.067)	(0.066)	(0.067)
Urban	0.034	0.075	0.058	0.058	0.067
	(0.062)	(0.062)	(0.062)	(0.063)	(0.064)
Western	0.239***	0.241***	0.263***	0.244***	0.219***
	(0.063)	(0.062)	(0.063)	(0.062)	(0.063)
Numeracy	0.121***	0.171***			
	(0.031)	(0.029)			
Reading	0.083**		0.152***		
	(0.037)		(0.033)		
Writing	0.075*			0.168***	
	(0.040)			(0.036)	
Core literacy	0.029				0.087***
	(0.032)				(0.030)
Constant	5.399***	5.470***	5.427***	5.409***	5.435***
	(0.106)	(0.102)	(0.104)	(0.102)	(0.105)
Observations	781	805	801	803	787
Adjusted R-squared	0.238	0.229	0.223	0.226	0.206

Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1
Notes: (1) Least squares regression (unweighted).
(2) The dependent variable is the natural logarithm of gross hourly earnings.
(3) Sample: All employed individuals (ages as shown).

TABLE A5: RETURNS TO COGNITIVE SKILLS: FEMALES, AGED 20-29

VARIABLES	(1) All	(2) Numeracy	(3) Reading	(4) Writing	(5) Core literacy
Experience	0.012*	0.012*	0.012*	0.011*	0.013*
	(0.007)	(0.006)	(0.006)	(0.006)	(0.007)
Experience squared/1000	-0.119***	-0.112***	-0.109***	-0.102***	-0.122***
	(0.044)	(0.038)	(0.038)	(0.037)	(0.046)
Full-time status	-1.036***	-1.018***	-1.022***	-1.066***	-0.986***
	(0.275)	(0.260)	(0.266)	(0.280)	(0.258)
Informal	-0.363	-0.367	-0.368	-0.379	-0.355
	(0.262)	(0.259)	(0.256)	(0.256)	(0.248)
Urban	0.078	0.123	0.117	0.113	0.076
	(0.254)	(0.240)	(0.243)	(0.240)	(0.253)
Western	0.184	0.123	0.132	0.178	0.125
	(0.239)	(0.231)	(0.235)	(0.229)	(0.232)
Numeracy	-0.074	-0.026			
	(0.140)	(0.129)			
Reading	-0.019		0.015		
	(0.142)		(0.115)		
Writing	0.136			0.089	
	(0.116)			(0.087)	
Core literacy	-0.267				-0.216
	(0.207)				(0.197)
Constant	5.212***	5.135***	5.126***	5.104***	5.227***
	(0.407)	(0.351)	(0.350)	(0.351)	(0.382)
Observations	81	82	82	82	81
Adjusted R-squared	0.279	0.267	0.267	0.277	0.287

Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1
Notes: (1) Least squares regression (unweighted).
(2) The dependent variable is the natural logarithm of gross hourly earnings.
(3) Sample: All employed individuals (ages as shown).

TABLE A6: RETURNS TO COGNITIVE SKILLS: MALES, AGED 20-29

VARIABLES	(1) All	(2) Numeracy	(3) Reading	(4) Writing	(5) Core literacy
Experience	0.006	0.006	0.005	0.005	0.005
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Experience squared/1000	-0.030	-0.026	-0.021	-0.018	-0.026
	(0.026)	(0.025)	(0.024)	(0.025)	(0.026)
Full-time status	-1.356***	-1.240***	-1.305***	-1.284***	-1.275***
	(0.198)	(0.190)	(0.195)	(0.195)	(0.193)
Informal	-0.004	-0.070	-0.029	-0.034	-0.112
	(0.151)	(0.139)	(0.141)	(0.142)	(0.147)
Urban	0.042	0.100	0.076	0.082	0.147
	(0.174)	(0.166)	(0.158)	(0.178)	(0.167)
Western	0.098	0.066	0.108	0.058	0.051
	(0.157)	(0.153)	(0.154)	(0.152)	(0.156)
Numeracy	0.116*	0.193***			
	(0.061)	(0.061)			
Reading	0.165*		0.226***		
	(0.086)		(0.076)		
Writing	0.074			0.193**	
	(0.095)			(0.084)	
Core literacy	-0.097				-0.015
	(0.093)				(0.092)
Constant	5.534***	5.496***	5.516***	5.527***	5.573***
	(0.237)	(0.223)	(0.227)	(0.224)	(0.231)
Observations	167	171	170	170	169
Adjusted R-squared	0.290	0.261	0.270	0.258	0.250

Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1
Notes: (1) Least squares regression (unweighted).
(2) The dependent variable is the natural logarithm of gross hourly earnings.
(3) Sample: All employed individuals (ages as shown).

TABLE A7: RETURNS TO NON-COGNITIVE SKILLS, BIG FIVE: FEMALES, AGED 20-64

VARIABLES	(1) All	(2) Extraversion	(3) Conscientiousness	(4) Openness	(5) Emotional stability	(6) Agreeableness, cooperation
Experience	0.002**	0.002**	0.002**	0.002**	0.002**	0.002***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Experience squared/1000	-0.003*	-0.003**	-0.003*	-0.003*	-0.003*	-0.004**
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Full-time status	-0.961***	-0.972***	-0.965***	-0.970***	-0.960***	-0.971***
	(0.091)	(0.093)	(0.093)	(0.091)	(0.093)	(0.093)
Informal	-0.575***	-0.630***	-0.635***	-0.581***	-0.627***	-0.634***
	(0.082)	(0.083)	(0.084)	(0.082)	(0.084)	(0.083)
Urban	0.344***	0.399***	0.375***	0.330***	0.377***	0.366***
	(0.084)	(0.086)	(0.088)	(0.086)	(0.088)	(0.088)
Western	0.036	0.025	0.037	0.032	0.033	0.034
	(0.081)	(0.083)	(0.084)	(0.081)	(0.083)	(0.084)
Extraversion	0.052	0.103**				
	(0.042)	(0.041)				
Conscientiousness	-0.004		0.065			
	(0.047)		(0.045)			
Openness	0.195***			0.209***		
	(0.045)			(0.039)		
Emotional stability	0.073*				0.096**	
	(0.039)				(0.038)	
Agreeableness, cooperation	-0.014					0.061
	(0.047)					(0.042)
Constant	5.030***	5.043***	5.043***	5.020***	5.056***	5.038***
	(0.115)	(0.116)	(0.117)	(0.113)	(0.118)	(0.116)
Observations	522	522	522	522	522	522
Adjusted R-squared	0.259	0.227	0.221	0.257	0.227	0.221

Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1
Notes: (1) Least squares regression (unweighted).
(2) The dependent variable is the natural logarithm of gross hourly earnings.
(3) Sample: All employed individuals (ages as shown).

TABLE A8: RETURNS TO NON-COGNITIVE SKILLS, BIG FIVE: MALES, AGED 20-64

VARIABLES	(1) All	(2) Extraversion	(3) Conscientiousness	(4) Openness	(5) Emotional stability	(6) Agreeableness, cooperation
Experience	0.001	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Experience squared/1000	-0.001**	-0.001*	-0.001**	-0.001**	-0.001**	-0.001**
	(0.000)	(0.001)	(0.001)	(0.000)	(0.001)	(0.000)
Full-time status	-0.986***	-0.959***	-0.964***	-0.971***	-0.978***	-0.973***
	(0.080)	(0.079)	(0.079)	(0.078)	(0.080)	(0.078)
Informal	-0.268***	-0.287***	-0.292***	-0.268***	-0.298***	-0.281***
	(0.064)	(0.064)	(0.064)	(0.064)	(0.064)	(0.063)
Urban	0.095	0.093	0.091	0.082	0.090	0.099
	(0.063)	(0.063)	(0.064)	(0.063)	(0.063)	(0.063)
Western	0.249***	0.237***	0.248***	0.237***	0.257***	0.260***
	(0.063)	(0.063)	(0.064)	(0.063)	(0.064)	(0.063)
Extraversion	0.037	0.043				
	(0.031)	(0.031)				
Conscientiousness	-0.026		0.006			
	(0.034)		(0.033)			
Openness	0.064**			0.090***		
	(0.031)			(0.030)		
Emotional stability	-0.054*				-0.055*	
	(0.029)				(0.030)	
Agreeableness, cooperation	0.103***					0.116***
	(0.029)					(0.029)
Constant	5.468***	5.477***	5.479***	5.459***	5.490***	5.473***
	(0.102)	(0.103)	(0.103)	(0.103)	(0.103)	(0.102)
Observations	803	804	804	803	804	804
Adjusted R-squared	0.222	0.205	0.203	0.211	0.206	0.217

Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1
Notes: (1) Least squares regression (unweighted).
(2) The dependent variable is the natural logarithm of gross hourly earnings.
(3) Sample: All employed individuals (ages as shown).

TABLE A9: RETURNS TO NON-COGNITIVE SKILLS, BIG FIVE: FEMALES, AGED 20-29

VARIABLES	(1) All	(2) Extraversion	(3) Conscientiousness	(4) Openness	(5) Emotional stability	(6) Agreeableness, cooperation
Experience	0.012*	0.012*	0.012*	0.012*	0.012*	0.012*
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Experience squared/1000	-0.094***	-0.101***	-0.110***	-0.103***	-0.110***	-0.110***
	(0.034)	(0.035)	(0.037)	(0.035)	(0.037)	(0.038)
Full-time status	-1.057***	-1.031***	-1.019***	-1.048***	-1.019***	-1.020***
	(0.257)	(0.254)	(0.260)	(0.259)	(0.260)	(0.261)
Informal	-0.435*	-0.434	-0.372	-0.375	-0.379	-0.376
	(0.257)	(0.263)	(0.250)	(0.248)	(0.255)	(0.256)
Urban	0.186	0.191	0.116	0.100	0.125	0.118
	(0.233)	(0.236)	(0.242)	(0.237)	(0.241)	(0.243)
Western	0.055	0.080	0.133	0.131	0.130	0.139
	(0.246)	(0.227)	(0.241)	(0.232)	(0.227)	(0.241)
Extraversion	0.142	0.147				
	(0.096)	(0.092)				
Conscientiousness	-0.026		0.009			
	(0.101)		(0.096)			
Openness	0.193*			0.190*		
	(0.105)			(0.105)		
Emotional stability	-0.060				-0.047	
	(0.104)				(0.103)	
Agreeableness, cooperation	-0.042					0.030
	(0.100)					(0.095)
Constant	5.087***	5.133***	5.130***	5.069***	5.132***	5.120***
	(0.349)	(0.345)	(0.350)	(0.351)	(0.346)	(0.348)
Observations	82	82	82	82	82	82
Adjusted R-squared	0.277	0.293	0.267	0.290	0.269	0.268

Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1
Notes: (1) Least squares regression (unweighted).
(2) The dependent variable is the natural logarithm of gross hourly earnings.
(3) Sample: All employed individuals (ages as shown).

TABLE A10: RETURNS TO NON-COGNITIVE SKILLS, BIG FIVE: MALES, AGED 20-29

VARIABLES	(1) All	(2) Extraversion	(3) Conscientiousness	(4) Openness	(5) Emotional stability	(6) Agreeableness, cooperation
Experience	0.004	0.004	0.005	0.005	0.004	0.005
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Experience squared/1000	-0.019	-0.019	-0.022	-0.022	-0.021	-0.022
	(0.025)	(0.025)	(0.026)	(0.025)	(0.026)	(0.025)
Full-time status	-1.244***	-1.210***	-1.235***	-1.242***	-1.243***	-1.233***
	(0.215)	(0.201)	(0.212)	(0.194)	(0.194)	(0.195)
Informal	-0.089	-0.097	-0.114	-0.104	-0.130	-0.101
	(0.141)	(0.136)	(0.138)	(0.136)	(0.138)	(0.134)
Urban	0.119	0.160	0.156	0.144	0.159	0.123
	(0.166)	(0.166)	(0.169)	(0.169)	(0.164)	(0.160)
Western	0.067	0.034	0.062	0.044	0.071	0.090
	(0.157)	(0.154)	(0.161)	(0.152)	(0.156)	(0.156)
Extraversion	0.074	0.076				
	(0.079)	(0.078)				
Conscientiousness	0.005		0.025			
	(0.098)		(0.099)			
Openness	0.036			0.068		
	(0.071)			(0.071)		
Emotional stability	-0.062				-0.073	
	(0.073)				(0.072)	
Agreeableness, cooperation	0.116					0.135*
	(0.074)					(0.076)
Constant	5.540***	5.537***	5.547***	5.530***	5.571***	5.517***
	(0.232)	(0.224)	(0.233)	(0.224)	(0.226)	(0.223)
Observations	171	171	171	171	171	171
Adjusted R-squared	0.237	0.236	0.232	0.235	0.236	0.246

Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1
Notes: (1) Least squares regression (unweighted).
(2) The dependent variable is the natural logarithm of gross hourly earnings.
(3) Sample: All employed individuals (ages as shown).

TABLE A11: RETURNS TO NON-COGNITIVE SKILLS, GRIT ETC.: FEMALES, AGED 20-64

VARIABLES	(1) All	(2) Grit	(3) Decision-making	(4) Hostile attribution bias	(5) Risk-taking	(6) Time preference
Experience	0.002**	0.002**	0.002**	0.002**	0.002**	0.002**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Experience squared/1000	-0.003**	-0.004**	-0.004**	-0.003**	-0.003**	-0.004**
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Full-time status	-0.974***	-0.972***	-0.973***	-0.974***	-0.971***	-0.973***
	(0.094)	(0.093)	(0.093)	(0.093)	(0.093)	(0.093)
Informal	-0.628***	-0.636***	-0.639***	-0.635***	-0.629***	-0.637***
	(0.085)	(0.084)	(0.083)	(0.084)	(0.085)	(0.084)
Urban	0.387***	0.381***	0.385***	0.381***	0.384***	0.381***
	(0.086)	(0.088)	(0.087)	(0.088)	(0.088)	(0.087)
Western	0.029	0.024	0.021	0.026	0.027	0.023
	(0.084)	(0.084)	(0.083)	(0.083)	(0.083)	(0.083)
Grit	0.007	0.004				
	(0.044)	(0.042)				
Decision-making	-0.013		-0.011			
	(0.047)		(0.044)			
Hostile attribution bias	-0.026			-0.026		
	(0.041)			(0.041)		
Risk-taking	0.034				0.033	
	(0.042)				(0.041)	
Time preference	-0.005					-0.000
	(0.045)					(0.043)
Constant	5.043***	5.045***	5.047***	5.047***	5.042***	5.046***
	(0.118)	(0.117)	(0.117)	(0.117)	(0.117)	(0.117)
Observations	521	522	522	521	522	522
Adjusted R-squared	0.213	0.218	0.218	0.218	0.218	0.218

Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1
Notes: (1) Least squares regression (unweighted).
(2) The dependent variable is the natural logarithm of gross hourly earnings.
(3) Sample: All employed individuals (ages as shown).

TABLE A12: RETURNS TO NON-COGNITIVE SKILLS, GRIT ETC.: MALES, AGED 20-64

VARIABLES	(1) All	(2) Grit	(3) Decision-making	(4) Hostile attribution bias	(5) Risk-taking	(6) Time preferencs
Experience	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Experience squared/1000	-0.001*	-0.001*	-0.001*	-0.001**	-0.001*	-0.001**
	(0.000)	(0.001)	(0.000)	(0.000)	(0.001)	(0.001)
Full-time status	-0.984***	-0.971***	-0.976***	-0.974***	-0.959***	-0.958***
	(0.078)	(0.079)	(0.079)	(0.079)	(0.077)	(0.078)
Informal	-0.283***	-0.287***	-0.280***	-0.299***	-0.288***	-0.295***
	(0.063)	(0.064)	(0.064)	(0.064)	(0.063)	(0.064)
Urban	0.101	0.093	0.100	0.090	0.092	0.089
	(0.063)	(0.063)	(0.063)	(0.063)	(0.062)	(0.063)
Western	0.238***	0.243***	0.248***	0.252***	0.230***	0.246***
	(0.061)	(0.063)	(0.063)	(0.063)	(0.062)	(0.063)
Grit	0.014	0.045				
	(0.034)	(0.035)				
Decision-making	0.083***		0.090***			
	(0.032)		(0.031)			
Hostile attribution bias	0.062**			0.067**		
	(0.027)			(0.028)		
Risk-taking	0.116***				0.121***	
	(0.033)				(0.032)	
Time preference	0.008					0.037
	(0.030)					(0.029)
Constant	5.488***	5.481***	5.484***	5.476***	5.486***	5.476***
	(0.101)	(0.103)	(0.101)	(0.103)	(0.102)	(0.103)
Observations	802	804	804	803	803	803
Adjusted R-squared	0.224	0.205	0.212	0.207	0.216	0.201

Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1
Notes: (1) Least squares regression (unweighted).
(2) The dependent variable is the natural logarithm of gross hourly earnings.
(3) Sample: All employed individuals (ages as shown).

TABLE A13: RETURNS TO NON-COGNITIVE SKILLS, GRIT ETC.: FEMALES, AGED 20-29

VARIABLES	(1) All	(2) Grit	(3) Decision-making	(4) Hostile attribution bias	(5) Risk-taking	(6) Time preference
Experience	0.014**	0.011*	0.012*	0.012*	0.014**	0.012*
	(0.007)	(0.006)	(0.006)	(0.006)	(0.007)	(0.006)
Experience squared/1000	-0.129***	-0.109***	-0.112***	-0.112***	-0.122***	-0.111***
	(0.042)	(0.040)	(0.036)	(0.038)	(0.040)	(0.036)
Full-time status	-0.968***	-0.993***	-1.022***	-1.007***	-1.022***	-1.006***
	(0.251)	(0.255)	(0.258)	(0.265)	(0.256)	(0.256)
Informal	-0.299	-0.363	-0.351	-0.368	-0.369	-0.343
	(0.239)	(0.248)	(0.245)	(0.256)	(0.253)	(0.256)
Urban	-0.033	0.111	0.078	0.103	0.072	0.133
	(0.258)	(0.242)	(0.236)	(0.240)	(0.254)	(0.247)
Western	0.140	0.113	0.143	0.116	0.151	0.114
	(0.254)	(0.233)	(0.231)	(0.231)	(0.243)	(0.234)
Grit	-0.199**	-0.164*				
	(0.100)	(0.094)				
Decision-making	0.146		0.077			
	(0.115)		(0.121)			
Hostile attribution bias	0.072			0.046		
	(0.096)			(0.096)		
Risk-taking	-0.107				-0.094	
	(0.114)				(0.113)	
Time preference	-0.068					-0.090
	(0.094)					(0.091)
Constant	5.100***	5.158***	5.114***	5.146***	5.094***	5.102***
	(0.335)	(0.342)	(0.344)	(0.343)	(0.354)	(0.347)
Observations	81	82	82	81	82	82
Adjusted R-squared	0.283	0.292	0.271	0.268	0.274	0.275

Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1
Notes: (1) Least squares regression (unweighted).
(2) The dependent variable is the natural logarithm of gross hourly earnings.
(3) Sample: All employed individuals (ages as shown).

TABLE A14: RETURNS TO NON-COGNITIVE SKILLS, GRIT ETC.: MALES, AGED 20-29

VARIABLES	(1) All	(2) Grit	(3) Decision-making	(4) Hostile attribution bias	(5) Risk-taking	(6) Time preference
Experience	0.004	0.004	0.004	0.005	0.004	0.005
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Experience squared/1000	-0.017	-0.021	-0.019	-0.022	-0.020	-0.022
	(0.024)	(0.025)	(0.024)	(0.025)	(0.025)	(0.025)
Full-time status	-1.245***	-1.241***	-1.273***	-1.239***	-1.182***	-1.226***
	(0.178)	(0.200)	(0.191)	(0.194)	(0.182)	(0.195)
Informal	-0.083	-0.119	-0.084	-0.127	-0.101	-0.117
	(0.134)	(0.135)	(0.134)	(0.134)	(0.136)	(0.136)
Urban	0.233	0.169	0.172	0.161	0.225	0.160
	(0.156)	(0.164)	(0.162)	(0.165)	(0.160)	(0.166)
Western	0.004	0.026	0.033	0.054	0.029	0.056
	(0.140)	(0.145)	(0.150)	(0.155)	(0.147)	(0.156)
Grit	0.004	0.091				
	(0.081)	(0.090)				
Decision-making	0.194**		0.209***			
	(0.078)		(0.077)			
Hostile attribution bias	0.086			0.085		
	(0.071)			(0.076)		
Risk-taking	0.184***				0.201***	
	(0.060)				(0.063)	
Time preference	-0.010					0.017
	(0.058)					(0.059)
Constant	5.560***	5.563***	5.593***	5.557***	5.488***	5.542***
	(0.219)	(0.229)	(0.225)	(0.220)	(0.221)	(0.224)
Observations	171	171	171	171	171	171
Adjusted R-squared	0.299	0.240	0.273	0.236	0.275	0.232

Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1
Notes: (1) Least squares regression (unweighted).
(2) The dependent variable is the natural logarithm of gross hourly earnings.
(3) Sample: All employed individuals (ages as shown).

TABLE A15: RETURNS TO SKILLS, EDUCATION, TRAINING, APPRENTICESHIPS, AND TVET: FEMALES, AGED 20-64

VARIABLES	(1) Cognitive only	(2) With formal education (years)	(3) With TVET training, apprenticeship	(4) Non-cognitive only	(5) With formal education (years)	(6) With TVET training, apprenticeship
Experience	0.001	0.001	0.001	0.002**	0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Experience squared/1000	-0.002	-0.001	-0.000	-0.003	-0.001	-0.001
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Full-time status	-0.967***	-0.950***	-0.946***	-0.966***	-0.953***	-0.948***
	(0.094)	(0.092)	(0.092)	(0.092)	(0.091)	(0.091)
Informal	-0.469***	-0.395***	-0.390***	-0.592***	-0.461***	-0.448***
	(0.089)	(0.085)	(0.084)	(0.083)	(0.081)	(0.080)
Urban	0.315***	0.306***	0.308***	0.359***	0.312***	0.312***
	(0.089)	(0.085)	(0.085)	(0.083)	(0.082)	(0.082)
Western	0.044	-0.010	-0.015	0.022	0.012	0.009
	(0.086)	(0.082)	(0.082)	(0.082)	(0.079)	(0.079)
Extraversion				0.052	0.045	0.045
				(0.044)	(0.043)	(0.043)
Conscientiousness				0.019	0.022	0.018
				(0.049)	(0.048)	(0.048)
Openness				0.233***	0.133***	0.133***
				(0.046)	(0.048)	(0.049)
Emotional stability				0.070*	0.063*	0.064*
				(0.038)	(0.037)	(0.037)
Agreeableness, cooperation				0.037	0.034	0.035
				(0.053)	(0.053)	(0.054)
Grit				-0.086*	-0.045	-0.047
				(0.047)	(0.046)	(0.046)
Decision-making				-0.098**	-0.093**	-0.094**
				(0.048)	(0.047)	(0.047)
Hostile attribution bias				-0.002	-0.003	-0.003
				(0.042)	(0.041)	(0.042)
Risk-taking				0.032	0.022	0.023
				(0.040)	(0.039)	(0.038)
Time preference				-0.007	0.010	0.009
				(0.043)	(0.042)	(0.042)
Numeracy	0.016	-0.033	-0.033			
	(0.051)	(0.049)	(0.049)			
Reading	0.009	-0.062	-0.064			
	(0.056)	(0.059)	(0.059)			

VARIABLES	(1) Cognitive only	(2) With formal education (years)	(3) With TVET training, apprenticeship	(4) Non-cognitive only	(5) With formal education (years)	(6) With TVET training, apprenticeship
Writing	0.166***	0.109**	0.105**			
	(0.051)	(0.050)	(0.052)			
Core literacy	0.103**	0.011	0.012			
	(0.050)	(0.054)	(0.054)			
Number of years of education		0.077***	0.078***		0.059***	0.059***
		(0.016)	(0.016)		(0.011)	(0.012)
Has TVET			-0.039			-0.038
			(0.104)			(0.101)
Participated in a training course in last 12 months			0.061			0.111
			(0.119)			(0.115)
Has completed an apprenticeship			-0.057			-0.057
			(0.109)			(0.108)
Constant	4.963***	4.228***	4.226***	5.045***	4.438***	4.437***
	(0.118)	(0.180)	(0.182)	(0.114)	(0.148)	(0.150)
Observations	511	511	511	521	521	521
Adjusted R-squared	0.246	0.279	0.276	0.264	0.295	0.292

Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1
Notes: (1) Least squares regression (unweighted).
(2) The dependent variable is the natural logarithm of gross hourly earnings.
(3) Sample: All employed individuals.

TABLE A16: RETURNS TO SKILLS, EDUCATION, TRAINING, APPRENTICESHIPS, AND TVET: MALES, AGED 20-64

VARIABLES	(1) Cognitive only	(2) With formal education (years)	(3) With TVET training, apprenticeship	(4) Non-cognitive only	(5) With formal education (years)	(6) With TVET training, apprenticeship
Experience	0.000	0.001*	0.001*	0.000	0.001**	0.001**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Experience squared/1000	-0.001*	-0.001*	-0.001*	-0.001**	-0.001**	-0.001**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Full-time status	-0.980***	-0.982***	-0.983***	-0.984***	-0.997***	-0.999***
	(0.079)	(0.078)	(0.078)	(0.080)	(0.077)	(0.077)
Informal	-0.154**	-0.081	-0.081	-0.268***	-0.119*	-0.119*
	(0.068)	(0.067)	(0.068)	(0.063)	(0.063)	(0.065)
Urban	0.034	-0.010	-0.014	0.100	0.020	0.017
	(0.062)	(0.062)	(0.063)	(0.063)	(0.062)	(0.063)
Western	0.239***	0.200***	0.203***	0.237***	0.204***	0.206***
	(0.063)	(0.062)	(0.062)	(0.062)	(0.059)	(0.060)
Extraversion				0.039	0.019	0.019
				(0.031)	(0.030)	(0.030)
Conscientiousness				-0.026	-0.010	-0.009
				(0.032)	(0.031)	(0.031)
Openness				0.050	-0.008	-0.008
				(0.034)	(0.033)	(0.032)
Emotional stability				-0.042	-0.041	-0.041
				(0.031)	(0.030)	(0.030)
Agreeableness, cooperation				0.094***	0.095***	0.095***
				(0.033)	(0.032)	(0.032)
Grit				-0.016	-0.007	-0.007
				(0.037)	(0.036)	(0.036)
Decision-making				0.038	0.032	0.032
				(0.034)	(0.032)	(0.033)
Hostile attribution bias				0.043	0.026	0.025
				(0.031)	(0.030)	(0.030)
Risk-taking				0.118***	0.094***	0.093***
				(0.033)	(0.032)	(0.032)
Time preference				0.005	0.024	0.025
				(0.030)	(0.029)	(0.029)
Numeracy	0.121***	0.074**	0.074**			
	(0.031)	(0.030)	(0.030)			
Reading	0.083**	0.036	0.037			
	(0.037)	(0.038)	(0.038)			

VARIABLES	(1) Cognitive only	(2) With formal education (years)	(3) With TVET training, apprenticeship	(4) Non-cognitive only	(5) With formal education (years)	(6) With TVET training, apprenticeship
Writing	0.075*	0.039	0.038			
	(0.040)	(0.039)	(0.039)			
Core literacy	0.029	-0.039	-0.039			
	(0.032)	(0.033)	(0.033)			
Number of years of education		0.071***	0.072***		0.076***	0.075***
		(0.011)	(0.012)		(0.009)	(0.010)
Has TVET			-0.033			-0.008
			(0.089)			(0.089)
Participated in a training course in last 12 months			0.017			0.015
			(0.142)			(0.138)
Has completed an apprenticeship			0.040			0.033
			(0.070)			(0.070)
Constant	5.399***	4.692***	4.679***	5.474***	4.682***	4.678***
	(0.106)	(0.153)	(0.158)	(0.102)	(0.146)	(0.150)
Observations	781	780	780	801	800	800
Adjusted R-squared	0.238	0.271	0.269	0.233	0.286	0.283

Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1
Notes: (1) Least squares regression (unweighted).
(2) The dependent variable is the natural logarithm of gross hourly earnings.
(3) Sample: All employed individuals.

TABLE A17: RETURNS TO SKILLS, EDUCATION, TRAINING, APPRENTICESHIPS, AND TVET: FEMALES, AGED 20-29

VARIABLES	(1) Cognitive only	(2) With formal education (years)	(3) With TVET training, apprenticeship	(4) Non-cognitive only	(5) With formal education (years)	(6) With TVET training, apprenticeship
Experience	0.012*	0.011*	0.011	0.012*	0.011	0.011
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Experience squared/1000	-0.119***	-0.105**	-0.104**	-0.101**	-0.086**	-0.088**
	(0.044)	(0.042)	(0.044)	(0.041)	(0.040)	(0.042)
Full-time status	-1.036***	-0.909***	-0.895***	-0.995***	-0.958***	-0.926***
	(0.275)	(0.266)	(0.274)	(0.250)	(0.243)	(0.255)
Informal	-0.363	-0.201	-0.243	-0.453*	-0.348	-0.391
	(0.262)	(0.239)	(0.255)	(0.241)	(0.236)	(0.242)
Urban	0.078	0.164	0.181	0.080	0.125	0.140
	(0.254)	(0.242)	(0.247)	(0.250)	(0.252)	(0.250)
Western	0.184	0.020	-0.021	0.039	-0.026	-0.096
	(0.239)	(0.241)	(0.258)	(0.259)	(0.261)	(0.285)
Extraversion				0.250**	0.252**	0.263**
				(0.102)	(0.103)	(0.107)
Conscientiousness				0.029	0.033	0.037
				(0.113)	(0.110)	(0.117)
Openness				0.260**	0.172	0.149
				(0.126)	(0.127)	(0.129)
Emotional stability				-0.050	-0.042	-0.017
				(0.091)	(0.089)	(0.090)
Agreeableness, cooperation				-0.030	-0.067	-0.066
				(0.111)	(0.108)	(0.111)
Grit				-0.340***	-0.284***	-0.278***
				(0.098)	(0.097)	(0.102)
Decision-making				0.058	0.058	0.073
				(0.146)	(0.143)	(0.150)
Hostile attribution bias				0.108	0.105	0.138
				(0.112)	(0.106)	(0.113)
Risk-taking				-0.110	-0.114	-0.121
				(0.093)	(0.091)	(0.095)
Time preference				-0.022	-0.039	-0.041
				(0.100)	(0.098)	(0.091)
Numeracy	-0.074	-0.108	-0.114			
	(0.140)	(0.113)	(0.112)			
Reading	-0.019	-0.118	-0.110			
	(0.142)	(0.151)	(0.163)			

VARIABLES	(1) Cognitive only	(2) With formal education (years)	(3) With TVET training, apprenticeship	(4) Non-cognitive only	(5) With formal education (years)	(6) With TVET training, apprenticeship
Writing	0.136	0.082	0.086			
	(0.116)	(0.117)	(0.122)			
Core literacy	-0.267	-0.303	-0.299			
	(0.207)	(0.196)	(0.204)			
Number of years of education		0.129***	0.129***		0.071*	0.075*
		(0.043)	(0.045)		(0.037)	(0.040)
Has TVET			0.041			0.020
			(0.219)			(0.254)
Participated in a training course in last 12 months			-0.221			-0.286
			(0.184)			(0.231)
Has completed an apprenticeship			-0.024			-0.037
			(0.286)			(0.296)
Constant	5.212***	3.729***	3.788***	5.104***	4.308***	4.362***
	(0.407)	(0.638)	(0.690)	(0.335)	(0.515)	(0.554)
Observations	81	81	81	81	81	81
Adjusted R-squared	0.279	0.344	0.321	0.335	0.351	0.330

Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1
Notes: (1) Least squares regression (unweighted).
(2) The dependent variable is the natural logarithm of gross hourly earnings.
(3) Sample: All employed individuals.

TABLE A18: RETURNS TO SKILLS, EDUCATION, TRAINING, APPRENTICESHIPS, AND TVET: MALES, AGED 20-29

VARIABLES	(1) Cognitive only	(2) With formal education (years)	(3) With TVET training, apprenticeship	(4) Non-cognitive only	(5) With formal education (years)	(6) With TVET training, apprenticeship
Experience	0.006	0.008**	0.008**	0.004	0.006	0.006
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Experience squared/1000	-0.030	-0.034	-0.032	-0.017	-0.022	-0.020
	(0.026)	(0.023)	(0.023)	(0.024)	(0.022)	(0.022)
Full-time status	-1.356***	-1.367***	-1.349***	-1.220***	-1.255***	-1.233***
	(0.198)	(0.190)	(0.189)	(0.190)	(0.182)	(0.180)
Informal	-0.004	0.044	0.060	-0.081	-0.006	0.015
	(0.151)	(0.147)	(0.148)	(0.136)	(0.134)	(0.138)
Urban	0.042	-0.031	-0.023	0.220	0.099	0.123
	(0.174)	(0.171)	(0.172)	(0.158)	(0.155)	(0.157)
Western	0.098	0.083	0.086	0.017	0.038	0.033
	(0.157)	(0.155)	(0.155)	(0.145)	(0.143)	(0.143)
Extraversion				0.024	-0.010	0.004
				(0.080)	(0.080)	(0.079)
Conscientiousness				-0.053	-0.029	-0.019
				(0.083)	(0.080)	(0.084)
Openness				-0.011	-0.043	-0.035
				(0.076)	(0.076)	(0.080)
Emotional stability				-0.028	-0.043	-0.037
				(0.072)	(0.069)	(0.072)
Agreeableness, cooperation				0.088	0.081	0.091
				(0.077)	(0.073)	(0.073)
Grit				0.011	0.002	-0.002
				(0.081)	(0.076)	(0.077)
Decision-making				0.172**	0.162**	0.165**
				(0.080)	(0.079)	(0.081)
Hostile attribution bias				0.077	0.037	0.039
				(0.079)	(0.078)	(0.082)
Risk-taking				0.194***	0.172***	0.176***
				(0.063)	(0.059)	(0.061)
Time preference				-0.017	-0.028	-0.031
				(0.058)	(0.057)	(0.057)
Numeracy	0.116*	0.020	0.021			
	(0.061)	(0.063)	(0.064)			
Reading	0.165*	0.144*	0.155*			
	(0.086)	(0.086)	(0.083)			

VARIABLES	(1) Cognitive only	(2) With formal education (years)	(3) With TVET training, apprenticeship	(4) Non-cognitive only	(5) With formal education (years)	(6) With TVET training, apprenticeship
Writing	0.074	0.064	0.068			
	(0.095)	(0.092)	(0.092)			
Core literacy	-0.097	-0.136	-0.141			
	(0.093)	(0.094)	(0.096)			
Number of years of education		0.087***	0.095***		0.084***	0.092***
		(0.029)	(0.030)		(0.026)	(0.028)
Has TVET			-0.195			-0.235
			(0.184)			(0.175)
Participated in a training course in last 12 months			-0.179			0.006
			(0.326)			(0.355)
Has completed an apprenticeship			0.052			0.010
			(0.140)			(0.146)
Constant	5.534***	4.610***	4.547***	5.532***	4.623***	4.565***
	(0.237)	(0.397)	(0.402)	(0.227)	(0.372)	(0.380)
Observations	167	166	166	171	170	170
Adjusted R-squared	0.290	0.319	0.313	0.286	0.324	0.318

Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1
Notes: (1) Least squares regression (unweighted).
(2) The dependent variable is the natural logarithm of gross hourly earnings.
(3) Sample: All employed individuals.

TABLE A19: RETURNS TO SKILLS, REGION, AND LABOR MARKET INFLUENCE: FEMALES, AGED 20-64

VARIABLES	(1) Cognitive only	(2) Including labor market variables	(3) Including labor market and geographic variables	(4) Non-cognitive only	(5) Including labor market variables	(6) Including labor market and geographic variables
Experience	0.001	0.001	0.001	0.002**	0.002**	0.002**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Experience squared/1000	-0.002	-0.002	-0.002	-0.003	-0.003*	-0.003
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Extraversion				0.032	0.030	0.052
				(0.048)	(0.045)	(0.044)
Conscientiousness				0.032	0.011	0.019
				(0.054)	(0.050)	(0.049)
Openness				0.249***	0.252***	0.233***
				(0.050)	(0.046)	(0.046)
Emotional stability				0.102**	0.072*	0.070*
				(0.042)	(0.039)	(0.038)
Agreeableness, cooperation				0.037	0.049	0.037
				(0.057)	(0.054)	(0.053)
Grit				-0.081	-0.096**	-0.086*
				(0.056)	(0.048)	(0.047)
Decision-making				-0.055	-0.078	-0.098**
				(0.055)	(0.049)	(0.048)
Hostile attribution bias				0.014	-0.003	-0.002
				(0.046)	(0.042)	(0.042)
Risk-taking				0.050	0.023	0.032
				(0.045)	(0.041)	(0.040)
Time preference				-0.030	-0.019	-0.007
				(0.046)	(0.043)	(0.043)
Numeracy	0.027	0.038	0.016			
	(0.056)	(0.051)	(0.051)			
Reading	0.055	0.011	0.009			
	(0.062)	(0.057)	(0.056)			
Writing	0.168***	0.175***	0.166***			
	(0.054)	(0.053)	(0.051)			
Core literacy	0.105*	0.108**	0.103**			
	(0.056)	(0.051)	(0.050)			
Full-time status		-0.933***	-0.967***		-0.930***	-0.966***
		(0.094)	(0.094)		(0.092)	(0.092)

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	Cognitive only	Including labor market variables	Including labor market and geographic variables	Non-cognitive only	Including labor market variables	Including labor market and geographic variables
Informal		-0.449***	-0.469***		-0.584***	-0.592***
		(0.091)	(0.089)		(0.085)	(0.083)
Urban			0.315***			0.359***
			(0.089)			(0.083)
Western			0.044			0.022
			(0.086)			(0.082)
Constant	4.299***	5.094***	4.963***	4.306***	5.188***	5.045***
	(0.090)	(0.119)	(0.118)	(0.087)	(0.115)	(0.114)
Observations	511	511	511	521	521	521
Adjusted R-squared	0.061	0.225	0.246	0.063	0.239	0.264

Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1
Notes: (1) Least squares regression (unweighted).
(2) The dependent variable is the natural logarithm of gross hourly earnings.
(3) Sample: All employed individuals.

TABLE A20: RETURNS TO SKILLS, REGION, AND LABOR MARKET INFLUENCE: MALES, AGED 20-64

VARIABLES	(1) Cognitive only	(2) Including labor market variables	(3) Including labor market and geographic variables	(4) Non-cognitive only	(5) Including labor market variables	(6) Including labor market and geographic variables
Experience	0.001	0.001	0.000	0.000	0.001	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Experience squared/1000	-0.001**	-0.001*	-0.001*	-0.001**	-0.001**	-0.001**
	(0.001)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)
Extraversion				0.060*	0.048	0.039
				(0.035)	(0.031)	(0.031)
Conscientiousness				-0.055	-0.041	-0.026
				(0.037)	(0.032)	(0.032)
Openness				0.072*	0.067*	0.050
				(0.039)	(0.034)	(0.034)
Emotional stability				0.006	-0.031	-0.042
				(0.035)	(0.031)	(0.031)
Agreeableness, cooperation				0.097***	0.085**	0.094***
				(0.036)	(0.033)	(0.033)
Grit				-0.045	-0.013	-0.016
				(0.042)	(0.038)	(0.037)
Decision-making				0.008	0.029	0.038
				(0.037)	(0.033)	(0.034)
Hostile attribution bias				0.013	0.045	0.043
				(0.034)	(0.031)	(0.031)
Risk-taking				0.127***	0.126***	0.118***
				(0.039)	(0.034)	(0.033)
Time preference				-0.015	-0.006	0.005
				(0.034)	(0.030)	(0.030)
Numeracy	0.069**	0.124***	0.121***			
	(0.035)	(0.031)	(0.031)			
Reading	0.043	0.074**	0.083**			
	(0.040)	(0.037)	(0.037)			
Writing	0.104**	0.077*	0.075*			
	(0.044)	(0.040)	(0.040)			
Core literacy	0.069**	0.044	0.029			
	(0.034)	(0.032)	(0.032)			
Full-time status		-0.962***	-0.980***		-0.958***	-0.984***
		(0.081)	(0.079)		(0.081)	(0.080)

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	Cognitive only	Including labor market variables	Including labor market and geographic variables	Non-cognitive only	Including labor market variables	Including labor market and geographic variables
Informal		-0.178***	-0.154**		-0.298***	-0.268***
		(0.068)	(0.068)		(0.064)	(0.063)
Urban			0.034			0.100
			(0.062)			(0.063)
Western			0.239***			0.237***
			(0.063)			(0.062)
Constant	4.696***	5.510***	5.399***	4.736***	5.607***	5.474***
	(0.063)	(0.103)	(0.106)	(0.065)	(0.102)	(0.102)
Observations	781	781	781	801	801	801
Adjusted R-squared	0.041	0.223	0.238	0.032	0.214	0.233

Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1
Notes: (1) Least squares regression (unweighted).
(2) The dependent variable is the natural logarithm of gross hourly earnings.
(3) Sample: All employed individuals.

TABLE A21: RETURNS TO SKILLS, REGION, AND LABOR MARKET INFLUENCE: FEMALES, AGED 20-29

VARIABLES	(1) Cognitive only	(2) Including labor market variables	(3) Including labor market and geographic variables	(4) Non-cognitive only	(5) Including labor market variables	(6) Including labor market and geographic variables
Experience	0.018***	0.012*	0.012*	0.017**	0.013*	0.012*
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Experience squared/1000	-0.161***	-0.122***	-0.119***	-0.138***	-0.105***	-0.101**
	(0.045)	(0.046)	(0.044)	(0.039)	(0.039)	(0.041)
Extraversion				0.259**	0.252**	0.250**
				(0.101)	(0.098)	(0.102)
Conscientiousness				0.046	0.019	0.029
				(0.135)	(0.107)	(0.113)
Openness				0.197	0.258**	0.260**
				(0.146)	(0.125)	(0.126)
Emotional stability				-0.031	-0.042	-0.050
				(0.106)	(0.092)	(0.091)
Agreeableness, cooperation				-0.042	-0.048	-0.030
				(0.119)	(0.105)	(0.111)
Grit				-0.359***	-0.340***	-0.340***
				(0.125)	(0.098)	(0.098)
Decision-making				0.078	0.082	0.058
				(0.171)	(0.138)	(0.146)
Hostile attribution bias				0.153	0.126	0.108
				(0.120)	(0.114)	(0.112)
Risk-taking				-0.100	-0.119	-0.110
				(0.100)	(0.090)	(0.093)
Time preference				-0.061	-0.022	-0.022
				(0.094)	(0.096)	(0.100)
Numeracy	-0.068	-0.072	-0.074			
	(0.147)	(0.143)	(0.140)			
Reading	-0.011	-0.025	-0.019			
	(0.159)	(0.140)	(0.142)			
Writing	0.056	0.115	0.136			
	(0.106)	(0.118)	(0.116)			
Core literacy	-0.333	-0.274	-0.267			
	(0.232)	(0.217)	(0.207)			
Full-time status		-0.997***	-1.036***		-0.980***	-0.995***
		(0.273)	(0.275)		(0.245)	(0.250)

VARIABLES	(1) Cognitive only	(2) Including labor market variables	(3) Including labor market and geographic variables	(4) Non-cognitive only	(5) Including labor market variables	(6) Including labor market and geographic variables
Informal		-0.331	-0.363		-0.422*	-0.453*
		(0.255)	(0.262)		(0.229)	(0.241)
Urban			0.078			0.080
			(0.254)			(0.250)
Western			0.184			0.039
			(0.239)			(0.259)
Constant	4.439***	5.319***	5.212***	4.234***	5.138***	5.104***
	(0.245)	(0.405)	(0.407)	(0.268)	(0.334)	(0.335)
Observations	81	81	81	81	81	81
Adjusted R-squared	0.108	0.285	0.279	0.160	0.353	0.335

Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1
Notes: (1) Least squares regression (unweighted).
(2) The dependent variable is the natural logarithm of gross hourly earnings.
(3) Sample: All employed individuals.

TABLE A22: RETURNS TO SKILLS, REGION, AND LABOR MARKET INFLUENCE: MALES, AGED 20-29

VARIABLES	(1) Cognitive only	(2) Including labor market variables	(3) Including labor market and geographic variables	(4) Non-cognitive only	(5) Including labor market variables	(6) Including labor market and geographic variables
Experience	0.003	0.006	0.006	0.002	0.004	0.004
	(0.005)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Experience squared/1000	-0.017	-0.029	-0.030	-0.004	-0.018	-0.017
	(0.025)	(0.025)	(0.026)	(0.022)	(0.023)	(0.024)
Extraversion				0.075	0.031	0.024
				(0.099)	(0.081)	(0.080)
Conscientiousness				-0.145	-0.052	-0.053
				(0.097)	(0.082)	(0.083)
Openness				-0.050	0.010	-0.011
				(0.094)	(0.076)	(0.076)
Emotional stability				0.028	-0.024	-0.028
				(0.074)	(0.072)	(0.072)
Agreeableness, cooperation				0.137	0.096	0.088
				(0.088)	(0.079)	(0.077)
Grit				0.015	0.009	0.011
				(0.093)	(0.084)	(0.081)
Decision-making				0.109	0.164**	0.172**
				(0.092)	(0.081)	(0.080)
Hostile attribution bias				0.048	0.079	0.077
				(0.087)	(0.080)	(0.079)
Risk-taking				0.241***	0.183***	0.194***
				(0.084)	(0.062)	(0.063)
Time preference				-0.038	-0.015	-0.017
				(0.069)	(0.058)	(0.058)
Numeracy	0.164**	0.118*	0.116*			
	(0.069)	(0.061)	(0.061)			
Reading	0.078	0.158*	0.165*			
	(0.089)	(0.085)	(0.086)			
Writing	-0.013	0.084	0.074			
	(0.095)	(0.088)	(0.095)			
Core literacy	-0.070	-0.092	-0.097			
	(0.107)	(0.092)	(0.093)			
Full-time status		-1.356***	-1.356***		-1.236***	-1.220***
		(0.188)	(0.198)		(0.186)	(0.190)

VARIABLES	(1) Cognitive only	(2) Including labor market variables	(3) Including labor market and geographic variables	(4) Non-cognitive only	(5) Including labor market variables	(6) Including labor market and geographic variables
Informal		-0.020	-0.004		-0.111	-0.081
		(0.148)	(0.151)		(0.134)	(0.136)
Urban			0.042			0.220
			(0.174)			(0.158)
Western			0.098			0.017
			(0.157)			(0.145)
Constant	4.692***	5.610***	5.534***	4.725***	5.630***	5.532***
	(0.155)	(0.214)	(0.237)	(0.157)	(0.215)	(0.227)
Observations	167	167	167	171	171	171
Adjusted R-squared	-0.006	0.296	0.290	0.039	0.284	0.286

Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1
Notes: (1) Least squares regression (unweighted).
(2) The dependent variable is the natural logarithm of gross hourly earnings.
(3) Sample: All employed individuals.

TABLE A23: RETURNS TO ALL SKILLS, SELECTIVITY CORRECTED: INDIVIDUALS, AGED 20-64

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	Females			Males		
	OLS	Selectivity corrected	First stage	OLS	Selectivity corrected	First stage
Age, years	0.039	0.100**	0.140***	0.040*	0.012	0.117***
	(0.027)	(0.042)	(0.023)	(0.023)	(0.044)	(0.028)
Urban	0.271***	0.319***	0.066	0.053	0.044	0.080
	(0.096)	(0.114)	(0.080)	(0.070)	(0.074)	(0.104)
Western	-0.041	-0.082	-0.133*	0.188***	0.134	0.382***
	(0.096)	(0.114)	(0.080)	(0.069)	(0.104)	(0.106)
Numeracy	-0.012	0.141	0.342***	0.058*	0.041	0.120**
	(0.057)	(0.092)	(0.042)	(0.035)	(0.047)	(0.055)
Reading	0.059	0.008	-0.129***	0.041	0.045	-0.018
	(0.059)	(0.063)	(0.040)	(0.038)	(0.041)	(0.056)
Writing	0.139**	0.264***	0.274***	0.100**	0.084*	0.102
	(0.055)	(0.083)	(0.045)	(0.043)	(0.049)	(0.063)
Extraversion	0.058	0.056	-0.008	0.044	0.047	-0.025
	(0.048)	(0.051)	(0.037)	(0.034)	(0.035)	(0.049)
Conscientiousness	0.028	0.051	0.051	-0.043	-0.053	0.066
	(0.056)	(0.055)	(0.038)	(0.037)	(0.038)	(0.049)
Openness	0.147***	0.109*	-0.065	0.006	0.014	-0.039
	(0.053)	(0.060)	(0.042)	(0.041)	(0.042)	(0.053)
Emotional stability	0.109***	0.135***	0.046	0.002	-0.001	0.016
	(0.042)	(0.048)	(0.035)	(0.035)	(0.036)	(0.048)
Agreeableness, cooperation	0.019	0.042	0.047	0.093***	0.088**	0.039
	(0.058)	(0.059)	(0.040)	(0.035)	(0.038)	(0.051)
Grit	-0.050	-0.005	0.091**	-0.046	-0.049	0.016
	(0.055)	(0.058)	(0.039)	(0.041)	(0.038)	(0.052)
Decision-making	-0.066	-0.109*	-0.085**	0.015	0.017	-0.018
	(0.056)	(0.060)	(0.041)	(0.037)	(0.038)	(0.052)
Hostile attribution bias	0.029	0.023	-0.013	-0.001	0.003	-0.033
	(0.046)	(0.050)	(0.036)	(0.034)	(0.037)	(0.050)
Risk-taking	0.052	0.010	-0.064*	0.114***	0.114***	0.002
	(0.044)	(0.055)	(0.036)	(0.038)	(0.035)	(0.049)
Time preference	-0.009	-0.013	-0.014	0.005	-0.008	0.081
	(0.046)	(0.049)	(0.035)	(0.035)	(0.040)	(0.050)
Number of own children under 6 years			-0.179***			0.014
			(0.065)			(0.088)
Married			-0.390***			0.397***
			(0.092)			(0.145)
Lambda			0.749**			-0.385
			(0.334)			(0.533)
Constant	3.608***	1.494	-2.947***	3.959***	4.600***	-1.461***
	(0.559)	(1.150)	(0.449)	(0.433)	(0.980)	(0.533)
Observations	519	1630	1630	795	1029	1029
R-squared	0.116			0.085		

Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1
Notes: (1) Selectivity corrected estimates.
(2) The dependent variable is the natural logarithm of gross hourly earnings.

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