MONASH BUSINESS SCHOOL

DEPARTMENT OF ECONOMICS

ISSN 1441-5429

DISCUSSION PAPER 50/15

The Economic Returns to Proficiency in English in China

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Abstract:
We examine economic returns to proficiency in English in China through applying a range of empirical methods to three nationally representative datasets. We find positive earnings returns to proficiency in English. We find considerable heterogeneity in the economic returns to proficiency in English across age groups, coastal and inland provinces, the income distribution, levels of education and occupation. We find that the returns to proficiency in English are generally higher in the coastal region, larger in higher income deciles and evidence of education-language and skill-language complementarity. While we do not observe any clear pattern in gender differentials, we also see differences in the economic returns to English between urban and rural residents and between rural-urban migrants and urban locals. Our findings help to explain why the demand for learning English is so high in China and have implications for the Chinese government at a time when it is re-evaluating the importance attached to learning English in the curriculum.

Keywords: China; English proficiency; education; wage; human capital

JEL Classification Numbers: J31; I26

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"China is, or soon will be, the largest English-speaking nation in the world".

> Jon Huntsman, former Utah Governor, on July 26th 2011 in a speech at Dartmouth College, cited in Gregg (2011).

"There are approximately 300-350 million people who have studied English in China. That's more than the entire population of the United States. …. However, there is a big difference between people who study English versus those who speak English. I teach 421 graduate students, all of whom have studied English for over ten years, many for as much as 15 years. Roughly 10% of them can speak the language".

> Blog poster, 2011.[1]

1. Introduction

Foreign language skills are a form of human capital that can be expected to result in higher earnings (Chiswick & Miller 2014). There are several reasons why speaking a foreign language can result in higher earnings. Speaking a foreign language may be associated with skill-based productivity increases or signal unobserved ability to employers (Stohr, 2015). Knowledge of a second language has been shown to develop an individual's cognitive and communicative abilities and improve analytic and interpretive capacities (Stohr, 2015). Several studies suggest that students who are learning a second language have better academic results across the board (Olsen & Brown, 1992). Knowledge of a second language can also facilitate trade links that may be valued by the firm, in which the individual is employed (Melitz, 2008).

Most studies have focused on returns to speaking a foreign language in developed countries. There are few such studies for developing countries (Di Paola & Tansel 2015; Duncan & Mavisakalayan; 2015 and Toomet, 2011 are exceptions). Positive returns to speaking foreign languages may be expected to be higher in developing countries than developed countries, given lower levels of human capital in the former. Di Paola and Tansel (2015) suggest that knowledge of a second language, along with formal schooling and the development of cognitive skills, may represent an important catalyst for economic development, particularly in a globalizing world.

In this paper we examine the economic returns to speaking English in China. English has come to be regarded as a *lingua franca.* According to the British Council, by 2020 two billion people will be studying English (Clark, 2012). By 2115, it is predicted that only about one tenth of today's 6000 languages will remain, making English even more dominant (McWhorter, 2015). As a consequence, in countries in which English is not the first language, it is fast becoming "a basic skill needed for the entire workforce, in the same way that literacy has been transformed in the last two centuries from an elite privilege into a basic requirement for informed citizenship" (Clark, 2012). In many countries in which English has traditionally been taught as a foreign language at the secondary school level and above, it is now being taught at earlier grade levels as a standard part of the curricula (Butler, 2014).

[1] https://answers.yahoo.com/question/index?qid=20110407195151AABgch2 (last accessed June 9, 2015).

Studying returns to English in China is interesting for several reasons. The first is the sheer number of people learning English in China. Based on the national 'Survey of the Language Situation in China', which is the most comprehensive survey of foreign languages in China, 390 million people have studied English in China (Wei & Su, 2012). There is considerable interest in what this means for China's role as a growing economic superpower (Gil, 2014). The second is that in China, speaking English is increasingly regarded as a vehicle for professional advancement (Jin & Cheng, 2013). In China, speaking English is regarded as the "entrance ticket to the working world" (Pang *et al*, 2002, p. 203) and a "passport to better paid employment" (Johnson, 2009, p. 148). According to a report in the *Chinese Daily* (2010): "There is no doubt that people who have a good command of English are more competitive than their peers".

Third, there is considerable heterogeneity in the ability to speak English in China. As the quotes at the beginning of this paper highlight, while the numbers of people learning English are huge, it is likely that only a small fraction of those who are learning English can actually speak English well. This suggests there is likely to be considerable variation in the economic returns to speaking English between individuals. Fourth, English has become increasingly important as China opens up to the outside world. This has particularly been the case since China joined the World Trade Organisation in 2001. English is typically the medium of communication not only when dealing with investors and trading partners from countries in which English is the first spoken language, but is also the *lingua franca* when doing business with those from countries in which Mandarin is not spoken (Pang *et al.,* 2002).

Guo & Sun (2014) examined returns to English proficiency, measured by College English Test-Band 4 (CET-4), for college graduates in China. Their main finding was that a one standard deviation increase in CET-4 scores corresponds to a 3.3 per cent difference in starting salaries for college graduates. Our focus differs from Guo and Sun (2014) in several ways. First, Guo and Sun (2014) focus on returns to speaking English among college graduates. We examine returns to speaking English for a sample of the population as a whole. We also examine heterogeneity in the returns to English proficiency across different groups in the population. Second, Guo and Sun (2014) focus on starting salaries for college graduates. We use the hourly wage of participants at the time they were surveyed. Third, Guo and Sun (2014) focus on returns to CET-4 (using returns to CET-6 as a robustness check). We use self-reported measures of English proficiency, as well as CET-4 and CET-6. To address biases with self-reported measures, in addition to using a complete set of controls, we use instrumental variable (IV) and propensity score matching (PSM) methods. Fourth, Guo and Sun (2014) use a specific survey of college graduates (the 2010 Chinese College Student Survey). We use three datasets that survey the population as a whole (not just college graduates), giving our results added robustness.

We find that the economic returns to proficiency in English are substantial. The ordinary least squares (OLS) estimates are 3.4-6.6 per cent. These estimates represent the equivalent of one to two years of additional schooling. The PSM estimates are 2.3-7.6 times higher than the OLS estimates, while the IV estimates are 2.4-9.1 times higher than the OLS estimates. We find considerable heterogeneity in the economic returns to proficiency in English across geographic locales, the income distribution, age groups, levels of education and occupation. We find that the returns to English

proficiency are generally higher in the eastern region of China. We also find that the returns to proficiency in English are higher for higher income deciles, more skilled occupations, the better educated and older age brackets. We do not observe any clear differences in returns to proficiency in English between males and females, but we do observe differences in the economic returns to proficiency in English between urban and rural residents and between rural-urban migrants and urban locals.

We contribute to the literature on economic returns to speaking a second language in the following ways. First, we add to the paucity of literature on economic returns to speaking a second language in developing countries. Second, we contribute to the even smaller literature on the economic returns to speaking a second language in post-socialist transition countries. Apart from Guo and Sun (2014), the only other studies of which we are aware are Duncan and Mavisakalyan (2015) and Toomet (2011), which both focus on returns to a second language in the former Soviet Union. Third, we contribute to explanations as to why people wish to learn a second language, such as English. Individuals will only invest in learning a second language if the present value of future returns from so doing is greater than the cost (Saiz & Zoido, 2005). That our results suggest that the economic returns to speaking English in China are high, may explain why so many people want to learn English.

Fourth, our results help to inform debate in China about the importance attached to learning English. While increasing importance has been attached to proficiency in English in hiring decisions in China (Jin & Cheng, 2013), recently the central government has moved to reduce what it perceives as an over-emphasis on English proficiency in the curriculum. Hence, for instance, the weight on English proficiency tests in high school and college entrance exams will be reduced in some provinces from 2016 (Guo & Sun, 2014). For example, starting from 2016, Beijing will lower the full score for English in the college entrance exam from 150 to 100 points out of the total 750, while increasing that for Chinese from 150 to 180 points. Moreover, students in Beijing will start learning English in year three, instead of year one. This makes it timely to examine the economic returns to speaking English in China.

2. Speaking English in China

As indicated in the introduction, there are estimated to be 390 million people who have studied English in China (Wei & Su, 2012). This figure glosses over considerable heterogeneity in degrees of proficiency. While a large number of people are learning English, an often-cited complaint is that the standard of classes are poor and that the teachers themselves are not fluent in English (China Daily, 2010). Native Chinese English teachers often have poor English pronunciation, while foreign English language teachers lack training in English as a second language. Several commentators have noted that rote memorisation is the norm when learning English, in which students read aloud English texts for hours without producing their own sentences (The Economist, 2011). This produces huge variability in the capacity to speak English and to obtain an economic return from communicating in English.

Of the 390 million people who have learned English in China, it is estimated that 30 million people ‘often’ use English and a further 120 million people ‘sometimes’ use English in their daily lives (Wei & Su, 2012). However, less than 40 million people use English at least ‘once per day’ at work (Wei & Su, 2012). Many of these people

will be in service jobs that entail some interaction with foreigners, such as hotels, restaurants and tourist sites.[2] It is estimated that 21 per cent (82 million people) of the 390 million people who have learned English possess reasonable English spoken proficiency, while 29 per cent (113 million people) have reasonable reading proficiency (Wei & Su, 2012). These people are often concentrated in the major cities (Wei & Sun, 2011). Outside of the major cities, the lack of individuals for whom English is their first language makes it difficult to practice English.

3. Existing Literature

Our contribution is related to at least three strands of connected literature. The first is returns to speaking the host language among immigrants for whom the host language is not their native language. Most of these studies focus on returns to speaking English in countries in which the host language is English (see eg. Bleakley & Chin, 2004; Chiswick & Miller, 1988, 1992, 1995, 1999, 2002, 2003, 2010; Dustmann & Fabbri, 2003; Shields & Wheatley Price, 2002). There are, however, some studies that have examined the economic returns to speaking the host language among immigrants to countries in which the host language is not English (see eg. Chiswick, 1991, 1998; Dustman & van Soest, 2001; Hayfron, 2001). Most of these studies find that immigrants whose native language is not the host language, but who are proficient in the host language, earn higher wages and have better jobs. Moreover, the IV estimates in these studies tend to be much larger than those obtained using OLS.

The second strand of literature to which our contribution is related is that on returns to languages other than English in countries in which that language is not the most widely spoken language. Most of these studies focus on returns to speaking a second language in countries in which the first language is English. Examples are Fry and Lowell (2003) and Saiz and Zoida (2005) who examine returns to bilingualism in the United States and Shapiro and Stelcner (1997) who examine returns to bilingualism in Canada. Other studies consider returns to bilingualism involving languages other than English. Examples are Di Paola and Tansel (2015), who examine returns to French, German and Russian in Turkey; Duncan and Mavisakalayan (2015), who consider returns to speaking Russian in the former Soviet Republics; and Grin and Srefddo (1998), who study returns to speaking Italian in Switzerland. Overall, the results for these studies suggest that returns to bilingualism in countries in which the first language is English are small (Saiz & Zoido, 2005) to non-existent (Fry & Lowell, 2003). In those cases in which a positive premium is observed, the estimated returns are correlated with the extent of tourism in the country (Williams, 2011). There is some more evidence of positive returns to bilingualism involving languages other than English. For example, Duncan and Mavisakalayan (2015) find that Russian language skills lead to favourable employment outcomes in the former Soviet Union.

The third strand of literature, and that to which our study is most closely related, is the literature on returns to speaking English in countries in which English is not the most widely spoken language (see eg. Azam *et al.,* 2013; Casale & Posel, 2011; Di Paola & Tansel, 2015; Donado, 2014; Ginsburgh & Prieto-Rodriguez, 2010; Grin, 2001; Isphording, 2013; Lang & Siniver, 2009; Levinshon, 2007; Munshi & Rosenzweig, 2006; Stohr, 2015; Toomet, 2011; Williams 2011). Most of these studies find a

[2] http://www.quora.com/How-many-people-in-China-can-speak-English (last accessed June 9, 2015).

sizeable wage premium for speaking English to non-immigrants in non-English speaking countries. For example, Ginsburgh and Prieto-Rodriguez (2010) examine returns to speaking English across several European countries and find that the economic returns vary from 11 per cent in Denmark to 49 per cent in Spain. Azam *et al.* (2013) find that the returns to advanced English skills in India is 35 per cent for males; Toomet (2011) finds that the economic returns to speaking English in the Baltic states range between 45 per cent in Estonia and 62 per cent in Latvia; while in South Africa the returns to speaking English for the non-immigrant population vary between 18 per cent and 44 per cent (Casale & Posel, 2011; Levinshon, 2007).

The existing literature on returns to language skills in China is limited. Gao and Smyth (2011) examine the economic returns to speaking 'standard Mandarin' among rural-urban migrants in China's urban labour market. Chen *et al.* (2014) examine the economic returns to speaking the Shanghai dialect among migrants in the Shanghai labour market. Both studies find a positive return. As discussed in the introduction, the closest study to ours is Guo and Sun (2014), who examine economic returns to English proficiency in China, but their study is restricted to college graduates.

To summarize, there is a growing literature on the economic returns to speaking English among the non-immigrant population in countries in which the first language is not English. There are, however, relatively few studies for developing countries. The one existing study for China is limited to a particular group being college graduates. We extend the literature by examining returns to English in an economically significant country using nationally representative datasets.

4. Data

We use data from the most recent waves of three nationally representative surveys; namely, the 2012 China Family Panel Studies (CFPS), the 2012 China Labor-Force Dynamics Survey (CLDS) and the 2013 Chinese General Social Survey (CGSS).

The CFPS is an annual longitudinal survey launched in 2010 by the Institute of Social Science Survey in Peking University, China. It covers 25 of the 31 mainland provinces and municipalities (excluding Inner Mongolia, Xinjiang, Tibet, Hainan, Ningxia and Qinghai). Each subsample in the CFPS study is drawn through three stages: county (or equivalent), then village (or equivalent), and then household. The CLDS and CGSS also adopt similar three-stage sampling. The sample through multi-stage probability is drawn with implicit stratification. In total, 35,727 valid responses were received in the 2012 wave. The CFPS 2012 contains information on the self-rated overall English proficiency of all adult members in sampled households.[3]

The CLDS is a biennial longitudinal survey launched in 2012 by the Center for Social Survey at Sun Yat-Sen University, China.[4] It covers 29 mainland provinces and municipalities (excluding Tibet and Hainan). It employs multi-stage cluster, stratified, probability proportional to size sampling. In the 2012 wave, 16,253 valid responses

[3] For more details about the CFPS, see Xie and Hu (2014) and the project website at http://www.isss.edu.cn/cfps.
[4] For more details about the CLDS, see Wang et al. (2015), Sun Yat-Sen University Center for Social Survey (2013) and the project website at http://css.sysu.edu.cn.

were received. CLDS 2012 contained information on the self-rated overall English proficiency of labour force participants aged 15 to 64 years in sampled households.

The CGSS is a nationwide cross-sectional general survey.[5] The CGSS was launched jointly by Renmin University of China and the Hong Kong University of Science and Technology in 2003. It adopts a multi-stage stratified sampling design. The CGSS 2013 covers 28 mainland provinces and municipalities (excluding Tibet, Xingjiang and Hainan). In total, 11,438 valid responses were received in the 2013 wave. The CGSS 2013 contain information on the self-rated listening and speaking English proficiency of a randomly selected member of a sampled household.

[Table 1 here]

Table 1 presents summary statistics for English proficiency and the hourly wage across the three datasets, which taken together illustrate some consistent patterns. In all datasets, females, urban residents and urban locals have higher English proficiency than males, rural residents and rural-urban migrants respectively. Urban residents and urban locals also have higher hourly wages than rural residents and rural-urban migrants respectively, although males have higher hourly wages than females. In terms of occupations, mangers and technicians have higher English proficiency and hourly wages than service and production workers. Those with more years of schooling have higher proficiency in English and higher hourly wages.

5. Empirical Specification and Method

We employ a Mincer earnings function, augmented with a variable measuring language proficiency, in which we regress the log of the hourly wage on years of schooling, a measure of English language proficiency and a full set of control variables. We measure English language proficiency in two ways. First, we use a self-reported measure of proficiency in English, which, depending on the dataset, is measured on a five-point or six-point Likert scale (zero = cannot speak English to four or five = very fluent in English). In the CGSS dataset, there are questions on listening and speaking fluency. In the CFPS and CLDS datasets, the question focuses on overall proficiency. Second, we also use a composite variable measuring whether the respondent has passed CET-4 or CET-6 (zero = has not passed either; one = passed CET-4, but not CET-6; two = passed CET-6). CET-4 serves as a nationally recognized English language credential (Guo & Sun, 2014). It is a better proxy for English language ability than alternatives, such as college entrance exams, that are too simple, or GRE or SAT, that are not representative. Importantly, CET-4 is regarded as an important qualification for college graduates on the job market and is highly regarded when seeking employment (Jin & Cheng, 2013). CET-6 is administered by the same agency as CET-4, but is regarded as a more difficult test (Guo & Sun, 2014).

OLS estimates of the coefficient on English proficiency may be biased for several reasons. First, there might be unobserved heterogeneity affecting both English proficiency and earnings (Chiswick & Miller, 1995). Second, there might be reverse causality through which higher earning individuals can invest more in improving their

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[5] For more details about the CGSS, see Bian and Li (2012) and the project website at http://www.chinagss.org.

English language proficiency (Chen *et al*, 2014). Third, the self-reported measures of English proficiency might contain measurement errors that bias the coefficient on English proficiency downwards (Dustmann & Van Soest, 2001).

While it is difficult to completely deal with all possible sources of endogeneity, to address the potential bias in OLS estimates we adopt several complementary approaches. The first is that we include a full set of control variables in the OLS specification to reduce concern that selection is biasing the estimates. In addition to age, gender, health, education, *hukou* (urban/rural household registration) status and marital status, we control for confidence, socioeconomic status, standardized memory and inferential ability test results and parental education that should assist in picking up unobservable characteristics, such as cognitive and non-cognitive ability and social networks. We also control for occupation fixed effects that pick up the extent to which the relationship between English proficiency and earnings operates through the occupational channel; ie. this controls for whether individuals who have higher English proficiency earn more because they are attracted to better-paid jobs. Province and urban/rural fixed effects (if applicable) are also included to account for regional and rural-urban heterogeneity. Finally, following Di Paolo and Tansel (2015) and Lang and Siniver (2009), as a robustness check with the CFPS and CLDS samples, we control for the respondents' proficiency in foreign languages other than English. This approach can further assist to pick up ability, assuming that knowledge of additional foreign languages is correlated with higher ability. The results indicated that the magnitude and significance of English proficiency were almost the same.[6]

Second, we attempt to reduce the bias generated by unobserved heterogeneity by using PSM, proposed by Rosenbaum and Rubin (1983). To do so we compare the economic returns of English speakers with non- and poor speakers who have a similar propensity to speak relatively good English. The propensity score is the probability of being assigned to a treatment, conditional on a set of covariates. The treatment in our context is proficiency in English. We use the full set of controls to compute propensity scores using kernel, nearest neighbour and stratification matching and compare the hourly wage of relatively good English speakers and non- and poor English speakers. The bias generated by unobserved heterogeneity will only be completely eliminated if speaking English can be regarded as completely random among individuals who have the same propensity scores. Given this assumption is unrealistic with most observational data, the best that PSM can achieve is generally a reduction in the bias generated by unobservable compounding factors (Duncan & Mavisakalayan, 2015).

Third, we treat proficiency in English as an endogenous variable and adopt an IV approach to address this issue. Across CFPS, CLDS and CGSS, we use three IVs for English proficiency; namely, number of children living in the household (or equivalent depending on the exact question), average English proficiency of family members and the number of universities in the province in which the individual lives.

The number of children in the household has been used extensively as an IV for language proficiency (see eg. Chiswick & Miller, 1999; Dustmann & Fabbri, 2003; Gao & Smyth, 2011; Shields & Wheatley Price, 2002). The number of children in the

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[6] We do not report these results to conserve space, but they are available on request.

household can be expected to be correlated with language proficiency, but not the wage rate. Chiswick and Miller (1995) suggest that the effect of number of children on language fluency is *ex ante* unclear. On the one hand, there is a child-parent transmission mechanism through which children learn English at school and then practice it at home with friends, parents and relatives. Hence, adults with children in the home are more exposed to speaking English in the home and are likely to have a broader vocabulary and better pronunciation than those without children. The positive effect of having children in the home on English proficiency is reinforced by the fact that children learn languages faster than adults (Gao & Smyth, 2011). On the other hand, it is argued that children can serve as interpreters for their parents, reducing the need of the parents to speak English. This latter argument, however, is more likely to apply to immigrants to countries in which English is the host language.

One rationale for using one's family's average English proficiency as an IV for one's own English proficiency are similar to that for using the number of children in the household. The higher the average English proficiency of one's family, the more opportunities to communicate in English. This is likely to translate into one having better pronunciation and wider English vocabulary. Alternatively, if the average English proficiency of one's family is higher there might be more people who can serve as interpreters when speaking English with others, but, again, this argument is more likely to apply to immigrants to countries in which English is the host language. Another rationale for using one's family's average English proficiency as an IV for own English proficiency relates to assortative mating. Between spouses there may be assortative mating based on linguistic ability (Chiswick & Miller, 2007). If so, the English proficiency of one's spouse is likely to be correlated with one's own English proficiency, but one's spouse's proficiency is unlikely to directly affect one's wage.

The number of universities in a province reflects the quality of the local education environment. In a better education environment, people can receive better education in English and have more opportunities to practice. In estimating the external returns to higher education in China, Fan *et al.* (2015) instrument the share of college graduates with the number of key universities in each province, based on the idea that the number of universities in each province is more likely to be correlated with historical and accumulative factors than contemporary market conditions. This argument also holds in our case because the vast majority of universities were established long before the collection of data and thus should not be correlated with current wages. One might be concerned that the rapid expansion of higher education, which mainly occurred between 1999 and 2005, is correlated with current wages. This should not be a major concern. Under more strict control by the central government after 2005, the increase in new enrolments has been much more stable and moderate. Thus the potential historical effect, if there is any, of the most intensive period of expansion on the *current* wages of the *recent* cohort of graduates at the time of the surveys (in 2012 and 2013) should have largely vanished. This is supported by the results in Wu and Zhao (2010) who find that the higher education expansion had no significant effect on the wages of either new or older cohorts of graduates.

6. Results

The OLS estimates for the full sample for each dataset are presented in Table 2. In each case we only report the coefficient on English language proficiency, although each specification included a full set of controls. The OLS results suggest that self-reported overall proficiency in English is associated with 3.4-6.6 per cent higher hourly wages in the CFPS and CLDS samples. The OLS results for listening and speaking proficiency separately in the CGSS sample are similar. Listening proficiency is associated with 4.5 per cent higher hourly wages, while speaking proficiency is associated with a 6.5 per cent increase in the hourly wage. Those who passed CET-4 or CET-6 earn 4.5 per cent more than those who do not have one of these qualifications. Overall, the OLS estimates are similar to those obtained in previous studies for a range of other countries (see Chiswick & Miller, 2014 for a review). The returns to an additional year of schooling were 4.1 per cent (CFPS), 3.8 per cent (CLDS) and 5.0-5.1 per cent (CGSS). Hence, the returns to English proficiency are equivalent to about one to two years of additional schooling. The OLS estimates for returns to schooling are lower than the OLS estimates of 7-8 per cent reported in many studies for a similar time period (see eg. Gao & Smyth, 2015). But this makes sense given that these other studies mainly focus on just urban labour markets in which returns to schooling are higher and do not control for language proficiency.

[Table 2 here]

The IV estimates from two-stage least squares are also reported in Table 2. In each case, the IV estimates satisfy the Cragg-Donald test for weak instruments and the Hansen J statistic for overidentification. The IV estimates for overall proficiency in English suggest that proficiency is associated with wages being 8.3-10.7 per cent higher in the CFPS and CLDS samples. The IV estimates for listening and speaking proficiency in the CGSS sample are quite a bit higher, being 44.8 per cent and 48.9 per cent respectively. The IV estimates are higher than the OLS estimates across the board. This result is consistent with measurement error being more important than omitted variable bias and is consistent with previous studies (see eg. Bleakley & Chin, 2004; Chiswick & Miller, 1995; Dustman & van Soest, 2001; Saiz & Zoido, 2005).

The result that speaking ability is rewarded more than listening ability is consistent with findings in Chen *et al* (2014) for the return to the Shanghai dialect. This reflects the fact that people may be better able to listen to, and understand some, English than speak the language. The finding that the economic returns to listening and speaking proficiency are higher than overall proficiency is consistent with the result in Gonzalez (2000) that the economic returns to oral (listening and speaking) proficiency are higher than the economic returns to literacy (reading and writing) skills.

While the estimates for listening and speaking proficiency seem high, particularly relative to the OLS estimates, they are in the same range as previous studies. Previous studies for immigrants to countries in which English is the host language that have used number of children in the household have obtained similar results. For example, Chiswick and Miller (1995) found that the IV estimates for economic returns to fluency in English were 41.3 per cent for migrants in Canada and 57.1 per cent for migrants in the United States. Our ratio of IV to OLS estimates ranges from 1.6:1 (CLDS) to 8.81:1 (CGSS listening proficiency). Chiswick and Miller (2010) found

that for immigrants to the United States that the variation in the ratio of IV to OLS estimates was similar, ranging between 2.4:1 and 9.1:1. The range of IV estimates are similar to those obtained for fluency in English among non-immigrant populations in a range of countries in which English is not the host language. As discussed in more detail in Section 3 above, economic returns to fluency in English among non-immigrant populations in the range 40-50 per cent or higher have been found in the Baltic states (Toomet, 2011), Europe (Ginsburgh & Prieto-Rodriguez, 2011) and South Africa (Casale & Posel, 2011). Using number of children living with the respondent and number of children of primary school age as IVs, Gao and Smyth (2011) found that the economic returns to speaking standard Mandarin among rural-urban migrants in China's urban labour market was 42.1 per cent.

[Table 3 here]

The PSM estimates for the three datasets are reported in Table 3. Each of the methods gives fairly similar results across datasets which is reassuring. For the CFPS sample, returns to overall proficiency are 11.1 per cent to 12.2 per cent, depending on the estimator. For the CLDS sample, the corresponding figures are 10.2 per cent to 18.5 per cent. The economic returns to listening and speaking proficiency with the CGSS dataset are 25.7-33.8 per cent and 25.1-38.6 per cent respectively. Hence, the PSM estimates with the CFPS and CLDS samples are similar to the IV estimates and the PSM estimates with the CGSS sample are slightly lower than the corresponding IV estimates. Comparing the IV and PSM methods, while the assumption of selection on observables using PSM is strong, Dehejia and Wahba (1999) find that PSM gives estimates of the treatment effect that are closer to using experimental data than do traditional econometric methods for non-experimental data. While there are some differences between IV and PSM estimates, the PSM listening and speaking results for the CGSS sample continue to be higher than the CFPS and CLDS overall estimates and reinforce the conclusion from the OLS and IV estimates that the economic returns to English proficiency are significant and economically important.

[Table 4 here]

The association between proficiency in English and hourly wages for different quintiles is presented in Table 4. In the CFPS dataset the association is slightly non-linear, but in the CLDS and CGSS datasets there is a positive trend. In the CGSS dataset, in particular, there is a sharp increasing trend between listening and speaking proficiency and hourly wages, in which the returns to listening to, and speaking, English are much higher in the upper deciles. This finding is consistent with the results reported in Toomet (2011) for the returns to proficiency in English in Estonia.

[Table 5 here]

Table 5 reports the results for the economic returns to English proficiency across different groups for each of the three datasets. We begin with the gender-specific differences. In the CFPS and CLDS datasets the economic returns to overall proficiency are higher for men than women. In the CGSS dataset, the economic return to listening proficiency is slighter higher for men, but the economic return to speaking proficiency is slightly higher for women. Overall, though, in the CLDS and CGSS

dataset the economic returns are remarkably similar across genders. Previous studies have reached mixed findings on the gender-specific returns. Mora and Davilia (1998) find that the English language premium for immigrants in the United States is larger for males. Azam *et al.* (2013) reach the same conclusion for non-immigrants in India. Williams (2011) finds that the returns to speaking English among non-immigrants varies between genders across European countries. In some countries, it is similar, in some countries returns are higher for males and in other countries returns are higher for women. The most common cited explanation for gender differences is that they reflect occupational sorting (Mora & Davilia, 1998; Williams, 2011). To examine this issue further we interacted the English proficiency variable with the type of occupation (ie. manager, technician/clerk, service worker, production worker, and other types). In the CFPS and CGSS samples the interaction terms for English proficiency and occupation were statistically significant at the 1 per cent level and the coefficients for females were larger than males. This result indicates that English proficiency has different gender effects on wages through occupational choice.[7]

Next, we consider differences in economic returns between urban and rural residents. As Azam *et al.* (2013) note, to the extent that jobs rewarding proficiency in English are likely to be concentrated in urban areas, we would expect the economic returns to proficiency in English to be higher in urban areas. On the other hand, there is a larger supply of potential workers who are proficient in English in urban areas. Hence, *ex ante,* returns could be higher for rural or urban residents. We find that returns are higher for urban residents. While the economic returns to urban residents are significant and in the range 4.2-8 per cent, the economic returns to rural residents are insignificant at the 5 per cent level across datasets. This finding differs from Azam *et al.* (2013) who find no evidence of a differential return between urban and rural areas.

Finally, we consider differences in economic returns for rural-urban migrants (without a non-agricultural *hukou*) and urban locals (with a non-agricultural *hukou*) in the cities. Again, *ex ante* it is not clear whether economic returns will be higher for rural-urban migrants or urban locals. On the one hand, rural-urban migrants tend to be segmented in low-skilled low-paid jobs, compared to urban locals, in which returns to fluency in English is likely to be low. For instance, a survey administered by the All-China Federation of Trade Unions in 2006 found that 65 per cent of rural-urban migrants worked in 'dirty, dangerous and demeaning' (three-D) jobs (Tao, 2006). On the other hand, compared to urban locals, there is a dearth of rural-urban migrants who are proficient in English, suggesting that the economic returns to English proficiency should be higher among rural-urban migrants. That rural-urban migrants earn lower wages than urban locals and have lower proficiency in English than urban locals in urban labour markets is evident across all three datasets in Table 1. We find that the economic returns to overall proficiency in English is higher for urban locals than rural-urban migrants at the 5 per cent level in both the CFPS and CLDS datasets. In addition, in the CGSS dataset, urban locals have higher returns to listening to English, but rural-urban migrants have higher returns to speaking English.

[Table 6 here]

[7] We do not report these results to conserve space, but they are available on request.

We expect that returns to proficiency in English might vary across occupational groups. Table 6 reports the returns to English proficiency according to occupational status. In the CFPS and CLDS datasets the economic returns to overall English proficiency are higher for managers and technicians, compared with production and service workers. In part, this result reflects the fact that due to the manner in which engineering and science is taught in universities, many management and technical jobs in China require good English to be successful (see also Azam *et al.,* 2013, who makes the same point for India). It also partly reflects complementarities between language proficiency and education and training. By accelerating the absorption of information, proficiency in English increases the returns to education and training through, for example, better ability to read scientific periodicals and texts in English (Gao & Smyth, 2011). In particular, individuals with better English language skills may be more likely to be selected for training in new technologies that lead to managerial and technical jobs (Gao & Smyth, 2011; McManus *et al.,* 1983). In the CGSS dataset returns to listening and speaking proficiency are higher for production workers than managers and technicians, but both are higher than returns to listening and speaking proficiency for service workers, which are statistically insignificant. Overall, taken together, these results point to language-skill complementarity in which proficiency in English is more important in skilled occupations. This finding is consistent with the literature on economic returns to English in countries in which English is not the main language (see eg. Lang & Siniver, 2009).

[Table 7 here]

Table 7 reports the economic returns to English proficiency according to education level. The economic returns to English proficiency is significant for those with 12 or more years education and ranges between 4.4 per cant and 10 per cent, depending on the dataset. The economic returns to English proficiency is insignificant at the 5 per cent level for those with nine years of education or less in all datasets. These results reinforce the conclusions regarding language-skill complementarity in the results for occupational groups in Table 6. They are generally consistent with previous studies that usually report the return to language proficiency in terms of wages and employment outcomes are better for more educated workers (see eg. Azam *et al.,* 2013; Lang & Siniver, 2009; Duncan & Mavisakalyan, 2015). The results are also consistent with the findings in Guo and Sun (2014) that higher levels of English proficiency is associated with higher levels of other human capital in China.

We expect the returns to proficiency in English to vary between the eastern, central and western regions of China. The eastern region is much more marketized and integrated into the global economy, compared with the other two regions. The provincial proportion of imports and exports in the eastern region is 86.9 per cent, compared with just 6.6 per cent and 6 per cent in the central and western regions respectively. Similarly, the proportion of foreign direct investment (FDI) at the provincial level in the eastern region is 80.9 per cent, while the comparable figures for the central and western regions are 10 per cent and 8.1 per cent respectively (National Bureau of Statistics, 2013). One hypothesis is that because the eastern region is more marketized and there are more trade opportunities, the returns to English will be higher in the coastal provinces. Most of the multinational companies are also located in the eastern region, creating strong demand for those who speak English well

(Melitz, 2008). An alternative hypothesis is that the returns to English will be higher in the interior regions. This would reflect the fact that there is a much lower number of people who speak English well in those regions, pushing up the rate of return.

[Table 8 here]

The results for the returns to proficiency in English across the regions are reported in Table 8. Across the three datasets, the results are generally consistent with the hypothesis that the returns to English are higher in the eastern region. The returns to proficiency in English are positive and significant in the eastern region in all three datasets, reflecting the growth in FDI and trade on the coastal seaboard. The only dataset for which returns to English are also significant in either of the interior regions is CLDS. In regressions not reported, we also interacted provincial trade and FDI measures with proficiency in English. The interaction terms were positive and generally significant at 5 per cent or better, reinforcing that returns to English are higher in those provinces in which trade and FDI are higher.

[Table 9 here]

Finally, we examine whether returns to proficiency in English vary across age groups. The results for returns to schooling and returns to proficiency in English are reported in Table 9. In the CFPS and CLDS datasets, the returns to overall proficiency in English are highest in the 30-39 and 40-49 age brackets. In the CGSS dataset, the returns to listening and speaking proficiency are highest in the 50 plus age bracket. Azam et al. (2013) also found that the returns to proficiency in English in India were higher among older age groups. Their explanation for why the skill price has not equalized across age groups is that older workers have the experience that complements English skills and allow them to take advantage of career opportunities that younger workers are unable too. Our results are consistent with this explanation and with the finding of language-skill complementarities in Tables 6 and 7.

7. Conclusion

In this paper we have examined the economic returns to English in China using a variety of methods. While each of them has their limitations, they point in the one direction. Our main conclusion is that the economic returns to proficiency in English are substantial. We find that the IV and PSM estimates are higher than the OLS estimates. The finding that the returns to proficiency in English are high is consistent with two stylised facts about English in China. The first is that the demand for people proficient in English is high. China's accession to the World Trade Organisation in 2001 was a catalyst for increased demand for those who can communicate well in English (see Pang *et al.,* 2002). Expected demand for English speakers will only continue to grow as China's economic might continues to increase, which inevitably will be accompanied by increased trade and investment flows, including outward investment. Guo and Sun (2014) found that foreign companies in China rewarded college graduates with proficiency in English more than any other employment sector in China. Even if the trade and investment flows are not with countries in which English is the first spoken language, English will invariably increasingly be the *lingua franca* (Johnson, 2009). The second stylised fact is that despite Jon Huntsman's claim

that China does, or soon will have, more English speakers, than the United States, in the passage cited at the beginning of this paper, the fact is that those who are proficient in English only form a small fraction of those who have studied, or know some, English in China. There is excess demand for those who are truly proficient in English in China and this means that such individuals can earn a premium.

Our second major conclusion is that there is considerable heterogeneity in the economic returns to proficiency in English in China. This can be observed across geographic regions, age groups, income deciles, levels of education and occupation with returns to proficiency in English being higher for those living on the coastal seaboard, older workers, those with better education, higher income earners and those in managerial, professional and technical occupations. We also found differences in the economic returns to proficiency in English between urban and rural residents and between migrants and urban locals. The economic returns to proficiency in English are higher in urban areas than rural areas, reflecting the concentration of jobs in which being proficient in English is rewarded in urban areas. Within urban areas, we found that the economic returns to English are higher for urban locals than rural-urban migrants, reflecting the segmentation of rural-urban migrants in three-D jobs.

Our main conclusions have some important policy implications for current debates in China about the role learning English should have in the curriculum (and how it is taught). One argument supporting the changes regarding English earmarked to be introduced in 2016 is that over-emphasizing English skills have negative effects on students' development of Chinese skills. This is reflected in the Chinese expression – *yingyu weixie lun* (literally 'the threat of English language') (Pan & Seargeant, 2012). However, findings from this study, together with Gao and Smyth (2011) and Guo and Sun (2014), suggest that both English and Chinese language skills have positive effects on wages. That the economic returns to English are high suggests that the Chinese government should not be moving to reduce the importance attached to English in the curriculum. Such a move underestimates the market demand for those proficient in English (see also Gao & Sun, 2014 who reach the same conclusion). Instead, what is needed may be some re-evaluation of the manner in which English is taught. China needs more people who have higher levels of proficiency in English, rather than more people who know some English.

That we find that the economic returns to speaking English are heterogeneous across groups suggests that the level of English training needs to be increased in rural areas and among rural-urban migrants. There is quite a lot of opposition to the decision to reduce the weight on English, on the basis that students from less developed areas of China will give less attention to learning English which, in turn, will potentially become an impediment to their long term personal and professional development, limiting their ability to compete with their English-speaking peers from more developed areas in being able to communicate with the outside world. Opponents to reducing the formal weighting on English point to the fact that disadvantaged groups, such as students in rural areas and rural-urban migrants, already suffer from inadequate resources, which impedes their ability to learn English. They note that students from big cities, who understand the importance of being able to communicate in English, will continue to place emphasis on learning English despite the reduced weighting, and will have access to a range of courses outside of the classroom to allow them to do so.

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Table 1 Summary statistics for English proficiency and hourly wage

	2012 China Family Panel Studies						2012 China Labor-Force Dynamics Survey				2013 Chinese General Social Survey					
	Overall proficiency		CET-4 or 6		Hourly wage		Overall proficiency		Hourly wage		Listening proficiency		Speaking proficiency		Hourly wage	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Full sample	0.74	1.07	0.03	0.22	19.72	303.34	0.38	0.85	18.08	127.92	0.53	0.83	0.45	0.77	14.08	35.13
By group																
Male	0.65	0.98	0.03	0.19	22.97	362.22	0.36	0.82	20.88	162.55	0.49	0.80	0.42	0.74	16.13	43.01
Female	0.88	1.17	0.04	0.25	14.33	163.89	0.39	0.87	14.13	46.64	0.57	0.88	0.49	0.81	11.18	18.67
Urban residents	0.82	1.11	0.04	0.25	21.94	209.14	0.61	1.04	24.55	179.26	0.89	0.95	0.77	0.91	21.11	46.41
Rural residents	0.64	1.01	0.02	0.18	17.29	389.43	0.24	0.69	11.98	37.95	0.25	0.59	0.21	0.54	8.67	21.45
Urban locals	1.09	1.30	1.11	0.41	26.50	61.41	0.62	1.05	25.68	125.57	1.90	1.00	1.75	0.92	23.86	28.54
Rural-urban migrants	0.80	1.09	1.04	0.23	21.52	217.76	0.57	0.99	24.24	191.43	1.69	0.93	1.60	0.88	20.39	49.79
By occupation																
Managers and technicians	1.39	1.29	0.12	0.40	27.54	222.65	0.65	1.03	26.74	210.02	1.00	1.01	0.88	0.97	26.12	59.90
Service workers	0.78	1.02	0.02	0.15	12.75	64.49	0.55	0.95	17.05	41.89	0.47	0.75	0.38	0.68	11.64	15.57
Production workers	0.43	0.76	0.00	0.06	19.50	399.59	0.43	0.27	11.21	30.91	0.37	0.64	0.30	0.58	12.33	26.22
By years of schooling																
9 years or less	0.49	0.88	0.01	0.13	13.30	142.46	0.27	0.72	14.41	74.80	0.16	0.45	0.12	0.39	8.60	20.25
12 years or more	1.29	1.23	0.08	0.33	30.46	460.22	0.49	0.95	21.24	160.12	1.11	0.96	0.97	0.93	22.82	49.24

Notes: CFPS: overall proficiency: 0 = cannot speak, 5 = very fluent; CET 4 or 6: 0 = did not pass either, 1= passed CET 4, 2 = passed CET 6.
CLDS: overall proficiency: 0 = cannot speak, 4 = very fluent.
CGSS: listening/speaking proficiency: 0 = cannot listen/speak, 4 = very good.

Table 2 OLS and 2SLS results for effects of English proficiency on hourly wages

	CFPS			CLDS		CGSS			
	Overall proficiency		CET-4 or 6	Overall proficiency		Listening proficiency		Speaking proficiency	
	OLS	IV	OLS	OLS	IV	OLS	IV	OLS	IV
English	0.0338**	0.0838***	0.0449**	0.0657***	0.1071***	0.0448***	0.3949***	0.0646***	0.4891***
	(2.31)	(3.60)	(2.06)	(4.38)	(5.29)	(2.94)	(2.89)	(4.09)	(2.89)
Cragg-Donald Wald F statistic		2043.184			2799.432		26.200		19.133
		(0.0000)			(0.0000)		(0.0000)		(0.0000)
Hansen J statistic		0.148			0.088		0.525		0.270
		(0.7003)			(0.7672)		(0.4689)		(0.6032)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	5748	5748	5748	5161	5161	4075	4049	4074	4048
Adjusted R^2	0.244	0.244	0.250	0.321	0.318	0.461	0.338	0.462	0.316

Notes: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$; t-values in parenthesis.

IVs in CLDS: family's average English proficiency and the number of children in secondary school or below.

IVs in CFPS: family's average English proficiency and the number of universities in the province.

IVs in CGSS: The number of children under 18 years old and the number of universities in the province.

Table 3 PSM results for effects of English proficiency on hourly wages

	CFPS		CLDS		CGSS			
	Overall proficiency		Overall proficiency		Listening proficiency		Speaking proficiency	
Nearest neighbour matching	0.120*	(1.77)	0.102	(1.38)	0.276***	(2.78)	0.255*	(2.06)
Kernel matching	0.111**	(2.26)	0.185***	(3.57)	0.338***	(4.60)	0.386***	(4.65)
Stratification matching	0.112***	(2.77)	0.152***	(2.83)	0.257	(1.20)	0.251***	(2.96)
N	5748		5161		4075		4074	

Notes: Notes: * p < 0.1, ** p < 0.05, *** p <0.01; t-values in parenthesis;

CFPS: Treatment = 1 if overall English proficiency = 2, 3, 4 or 5; otherwise treatment = 0;

CLDS: Treatment = 1 if overall English proficiency = 2, 3 or 4; otherwise treatment = 0;

CGSS: Treatment = 1 if listening/speaking proficiency = 3 or 4; otherwise treatment =0.

Table 4 Quintile regression results for effects of English proficiency on distributional hourly wages

	CFPS		CLDS		CGSS			
Quintile	Overall proficiency		Overall proficiency		Listening proficiency		Speaking proficiency	
0.1	0.0450	(1.47)	0.0575**	(2.15)	0.0233	(0.87)	0.0290	(1.10)
0.2	0.0314	(1.50)	0.0478**	(2.42)	0.0381*	(1.90)	0.0350*	(1.65)
0.3	0.0275**	(1.98)	0.0617***	(3.84)	0.0403**	(2.48)	0.0508***	(2.88)
0.4	0.0318***	(2.93)	0.0679***	(4.52)	0.0415***	(2.64)	0.0591***	(3.56)
0.5	0.0256*	(1.80)	0.0624***	(4.71)	0.0354**	(2.18)	0.0617***	(3.64)
0.6	0.0311**	(2.27)	0.0588***	(3.45)	0.0383**	(2.31)	0.0696***	(4.00)
0.7	0.0309**	(2.11)	0.0669***	(4.48)	0.0303*	(1.74)	0.0532***	(2.91)
0.8	0.0345**	(2.22)	0.0765***	(3.54)	0.0370*	(1.88)	0.0736***	(3.57)
0.9	0.0470*	(1.68)	0.0737**	(2.37)	0.0920***	(2.96)	0.1254***	(3.97)

Notes: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$; *t*-values in parenthesis. All specifications include a full set of controls.

Table 5 Effects of English proficiency on hourly wages by demographic or socioeconomic group

	Males	Females	Urban residents	Rural residents	Urban locals	Rural-urban migrants
Panel A: CFPS						
Overall proficiency	0.0407**	0.0173	0.0538***	0.0136	0.0475**	0.0959
	(2.04)	(0.80)	(3.04)	(0.53)	(2.59)	(1.34)
N	3560	2188	3310	2438	3010	300
Adjusted R^2	0.187	0.324	0.270	0.184	0.269	0.435
Panel B: CLDS						
Overall proficiency	0.0665***	0.0536**	0.0798***	0.0364	0.0716***	0.0788*
	(3.08)	(2.53)	(4.49)	(1.26)	(4.06)	(1.75)
N	3066	2095	2738	2423	2166	572
Adjusted R^2	0.284	0.342	0.302	0.204	0.347	0.368
Panel C: CGSS						
Listening proficiency	0.0473**	0.0427*	0.0416**	0.0522*	0.0419**	0.0483
	(2.36)	(1.81)	(2.36)	(1.71)	(2.19)	(1.05)
N	2517	1558	2649	1426	2115	534
Adjusted R^2	0.427	0.494	0.470	0.334	0.499	0.465
Speaking proficiency	0.0624***	0.0667***	0.0685***	0.0497	0.0635***	0.1081***
	(2.93)	(2.85)	(3.76)	(1.57)	(3.21)	(2.35)
N	2517	1557	2648	1426	2114	534
Adjusted R^2	0.427	0.495	0.471	0.333	0.500	0.469

Notes: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$; *t*-values in parenthesis. All specifications include a full set of controls.

Table 6 Effects of English proficiency on hourly wages by occupation

	Managers and technicians	Service workers	Production workers
Panel A: CFPS			
Overall proficiency	0.0703***	-0.0016	0.0250
	(2.97)	(-0.05)	(1.00)
N	1693	1277	2765
Adjusted R^2	0.213	0.233	0.179
Panel B: CLDS			
Overall proficiency	0.0679***	0.0411*	0.0327
	(3.10)	(1.74)	(0.56)
N	1800	1489	1183
Adjusted R^2	0.298	0.269	0.252
Panel C: CGSS			
Listening proficiency	0.0568***	0.0034	0.0728**
	(2.75)	(0.11)	(2.27)
N	1571	1402	1044
Adjusted R^2	0.397	0.446	0.311
Speaking proficiency	0.0777***	0.0155	0.1284***
	(3.84)	(0.45)	(3.61)
N	1570	1402	1044
Adjusted R^2	0.399	0.446	0.316

Notes: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$; *t*-values in parenthesis. All specifications include a full set of controls.

Table 7 Effects of English proficiency on hourly wages by education

	9 years or less	12 years or more
Panel A: CFPS		
English	0.0090	0.0444**
	(0.34)	(2.39)
N	3123	2625
Adjusted R^2	0.163	0.234
Panel B: CLDS		
English	0.0290	0.0900***
	(1.35)	(5.67)
N	2772	3211
Adjusted R^2	0.196	0.375
Panel C: CGSS		
Listening proficiency	0.0628*	0.0750***
	(1.85)	(4.44)
N	1779	2296
Adjusted R^2	0.306	0.403
Speaking proficiency	0.0750*	0.0995***
	(1.88)	(5.80)
N	1779	2295
Adjusted R^2	0.306	0.407

Notes: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$; *t*-values in parenthesis. All specifications include a full set of controls.

Table 8 Effects of English proficiency on hourly wages by region

	East	Central	West
Panel A: CFPS			
Overall proficiency	0.0469**	0.0361	-0.0064
	(2.24)	(1.41)	(-0.19)
N	2777	1872	1099
Adjusted R^2	0.291	0.161	0.195
Panel B: CLDS			
Overall proficiency	0.0745***	0.0198	0.1071**
	(3.95)	(0.70)	(2.49)
N	2765	1476	920
Adjusted R^2	0.369	0.251	0.323
Panel C: CGSS			
Listening proficiency	0.0651***	-0.0010	0.0190
	(3.56)	(-0.03)	(0.39)
N	2161	1081	833
Adjusted R^2	0.488	0.309	0.346
Speaking proficiency	0.0869***	0.0067	0.0375
	(4.69)	(0.19)	(0.72)
N	2161	1080	833
Adjusted R^2	0.490	0.309	0.347

Notes: ** $p < 0.05$, *** $p < 0.01$; *t*-values in parenthesis. All specifications include a full set of controls.

Table 9 Effects of English proficiency on hourly wages by age group

	15-29	30-39	40-49	50+
Panel A: CFPS				
Overall proficiency	0.0484**	0.0517*	0.0612**	0.0713
	(2.10)	(1.89)	(2.07)	(1.22)
Education	0.0201**	0.0409***	0.0468***	0.0802***
	(2.29)	(4.15)	(4.29)	(5.40)
N	1826	1542	1566	814
Adjusted R^2	0.219	0.293	0.226	0.310
Panel B: CLDS				
Overall proficiency	0.0682***	0.1021***	0.0967***	0.0450
	(2.69)	(3.79)	(3.25)	(0.78)
Education	0.0136	0.0437***	0.0637***	0.0323**
	(1.20)	(3.87)	(6.72)	(2.41)
N	1383	1353	1520	905
Adjusted R^2	0.263	0.320	0.331	0.359
Panel C: CGSS				
Listening proficiency	0.0418	0.0524**	0.0314	0.1201***
	(1.21)	(2.13)	(1.16)	(2.70)
Education	0.0242*	0.0590***	0.0587***	0.0408***
	(1.72)	(6.64)	(7.18)	(4.09)
N	752	1215	1228	880
Adjusted R^2	0.360	0.479	0.487	0.484
Speaking proficiency	0.0486	0.0562**	0.0655**	0.2045***
	(1.44)	(2.31)	(2.23)	(3.89)
Education	0.0233*	0.0594***	0.0566***	0.0393***
	(1.68)	(6.85)	(6.92)	(4.00)
N	752	1215	1227	880
Adjusted R^2	0.360	0.479	0.488	0.490

Notes: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$; *t*-values in parenthesis. All specifications include a full set of controls.