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# The economic returns to proficiency in English in China

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ABSTRACT

We examine economic returns to proficiency in English in China using two waves of the China Labor-Force Dynamics Survey (CLDS). 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, levels of education and occupation. We find that the returns to proficiency in English are higher in the coastal region, higher for women and evidence of education-language and skill-language complementarity. 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, as well as having implications for the Chinese government at a time when it is re-evaluating the importance attached to learning English in the curriculum.



> "China is, or soon will be, the largest English-speaking nation in the world".
>
> Jon Huntsman, former Utah Governor and US Ambassador to China, 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, 2015). There are several reasons why speaking a foreign language can result in higher earnings. Speaking a foreign language may be

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

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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).

Specifically, proficiency in English can be expected to increase earnings in countries in which English is not the first language because English is increasingly coming to be regarded as a *lingua franca*. According to the British Council, by 2020 two billion people will be studying English (Clarke, 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" (Clarke, 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). English proficiency is likely to be associated with higher earnings because, particularly in jobs that involve trade, inward and outward foreign investment and any engagement with individuals from other countries, it makes workers more productive. As a consequence, there is strong demand from employers in the labor market in many non-English speaking countries for workers who are proficient in English; yet, often, on the supply-side, there are relatively few potential employees who speak English well. This scarcity value contributes to higher wages for those who can communicate well in English.

Most studies have focused on returns to speaking a foreign language in developed countries. There are few such studies for developing countries (Azam, Chin, & Prakash, 2013; Di Paolo & Tansel, 2015; Duncan & Mavisakalyan, 2015; 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 Paolo 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. To do so, we use two waves of the China Labor-Force Dynamics Survey (CLDS). 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, 2011). 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, Zhou, & Fu, 2002, p. 203) and a "passport to better paid employment" (Johnson, 2009, p. 148). He (2010) states: "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 number of people learning English is huge, it is likely that only a small fraction of those who are learning English can actually speak English well. Data from CLDS, and other nationally representative surveys that we report on later, suggest that mean English proficiency in China is very low. This suggests that 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 and 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% difference in starting salaries for college graduates. Our focus differs from Guo and Sun (2014) in several ways. First, we employ a broader sample. Guo and Sun's (2014) analysis is restricted to returns to speaking English among college graduates. We examine returns to speaking English for a sample of the workforce as a whole, including both college and non-college educated employees. Second, related to the first point, unlike Guo and Sun (2014), we examine heterogeneity in the returns to English proficiency across different segments of the workforce. The first two points, together, mean that we provide a more comprehensive picture of the returns to English in China. Third, Guo and Sun (2014) employ the monthly starting salary of graduates. We use the hourly wage of participants at the time they were surveyed. A limitation of the measure employed by Guo and Sun (2014) is that income may be biased upwards because it does not account for hours worked. Fourth, Guo and Sun (2014) use a cross-sectional survey (the 2010 Chinese College Student Survey) and employ ordinary least squares (OLS). While they add various controls to address unobservable variables that could be affecting English proficiency and starting salary, they do not instrument for English proficiency. In contrast to Guo and Sun (2014), we employ both cross-sectional and panel data. In addition to pooled OLS, fixed effects (FE) and random effects (RE), when using cross-sectional data, to address endogeneity of English proficiency we use instrumental variables (IV) as well as including a complete set of controls.[2]

[2] We acknowledge that we have just two waves, which are only two years apart in time (2012, 2014), possibly diminishing the advantages of panel data. It will become possible to address this point in the future when further waves of CLDS are released.

We find that the economic returns to proficiency in English are substantial. The OLS, RE and FE estimates are 5.7%, 4.6% and 3.9% respectively. To get an idea of these magnitudes, the OLS estimates represent the equivalent to about one year of additional schooling. Our IV estimate is approximately 3.2, 3.5 and 4.2 times higher than the OLS, RE and FE estimates respectively. In addition, we find considerable heterogeneity in the economic returns to proficiency in English across geographic locales, age groups, levels of education and occupation. We find that the returns to English proficiency are higher in the eastern region of China. We also find that the returns to proficiency in English are higher for more skilled occupations, for the better educated and for those who are in middle age. Moreover, we observe differences in returns to proficiency in English between males and females, 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 & Zoida, 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 has been reduced in some provinces from 2016 (Guo & Sun, 2014). 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 is poor and that the teachers, themselves, are not fluent in English (He, 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 (Greene, 2011). This produces huge variability in the capacity to speak English, as well as ability 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, <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.[3] It is estimated that 21% (82 million people) of the 390 million people who have learned English possess reasonable English spoken proficiency, while 29% (113 million people) have reasonable reading proficiency (Wei & Su, 2012). These people are often concentrated in the major cities (Wei & Su, 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 (see e.g. Bleakley & Chin, 2004; Chiswick & Miller, 1988, 1992, 1995, 1999, 2002, 2003, 2010; Dustmann & Fabbri, 2003; Shields & Wheatley Price, 2002). 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 (see e.g. Di Paolo & Tansel, 2015; Duncan & Mavisakalyan, 2015; Fry & Lowell, 2003; Saiz & Zoida, 2005; Shapiro & Stelcner, 1997).

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 e.g. Azam et al., 2013; Casale & Posel, 2011; Di Paolo & Tansel, 2015; Donado, 2014; Ginsburgh & Prietro-Rodriguez, 2011; Grin, 2001; Isphording, 2013; Lang & Siniver, 2009; Levinsohn, 2007; Munshi & Rosenzweig, 2006; Stohr, 2015; Toomet, 2011; Williams, 2011). Most of these studies find a sizeable wage premium for speaking English to non-immigrants in non-English speaking countries. For example, Ginsburgh and Prietro-Rodriguez (2011) examine returns to speaking English across several European countries and find that the economic returns vary from 11% in Denmark to 49% in Spain. Azam et al. (2013) find that the returns to advanced English skills in India is 35% for males; Toomet (2011) finds that the economic returns to speaking English in the Baltic states range between 45% in Estonia and 62% in Latvia; while, in South Africa,l the returns to speaking English for the non-immigrant population vary between 18% and 44% (Casale & Posel, 2011; Levinsohn, 2007).

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

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 labor market. Chen, Lu, and Xu (2014) examine the economic returns to speaking the Shanghai dialect among migrants in the Shanghai labor market. These studies find a positive return. Wang, Cheng, and Smyth (2016a) examine the relationship between Mandarin proficiency and consumption expenditure and find that those with higher proficiency consume more. Wang, Cheng, and Smyth (2016c) examine the effects of Mandarin proficiency on health outcomes and health inequality. 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 a nationally representative dataset.

## 4. Data

We use panel data from the 2012 and 2014 CLDS, which is a biennial longitudinal survey launched in 2012 by the Center for Social Survey at Sun Yat—Sen University, China.[4] The CLDS is designed to be a nationally representative survey.[5] It employs multi-stage cluster, stratified, probability proportional to size sampling. Each subsample in the CLDS study is drawn through three stages: county (or equivalent), then village (or equivalent), and then household. The sampling framework covers 29 mainland provinces and municipalities (excluding Tibet and Hainan) and 2282 counties. In two waves 401 sampled counties were surveyed. The population weights used in sampling correspond to the sixth National Population Census conducted in 2010. In addition, the sampling design was based on respondents' birthplace, rather than their residence during the survey, to mitigate potential sample selection.

In the 2012 wave, there were 16,253 valid responses and in the 2014 wave, 9567 individuals first surveyed in 2012 were re-surveyed.[6] CLDS 2012-2014 contains information on the self-rated overall English proficiency of labor force participants aged 15 to 64 in sampled households. Self-assessed English proficiency is measured on a five-point Likert scale (0 = cannot speak English; 1 = can speak a few English words; 2 = moderately fluent in English; 3 = fluent in English; 4 = very fluent in English).

Table 1 presents summary statistics for English proficiency and the hourly wage. In 2012, mean English proficiency was 0.43 and the mean hourly wage was 21.10 RMB. In 2014, mean English proficiency was 0.30 and the mean hourly wage was 39.34 RMB. This suggests that average English proficiency among the sample is very low.[7] Females, urban residents and rural-urban migrants have higher English proficiency than males, rural residents and urban locals respectively.[8] Males, urban residents and urban locals also have higher hourly wages than females, rural residents and rural-urban migrants respectively. In terms of occupations, managers and technicians and clerks have higher English proficiency and hourly wages than service, production and agriculture workers. Those with more schooling have higher proficiency in English and higher hourly wages. Those living in the eastern region have higher proficiency in English and wages than those residing in the central and western regions.

## 5. Empirical specification and method

We regress the log of the hourly wage on years of schooling, our measure of English language proficiency and a full set of control variables. Summary statistics for each of the control variables are presented in Table 2.[9]

A feature of our data is that English proficiency, the key independent variable, varies little for each individual across the two waves of CLDS. From a methodological point of view, a RE model is preferred in this situation because FE estimates are less stable (Clark & Linzer, 2015). Due to the lack of time variation in the independent variables in three waves of panel data, Dustmann and Van Soest (2001) employ a RE model to estimate the effect of language proficiency on earnings. For the same reason, Chiswick and Wang (2016) also use a RE model with two-waves of panel data, when examining the effect of proficiency in Dutch on employment outcomes in the Netherlands. Petersen et al. (2013) find that a RE model fits the data better than a FE model when estimating the impact of language ability on development of behavioural problems in children.[10] In addition, Clarke, Crawford, Steele, and Vignoles (2015) suggest that, in economics of education research, when the selection mechanism is fairly well

[4] For more details about the CLDS, see Wang, Cheng, and Smyth (2016b), Sun Yat-Sen University Center for Social Survey (2013, 2014, 2015) and the CLDS website at http://css.sysu.edu.cn.

[5] See Sun Yat-Sen University Center for Social Survey (2014).

[6] We exclude four female respondents for which their hourly wage was in excess of 10,000 RMB. Excluding these four respondents does not qualitatively alter the results.

[7] Other nationally representative surveys also show that average English proficiency is very low in China. According to the 2012 China Family Panel Studies, the mean English proficiency is 0.74 (SD = 1.07; scale: 0–5). According to the 2013 Chinese General Social Survey, the mean listening English proficiency is 0.53 (SD = 0.83; scale 0–4) and spoken English proficiency is 0.45 (SD = 0.77; scale = 0–4). Therefore, the low proficiency in English in the CLDS is consistent with other nationally representative data.

[8] The reason why rural-urban migrants have higher English proficiency than urban residents is that the sampling method in CLDS gives more weight to better-educated, lower mobility migrants.

[9] Among the control variables, we control for self-assessed health. One might be concerned that there could be reverse causality between health and income and that both variables depend on language. If so, the inclusion of health as a control would reduce the return to language if the two are positively correlated and introduce a bias as all the variables are related to the wage regression's error term. In unreported results, we omitted health as a control and the returns for language are almost identical.

[10] This is reaffirmed by our results in Table 3 below. The RE adjusted $R^2$ is 0.25; FE adjusted $R^2$ is 0.14.

**Table 1**
Summary statistics for English proficiency and hourly wage.

| Full sample | English proficiency | | Hourly wage | |
|---|---|---|---|---|
| | Mean | SD | Mean | SD |
| 2012 | 0.43 | 0.87 | 21.10 | 147.01 |
| 2014 | 0.30 | 0.79 | 39.34 | 218.89 |
| *By group* | | | | |
| Males | 0.31 | 0.76 | 27.94 | 165.34 |
| Females | 0.49 | 0.94 | 26.89 | 189.37 |
| Urban residents | 0.62 | 1.03 | 32.66 | 204.18 |
| Rural residents | 0.18 | 0.57 | 22.99 | 146.49 |
| Urban locals | 0.62 | 1.03 | 34.38 | 220.77 |
| Rural-urban migrants | 0.64 | 1.03 | 25.18 | 104.86 |
| *By occupation* | | | | |
| Managers | 0.31 | 0.75 | 35.24 | 117.39 |
| Technicians | 0.92 | 1.16 | 31.80 | 148.86 |
| Service workers | 0.46 | 0.88 | 23.80 | 191.75 |
| Production workers | 0.18 | 0.57 | 21.53 | 142.48 |
| Agricultural workers | 0.04 | 0.27 | 29.96 | 191.90 |
| *By education* | | | | |
| 9 years or less | 0.14 | 0.49 | 25.78 | 175.07 |
| 12 years or more | 0.74 | 1.09 | 30.01 | 113.43 |
| *By age group* | | | | |
| 15–29 | 0.82 | 1.11 | 17.57 | 52.44 |
| 30–39 | 0.54 | 0.96 | 24.55 | 99.16 |
| 40–49 | 0.23 | 0.65 | 26.55 | 161.04 |
| 50–59 | 0.09 | 0.43 | 35.06 | 238.91 |
| 60+ | 0.05 | 0.33 | 53.65 | 386.37 |
| *By region* | | | | |
| East | 0.41 | 0.87 | 34.05 | 442.47 |
| Central | 0.39 | 0.85 | 32.88 | 200.11 |
| West | 0.34 | 0.79 | 30.56 | 227.75 |

Date source: 2012 and 2014 China Labor-Force Dynamics Survey.
Notes: The western region includes Beijing, Tianjin, Hebei, Liaoning, Shanghai, Jiangsu, Zhejiang, Fujian, Shandong and Guangdong; the central region includes Shanxi, Jilin, Heilongjiang, Anhui, Jiangxi, Henan, Hubei and Hunan; the western region includes Sichuan, Chongqing, Guizhou, Yunnan, Shanxi, Gansu, Qinghai, Ningxia, Xinjiang, Guangxi and Inner Mongolia.

understood and rich data is available, a RE model should be preferred over a FE model because it can produce policy-relevant, and more efficient, estimates. Following this related literature, in our preferred estimates, we employ a RE model (although we also report OLS estimates and, in the main baseline results, FE for comparison).[11]

There are several possible sources of bias associated with OLS/RE/FE estimates. First, there might be unobserved heterogeneity affecting both English proficiency and earnings (Chiswick & Miller, 1995). Second, there might be reverse causality through which individuals who earn more can invest more in improving their English language proficiency (Chen et al., 2014). Third, as stated by Dustmann and Van Soest (2001), the presence of errors in self-reported language proficiency a) is a misclassification and b) may generate both upward or downward biases in OLS/RE, although the empirical regularity is that the bias operates negatively.

While it is difficult to completely deal with all possible sources of endogeneity, to address potential bias we adopt several complementary approaches. The first is that we include a full set of control variables in the 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 socioeconomic status, number of friends in the local area, the extent to which the respondent is familiar with their neighbourhood, and the extent to which the respondent perceives that living standards fairly reflect work effort. We control for the perceived level of trust in the neighbourhood and the extent to which neighbours help each other. These controls should assist in picking up unobservable characteristics, such as cognitive and non-cognitive ability and social networks. We control for occupation that picks up the extent to which the relationship between English proficiency and earnings operates through the occupational channel; i.e. 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 are included to account for regional and rural-urban heterogeneity. Following Di Paolo and Tansel (2015) and Lang and Siniver (2009), as a robustness check, we control for the respondents' proficiency in foreign languages other than English. This can further assist to pick up ability, assuming that knowledge of additional foreign languages is correlated with higher ability. The results (available on request) indicated that the magnitude and significance of English proficiency were almost the same.

[11] We report OLS, FE and RE estimates when looking at the overall returns to English proficiency. When we look at heterogeneity in returns across subsamples we present OLS, RE and IV estimates.

**Table 2**
Summary statistics for control variables.

| Variable | Definition | Mean (s.d.)/per cent |
|---|---|---|
| Male (%) | | 46.98 |
| Age (years) | | 43.81 (13.92) |
| Education (years) | | 6.96 (4.62) |
| Rural *hukou* (%) | Ref: urban *hukou* | 75.34 |
| Local *hukou* (%) | Ref: non-local *hukou* | 91.72 |
| Health status | Scale: very healthy = 5; very unhealthy = 1 | 3.59 (0.98) |
| Socioeconomic status | Scale: very low = 0; very high = 10 | 4.24 (1.84) |
| Friends | Number of friends in local area. Scale: none = 0; >16 friends = 5 | 2.74 (1.32) |
| Familiar | Familiar with neigbourhood. Scale: very unfamiliar = 1; very familiar = 5 | 3.77 (1.02) |
| Trust | Level of trust in the neigbourhood. Scale: very low = 1; very high = 5 | 3.62 (0.84) |
| Help | Neigbours help each other. Scale: not at all = 1; A lot = 5 | 3.28 (1.04) |
| Fair | Living standards fairly reflect work effort Scale: not at all = 1; totally = 5 | 3.29 (0.94) |
| Industry (%) | | |
| Agriculture | | 45.44 |
| Manufacturing | | 13.88 |
| Construction | | 7.31 |
| Services | | 15.34 |
| Social management | | 11.52 |
| Others | | 6.51 |
| Job (%) | | |
| Manager | | 6.24 |
| Technician & clerk | | 12.77 |
| Service worker | | 12.04 |
| Agricultural worker | | 43.90 |
| Production worker | | 23.06 |
| Others | | 1.99 |
| Medical insurance (%) | Ref: no | 87.99 |
| Pension (%) | Ref: no | 50.49 |
| Training (%) | Ref: no | 11.20 |
| Rural area (%) | Ref: urban area | 65.58 |
| Province/municipality (%) | | |
| Beijing | | 1.33 |
| Tianjin | | 1.24 |
| Hebei | | 2.77 |
| Shanxi | | 1.43 |
| Inner Mongolia | | 0.62 |
| Liaoning | | 3.87 |
| Jilin | | 2.08 |
| Heilongjiang | | 1.81 |
| Shanghai | | 1.25 |
| Jiangsu | | 4.37 |
| Zhejiang | | 3.72 |
| Anhui | | 3.61 |
| Fujian | | 3.78 |
| Jiangxi | | 2.58 |
| Shandong | | 6.51 |
| Henan | | 4.31 |
| Hubei | | 4.76 |
| Hunan | | 3.63 |
| Guangdong | | 16.65 |
| Guangxi | | 3.60 |
| Chongqing | | 1.12 |
| Sichuan | | 4.56 |
| Guizhou | | 2.05 |
| Yunnan | | 3.00 |
| Shaanxi | | 3.39 |
| Gansu | | 5.56 |
| Qinghai | | 0.66 |
| Ningxia | | 1.26 |
| Xinjiang | | 4.47 |

Date source: 2012 and 2014 China Labor-Force Dynamics Survey.

Second, to take account of unobserved heterogeneity, as well as measurement error that is independent over time, we control for these background variables, while using an IV approach. Our first IV is lead English proficiency and takes advantage of having multiple observations on the language proficiency of the respondent. It is similar to the approach in Dustmann and van Soest (2002), who use leads and lags of language proficiency as IVs and Chiswick and Wang (2016), who include lagged language proficiency three to four years prior to the measured earnings to rule out reverse causality. Since currently CLDS has only two waves – 2012 and 2014 – we instrument for English proficiency in 2012 using English proficiency in 2014. Hence, we use the lead

English proficiency of the respondent in 2014. This approach should allow us to address both unobserved heterogeneity to the extent that background variables explain variation in the unexplained heterogeneity component and eliminate the bias component induced by measurement error, if measurement errors are independent over time (Dustmann & van Soest, 2002).

With respect to the exclusion criteria, it is unlikely that English proficiency in 2014 would be associated with earnings two years earlier, except through English proficiency in 2012. A potential problem is that self-rated English proficiency in 2014 may be correlated with unobservable characteristics that affect earnings. We have included several variables in the first stage regression, including number of friends in the local area, level of familiarity with the neighbourhood, level of trust in the neighbourhood, whether neighbours help each other and whether the respondent believes that his/her living standards fairly reflect work effort. These variables should largely control for the unobservable characteristics and ameliorate concerns about estimation bias.

Our second IV is smoking status at age 18. This variable has been widely used as an IV for years of schooling (see eg. Dickson, 2013 and references cited therein). Arabsheibani and Mussurov (2007) employ smoking at age 18 as an IV for schooling when estimating returns to schooling in Kazakhstan. As far as we know, smoking at age 18 has not been employed as an IV for proficiency in a foreign language, although the same intuition that make it an appropriate IV for years of schooling make it an appropriate IV for learning a foreign language. If the correlation between smoking and learning a foreign language is driven by the same unobservable factor – i.e. an individual's rate of time preference – smoking is a good IV for proficiency in a foreign language (Fuchs, 1982). Individuals who smoke at age 18 are likely to have a higher discount rate and care less about the future than those who do not smoke. If an individual has a high discount rate, he/she is less likely to invest in their human capital, which includes education and learning a foreign language. Several studies show that smoking at age 18 is a good predictor of discount rates and that smoking at age 18 is correlated with years of schooling (see eg. Fersterer & Winter-Ebmer, 2003). It is likely that smoking at age 18 is similarly correlated with investing in learning a second language. With respect to validity, while it is not possible, due to unobservables in the wage equation, to *a priori* rule out correlation between smoking at age 18 and unobservable variables that might affect wages, Dickson (2013) succinctly makes the case that smoking in one's youth is not correlated with current wages. Dickson (2013, p.482) who, in a study for the UK, uses smoking at age 16, rather than smoking at age 18, to instrument for years of schooling in the Mincer wage equation, writes:

> As it is a past health habit that is instrumenting for education in the equation for current wage, there should not be a correlation via an income effect: the contemporary wage can have no impact on the disposable income of 16-year old deciding whether or not to smoke. Moreover, theoretically whether one smoked at 16 should have no independent direct effect on current wage. It is by no means certain that current smoking affects current wage via a productivity effect – in fact, using British Household Panel Survey (BHPS) data Brune (2007) shows that there is only weak evidence that current smoking causally reduces current wages. Thus a link between smoking at 16 and current wage would be even more speculative.

Several other studies using US and UK data also find that early drug and alcohol use has no harmful effects on later economic prospects (Burgess & Propper, 1998; MacDonlad & Pudney, 2000). Dickson (2013, p.483) finds that "there is a good degree of movement between smoking and non-smoking amongst the BHPS sample". This is also the case in the CLDS sample. In the CLDS sample, 31.6% of respondents who smoked at age 18 had stopped smoking by the time they were first surveyed in 2012, while 29.4% of respondents who were smokers in 2012 were not smokers at age 18. Moreover, of the 805 respondents who changed smoking status between age 18 and 2012, 85.8% took up smoking after age 18. Thus, it is reasonable to conclude that smoking at age 18 can be legitimately excluded from the wage function.

## 6. Results

The estimates for the full sample are presented in Table 3. We only report the coefficient on English language proficiency, although each specification included a full set of controls. In Table 3 we also provide FE and OLS estimates for reference. The RE, FE

**Table 3**
Results for effects of English proficiency on hourly wages.

| | RE | FE | OLS (Panel) | OLS (2012 cross-sectional) | 2SLS |
|---|---|---|---|---|---|
| English proficiency | 0.0463*** | 0.0386** | 0.0574*** | 0.0733*** | 0.1642*** |
| | (2.32) | (2.49) | (3.60) | (3.58) | (3.90) |
| Instrumental variables | | | | | Lead English proficiency in 2014; smoking at 18 |
| Kleibergen-Paap rk Wald F statistic | | | | | 167.7656 |
| *p*-Value | | | | | 0.0000 |
| Hansen J statistic | | | | | 0.0684 |
| *p*-Value | | | | | 0.7937 |
| *N* | 5700 | 5700 | 5700 | 2709 | 2709 |
| adj. $R^2$ | 0.233 | 0.1435 | 0.2294 | 0.3001 | 0.2963 |

Date source: 2012 and 2014 China Labor-Force Dynamics Survey.
Notes: OLS = ordinary least squares; RE = random Effects; FE = fixed Effects; 2SLS = two-stage least squares; *t*-values in parenthesis for FE and OLS; *z*-values in parenthesis for RE and 2SLS; all specifications include a full set of controls; see Table 2 for their definitions and summary statistics.
** $p < 0.05$.
*** $p < 0.01$.

and OLS results suggest that self-reported overall proficiency in English for the panel is associated with 4.6, 3.9 and 5.7% higher hourly wages respectively. Overall, the OLS estimates are similar to those obtained in previous studies for a range of other countries (see Chiswick & Miller, 2015 for a review). To put this in perspective, the OLS returns to English proficiency are equivalent to about one year of additional schooling. In our estimates the returns to an additional year of schooling in the OLS regression were 5.2%. The estimates for returns to schooling are lower than the equivalent estimates of 7–8% reported in some recent previous studies for China (see e.g. Gao & Smyth, 2015). But this makes sense given that these other studies mainly focus on just urban labor markets, in which returns to schooling are higher and that these other studies do not control for language proficiency.

As a robustness check, we ran the above specifications without controlling for occupation and province respectively. We do not report the results, but found that the returns to English proficiency increase by approximately 0.4% if not controlling for occupation fixed effects and by approximately 2.7% if not controlling for province fixed effects. This points to the importance of controlling for occupation and province fixed effects, as well as the need to better understand the heterogeneous effects of English proficiency across different occupations and provinces/regions, which we will examine later in this section.

The IV estimates from 2SLS for 2012, together with the corresponding OLS estimates, are also reported in Table 3. The first stage estimates are presented in Table A1 in the Appendix A. The OLS and 2SLS estimates for 2012 suggest that the returns to English proficiency are 7.3% and 16.4% respectively. The 2SLS estimates satisfy the Kleibergen-Paap rk Wald F statistic that the instruments are not weak and the Hansen J statistic for overidentification. The results for 2SLS are consistent with measurement error being more important than omitted variable bias and are consistent with the findings from previous studies in this respect (see e.g. Bleakley & Chin, 2004; Chiswick & Miller, 1995; Dustmann & van Soest, 2001; Saiz & Zoida, 2005).

Our IV estimates are 3.5:1 (RE) to 2.3:1 (OLS).[12] Previous studies for immigrants to countries in which English is the host language have found that the IV estimates are much higher than the OLS estimates. Chiswick and Miller (2010) found that for immigrants to the United States that the variation in the ratio of IV to OLS estimates ranged between 2.4:1 and 9.1:1. As an upper bound on prior IV estimates, Chiswick and Miller (1995) found that the IV estimates for economic returns to fluency in English were 41.3% for migrants in Canada and 57.1% for migrants in the United States. As discussed in Section 3, economic returns to fluency in English among non-immigrant populations in the range 40-50% or higher have been found in the Baltic states (Toomet, 2011), Europe (Ginsburgh & Prietro-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 labor market was 42.1%.

In Tables 4-8 we report RE, OLS and 2SLS estimates across different sub-samples. For 2SLS we use lead English proficiency in 2014 and smoking at age 18 as IVs in Tables 4-8. For 2SLS estimates of sub-samples, we test the validity of IVs. Most 2SLS specifications satisfy the Kleibergen-Paap rk Wald F statistic that the instruments are not weak and the Hansen J statistic for overidentification, except for a few specifications in relation to the smaller sub-samples of rural-urban migrants (Table 4), agricultural workers (Table 5) and older workers (50–59 and 60+ in Table 8), for which the F statistics are relatively small. Using the critical values in Stock and Yogo (2005) to test for weak instruments based on 2SLS size, we check the maximum size of the Wald test at the 5% significance level for these four specifications and find that the maximum size of the Wald test for each is <0.10, indicating that the IVs are not weak in these four specifications for smaller sub-samples. Other studies also use this method to further verify the validity of IVs when the Kleibergen-Paap rk statistic is relatively low (see e.g. Casey & Owen, 2014).

Table 4 reports the results for the economic returns to English proficiency across different demographic and socioeconomic groups. We begin with the gender-specific differences. For the RE estimates the economic returns to overall proficiency are significant among women, but not men. For the OLS and 2SLS estimates returns to English proficiency are significant for both genders, but higher for women. Previous studies have reached mixed findings on the gender-specific returns. Mora and Davila (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 vary 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 & Davila, 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) – results are available on request. The interaction terms for English proficiency and occupation were statistically significant at the 1% 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.

Next, we consider differences in economic returns between urban and rural residents. As Azam et al. (2013) note, in their study for India, 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. We find that returns are higher for urban residents. While the economic returns to urban residents are 17.8% in the 2SLS estimates, the economic returns to rural residents are insignificant. This finding differs from Azam et al. (2013) who find no evidence of a differential return between urban and rural residents in India.

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. Rural-urban migrants are 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

[12] 3.2:1 for the pooled OLS, although for this case the samples differ.

**Table 4**
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: RE** | | | | | | |
| English proficiency | 0.0325 | 0.0535*** | 0.0673*** | −0.0004 | 0.0760*** | 0.0201 |
| | (1.16) | (3.23) | (5.73) | (−0.02) | (4.52) | (0.60) |
| *N* | 4765 | 3384 | 4040 | 4109 | 3303 | 737 |
| adj. $R^2$ | 0.2368 | 0.2513 | 0.2768 | 0.1576 | 0.2829 | 0.3149 |
| **Panel B: OLS** | | | | | | |
| English proficiency | 0.0710** | 0.0747*** | 0.0824*** | 0.0723 | 0.0823*** | 0.0171 |
| | (2.32) | (2.69) | (3.73) | (1.57) | (3.49) | (0.23) |
| *N* | 1620 | 1089 | 1256 | 1453 | 1117 | 139 |
| adj. $R^2$ | 0.2688 | 0.3469 | 0.3388 | 0.1888 | 0.3355 | 0.5290 |
| **Panel C: 2SLS** | | | | | | |
| English proficiency | 0.1173** | 0.1940*** | 0.1784*** | 0.1763 | 0.1998*** | −0.0505 |
| | (2.14) | (3.03) | (3.94) | (1.55) | (4.09) | (−0.38) |
| Kleibergen-Paap rk Wald F statistic | 107.4584 | 64.4960 | 120.4284 | 30.2856 | 107.4737 | 3.8380 |
| *p*-Value | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0029 |
| Hansen J statistic | 0.0726 | 0.0656 | 0.9672 | 0.5894 | 1.9630 | 2.4687 |
| *p*-Value | 0.7875 | 0.7978 | 0.3254 | 0.4426 | 0.1612 | 0.1161 |
| *N* | 1620 | 1089 | 1256 | 1453 | 1117 | 139 |
| adj. $R^2$ | 0.2680 | 0.3381 | 0.3293 | 0.1759 | 0.3213 | 0.5243 |

Date source: 2012 and 2014 China Labor-Force Dynamics Survey.
Notes: See notes to Table 3; the 2SLS estimates employ lead English proficiency and smoking at age 18 as IVs; all specifications include a full set of controls; see Table 2 for their definitions and summary statistics.
** $p < 0.05$.
*** $p < 0.01$.

Federation of Trade Unions in 2006 found that 65% of rural-urban migrants worked in 'dirty, dangerous and demeaning' (three-D) jobs (Tao, 2006). We find that the economic returns to overall proficiency in English are significant among urban locals, but not rural-urban migrants. The 2SLS estimate of economic returns to urban locals is 20.0%.

Table 5 reports the RE, OLS and 2SLS estimates for returns to English proficiency according to occupational status. The economic returns to English proficiency are insignificant for managers, production workers and agricultural workers. The 2SLS estimates for returns to English proficiency for technicians and service workers are 19.6% and 23% respectively. In part, this result reflects the fact that due to the manner in which engineering and science is taught in universities, many 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

**Table 5**
Effects of English proficiency on hourly wages by occupation.

| | Managers | Technicians | Service workers | Production workers | Agricultural workers |
|---|---|---|---|---|---|
| **Panel A: RE** | | | | | |
| English proficiency | −0.1316 | 0.0825*** | 0.0652* | 0.0569 | 0.0300 |
| | (−1.22) | (4.05) | (1.94) | (0.50) | (1.37) |
| *N* | 306 | 1994 | 1487 | 1106 | 3014 |
| adj. $R^2$ | 0.3509 | 0.3081 | 0.2549 | 0.1679 | 0.1833 |
| **Panel B: OLS** | | | | | |
| English proficiency | −0.1618 | 0.0594** | 0.1334*** | 0.0666 | 0.2109 |
| | (−1.37) | (2.06) | (3.07) | (1.39) | (0.95) |
| *N* | 85 | 705 | 468 | 988 | 347 |
| adj. $R^2$ | 0.3715 | 0.3491 | 0.3085 | 0.1612 | 0.1975 |
| **Panel C: 2SLS** | | | | | |
| English proficiency | −0.1539 | 0.1961*** | 0.2299** | 0.0494 | 0.1141 |
| | (−0.56) | (2.92) | (2.47) | (0.51) | (0.28) |
| Kleibergen-Paap rk Wald F statistic | 9.7515 | 50.6447 | 32.9909 | 27.7885 | 5.2907 |
| *p*-Value | 0.0002 | 0.0000 | 0.0000 | 0.0000 | 0.0349 |
| Hansen J statistic | 0.0465 | 0.1152 | 1.1791 | 0.1395 | 2.3569 |
| *p*-Value | 0.8292 | 0.7343 | 0.2775 | 0.7088 | 0.1247 |
| *N* | 85 | 705 | 468 | 988 | 347 |
| adj. $R^2$ | −0.2429 | 0.3287 | 0.2648 | 0.1611 | 0.0070 |

Date source: 2012 and 2014 China Labor-Force Dynamics Survey.
Notes: See notes to Tables 3 and 4; all specifications include a full set of controls; see Table 2 for their definitions and summary statistics.
* $p < 0.1$.
** $p < 0.05$.
*** $p < 0.01$.

**Table 6**
Effects of English proficiency on hourly wages by education.

| | 9 years or less | 12 years or more |
|---|---|---|
| **Panel A: RE** | | |
| English proficiency | −0.0001 | 0.0686*** |
| | (−0.01) | (4.46) |
| *N* | 5328 | 2791 |
| adj. $R^2$ | 0.1538 | 0.2393 |
| **Panel B: OLS** | | |
| English proficiency | 0.0362 | 0.0915*** |
| | (0.91) | (3.62) |
| *N* | 1954 | 755 |
| adj. $R^2$ | 0.1942 | 0.3643 |
| **Panel C: 2SLS** | | |
| English proficiency | 0.1255 | 0.1520*** |
| | (1.27) | (2.96) |
| Kleibergen-Paap rk Wald F statistic | 29.1515 | 90.4682 |
| *p*-Value | 0.0000 | 0.0000 |
| Hansen J statistic | 0.8557 | 2.4914 |
| *p*-Value | 0.3549 | 0.1145 |
| *N* | 1954 | 755 |
| adj. $R^2$ | 0.1924 | 0.3507 |

Date source: 2012 and 2014 China Labor-Force Dynamics Survey.
Notes: See notes to Tables 3 and 4; all specifications include a full set of controls; see Table 2 for their definitions and summary statistics.
*** $p < 0.01$.

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 service and technical jobs (McManus, Gould, & Welsch, 1983). Overall, taken together, these results point to language-skill complementarity in which proficiency in English is more important in certain skilled occupations, such as technical jobs. This finding is consistent with the literature on economic returns to English in countries in which English is not the main language (see e.g. Lang & Siniver, 2009).

Table 6 reports the RE, OLS and 2SLS estimates for economic returns to English proficiency according to education level. The 2SLS estimates for economic returns to English proficiency are significant for those with 12 or more years education (15.2%). These results reinforce the conclusions regarding language-skill complementarity in the results for occupational groups

**Table 7**
Effects of English proficiency on hourly wages by region.

| | East | Central | West |
|---|---|---|---|
| **Panel A: RE** | | | |
| English proficiency | 0.0527*** | 0.0366 | 0.0360 |
| | (2.99) | (1.13) | (1.28) |
| *N* | 4556 | 1639 | 1954 |
| adj. $R^2$ | 0.2718 | 0.1792 | 0.2631 |
| **Panel B: OLS** | | | |
| English proficiency | 0.0837*** | 0.0879* | 0.0789 |
| | (3.30) | (1.76) | (1.48) |
| *N* | 1569 | 519 | 621 |
| adj. $R^2$ | 0.3375 | 0.1829 | 0.3145 |
| **Panel C: 2SLS** | | | |
| English proficiency | 0.1699*** | 0.0533 | 0.2296 |
| | (3.41) | (0.54) | (1.55) |
| Kleibergen-Paap rk Wald F statistic | 132.8972 | 29.9431 | 17.3090 |
| *p*-value | 0.0000 | 0.0000 | 0.0000 |
| Hansen J statistic | 0.1054 | 0.3491 | 0.2798 |
| *p*-value | 0.7454 | 0.5546 | 0.5969 |
| *N* | 1569 | 519 | 621 |
| adj. $R^2$ | 0.3331 | 0.1824 | 0.3075 |

Date source: 2012 and 2014 China Labor-Force Dynamics Survey.
Notes: See notes to Tables 3 and 4; all specifications include a full set of controls; see Table 2 for their definitions and summary statistics; the western region includes Beijing, Tianjin, Hebei, Liaoning, Shanghai, Jiangsu, Zhejiang, Fujian, Shandong and Guangdong; the central region includes Shanxi, Jilin, Heilongjiang, Anhui, Jiangxi, Henan, Hubei and Hunan; the western region includes Sichuan, Chongqing, Guizhou, Yunnan, Shanxi, Gansu, Qinghai, Ningxia, Xinjiang, Guangxi and Inner Mongolia.
* $p < 0.1$.
*** $p < 0.01$.

**Table 8**
Effects of English proficiency on hourly wages by age group.

| | 15-29 | 30-39 | 40-49 | 50-59 | 60+ |
|---|---|---|---|---|---|
| **Panel A: RE** | | | | | |
| English proficiency | 0.0405** | 0.0898*** | 0.0780*** | 0.0368 | 0.1662 |
| | (1.98) | (4.94) | (2.95) | (0.54) | (1.12) |
| Education | 0.0308*** | 0.0610*** | 0.0650*** | 0.0652*** | 0.0440** |
| | (5.30) | (9.62) | (6.11) | (7.84) | (1.98) |
| *N* | 1784 | 2020 | 2557 | 1353 | 435 |
| adj. $R^2$ | 0.2460 | 0.3214 | 0.2602 | 0.2706 | 0.3254 |
| **Panel B: OLS** | | | | | |
| English proficiency | 0.1126*** | 0.0827** | 0.0908** | −0.1176 | 0.4771 |
| | (3.04) | (2.21) | (2.09) | (−1.59) | (0.53) |
| Education | 0.0042 | 0.0399*** | 0.0349*** | 0.0396*** | 0.0171 |
| | (0.40) | (4.02) | (4.26) | (2.88) | (0.22) |
| *N* | 503 | 706 | 957 | 452 | 91 |
| adj. $R^2$ | 0.2756 | 0.3285 | 0.2734 | 0.3424 | 0.2902 |
| **Panel C: 2SLS** | | | | | |
| English proficiency | 0.1457 | 0.2559*** | 0.2252*** | 0.0398 | −1.6888 |
| | (1.56) | (3.38) | (2.98) | (0.23) | (−1.49) |
| Kleibergen-Paap rk Wald F statistic | 27.8680 | 46.0420 | 68.5294 | 3.0593 | 5.7401 |
| *p*-Value | 0.0000 | 0.0000 | 0.0000 | 0.1235 | 0.0059 |
| Hansen J statistic | 2.2522 | 2.2781 | 0.1250 | 6.6914 | 2.0413 |
| *p*-Value | 0.1334 | 0.1312 | 0.7237 | 0.0097 | 0.1531 |
| *N* | 503 | 706 | 957 | 452 | 91 |
| adj. $R^2$ | 0.2713 | 0.2932 | 0.2534 | 0.3346 | 0.2280 |

Date source: 2012 and 2014 China Labor-Force Dynamics Survey.
Notes: See notes to Tables 3 and 4; all specifications include a full set of controls; see Table 2 for their definitions and summary statistics.
** $p < 0.05$.
*** $p < 0.01$.

in Table 5. They are generally consistent with previous studies that find that the return to language proficiency, in terms of wages and employment outcomes, are better for more educated workers (see e.g. Azam et al., 2013; Duncan & Mavisakalyan, 2015; Lang & Siniver, 2009). 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 forms of 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%, compared with just 6.6% and 6% 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%, while the comparable figures for the central and western regions are 10% and 8.1% respectively (National Bureau of Statistics, 2013). We expect that because the eastern region is more marketized, and that 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.

The results for the returns to proficiency in English across the regions are reported in Table 7. The results are consistent with our hypothesis that the returns to English are higher in the eastern region. The 2SLS estimate of returns to proficiency in English in the eastern region is 16.99%, reflecting the growth in FDI and trade on the coastal seaboard. 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% or better, reinforcing that returns to English are higher in those provinces in which trade and FDI are higher.

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 8. The returns to overall proficiency in English for the 2SLS estimates are highest in the 30-39 and 40-49 age brackets. Azam et al. (2013) also found that the returns to proficiency in English in India were higher among those in the middle age brackets. Their explanation for why the skill price has not equalized across age groups is that middle age workers have the work experience that complements English skills and allow them to take advantage of career opportunities that younger workers in the 15-29 age bracket are unable too. Our results are consistent with this explanation and with the finding of language-skill complementarities in Tables 5 and 6.

## 7. Conclusion

In this paper we have examined the economic returns to English in China. Our main conclusion is that the economic returns to proficiency in English are substantial. We find that the 2SLS estimates are higher than the RE, FE and 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 continue 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, and this means that such individuals can earn a premium for speaking English well.

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, levels of education and occupation with returns to proficiency in English being higher for those living on the coastal seaboard, middle-aged workers, those with better education, and those in technical and service occupations. We also found differences in the economic returns to proficiency in English between urban and rural residents and between rural-urban 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 so-called 'three-D jobs'.

Our main conclusions have some important policy implications for current debates in China about the role that 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 & Seargent, 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 Guo & 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. 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, 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 (see e.g. Qi, 2014).

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## Appendix A

**Table A1**
First stage regression on English proficiency in 2012.

| | | |
|---|---|---|
| Smoking at 18 years old | −0.0874** | (−2.44) |
| Lead English proficiency in 2014 | 0.4792*** | (17.76) |
| *N* | 2709 | |
| adj. $R^2$ | 0.4712 | |

Date source: 2012 and 2014 China Labor-Force Dynamics Survey.
Notes: *t*-values in parenthesis; the specification includes a full set of controls; see Table 2 for their definitions and summary statistics.
* $p < 0.1$.
** $p < 0.05$.
*** $p < 0.01$

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