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DISCUSSION PAPER 12.27

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Abstract: This paper studies the effects of live-in foreign domestic workers (FDWs) on children's educational achievement using samples from two population censuses and a survey dataset. The census data shows that the incidence of express schooling is significantly higher for children who are under the care of an FDW when their mothers are at work. In the survey data, children scored higher for English if they had a Filipino FDW. The age of FDWs had a positive and significant relationship with children's average scores for Chinese, English and Mathematics. These findings suggest that FDWs provide an important childrearing service, which is often unrecognised and undervalued.

JEL classification: J61, I21

Keywords: Foreign Domestic Workers, Educational Achievement, Hong Kong.

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1. Introduction

Many families in Hong Kong employ a live-in foreign domestic worker (FDW), who not only performs household chores, but also looks after children while both parents are working.¹ Since FDWs are usually paid a relatively low wage compared to the wage the mothers can earn in their formal employment, FDWs provide an affordable solution to childrearing for many Hong Kong women who would otherwise not have been able to join the workforce.² It is thus no coincidence that the demand for FDWs has been steadily increasing since the early 1980s and the total number of FDWs in Hong Kong has reached around 300,000 at the end of 2011. However, despite the dependence of many Hong Kong families on their FDW, the Hong Kong government has a series of discriminatory policies in place against FDWs working in Hong Kong. For example, FDWs are denied the right of abode even though other foreign workers can apply for permanent Hong Kong residency.³ The current paper does not directly evaluate these discriminatory policies per se but aims to show that the contributions of FDWs to Hong Kong's economy may not be confined to providing domestic services alone. It is contended in this paper that given their role as children's main carer in the households when both parents are working, FDWs can have important influences on children's educational achievement.

Recent research indicates that educational achievement, as opposed to years of schooling, in primary and secondary schools is the most important aspect of human capital formation, which directly contributes to long-term economic growth (Hanushek and Woessmann, 2008, 2012). Factors that affect educational achievement such as financial constraints, family background and school quality have also been studied extensively in the literature.⁴ This paper builds on these insightful studies to ask whether and how live-in FDWs affect children's educational achievement. The findings of this paper will not only have important implications for the long-term growth prospects of Hong Kong, but also for the long-term growth prospects of other countries where a substantial number of FDWs are present. In addition, this paper attempts to draw greater public attention and recognition to live-in FDWs whose services to the local families are often regarded as low skilled and low value-added.

In theory, FDWs can have either positive or negative effects on children's educational achievement. On the positive side, FDWs can directly affect the schooling achievement of children under their care through informal learning via personal contacts and tutoring school works. This potential positive effect is related to the FDWs' own educational attainment and experience in childrearing. One study by Tse et al. (2009) examines the English reading comprehension of a selected group of grade four students in Hong Kong. They found a statistically significant difference between the reading performance of students who had an English-speaking FDW and their peers who did not. They concluded that English-speaking FDWs may have a positive

¹ The female labour force participation rate averages around 70% between the age of 20 and 55 (CSDHK, 2012).

² FDWs are usually paid the minimum monthly wage, which has been set by the Hong Kong government at HK\$3740 or approximately US\$480 per month since June 2011. Suen (2000) uses the difference between employer's cost of time and employee's wage as a measure of rent to find that wages for domestic helpers are positively related to rent. However the apparent sharing of rent is better explained by matching than by efficiency wage models.

³ In August 2011, a Filipino domestic worker launched a landmark court case against the Hong Kong government for denying her the right of abode although she had lived in Hong Kong for 25 years. The court subsequently ruled that the government policy treating FDWs as "non-ordinary residents" is unconstitutional. The judgement handed down by the court spurs a fear of massive influx of immigrants among some quarters, especially the trade unions, in Hong Kong.

⁴ A large body of literature concerns the estimation of the educational production function in which income, family characteristics and school quality are used as factors that explain educational achievement. See discussion in Section 3.1.

influence on how well students acquired English language skills in the primary school. They also add that FDWs tend to have a stronger influence on the students' English learning than do the actual parents of the children. Another potentially positive channel is that FDWs can help improve children's schooling achievement by giving parents more time to supervise their own children's school homework. Chan (2005) finds that parents do not delegate certain tasks to FDWs because these tasks symbolise their status as parents. Supervision of children's school homework is one of those important tasks which the parents reserve for themselves and can spend more time on when house chores are performed by the FDWs.

FDWs can also have negative effects on children's schooling achievement. Some studies investigated the social and psychological impacts of FDWs on children. FDWs may cause behavioural problems because they have responsibility for the children, but have no authority and thus are forced to appease the children in order to gain control (Yeoh et al., 1999). Cheuk and Wong (2005) found that children less than five years old and cared for by FDWs are associated with an increased risk and severity of specific language impairment. Tam (1999) discusses the role of FDWs in providing an affordable childcare service for Hong Kong families with young children. However, heavy reliance on FDWs to fill the childcare service gap is said to incur social and psychological costs for the FDWs themselves and the local families.⁵

Clearly, the questions of whether and how FDWs affect children's educational achievement cannot be settled by appealing to theory alone. Using sample data from the Hong Kong 2001 Population Census and the 2006 Population Bi-census, this paper examines the incidence of express schooling among school children in Hong Kong. Express schooling suggests exceptional schooling achievement, indicating a child studying in a higher grade for their age than the rest of the class. The key results from the Census data show that the probabilities of express schooling are significantly higher for those school children who are under the care of an FDW than those who are not while their mothers are working. For children whose mothers are not working, however, the effects of FDWs on children's educational achievement are weak but still present, indicating that FDWs' effects are not as important when mothers are the main carers of the children rather than being in the workforce.

This paper exploits the exogenous differences in age, experience and education between the two largest ethnic FDW groups, Filipino and Indonesian, to show that the effects of FDWs on children's educational achievement are not simply due to reverse causation. Specifically, if families employ an FDW because their children excel in school, they will naturally employ a Filipino FDW rather than an Indonesian FDW because Filipino FDWs are older, more experienced and better educated. This well-known behaviour among Hong Kong parents allows us to expect Filipino FDWs to have a greater effect on children's educational achievement, some of which could have been the result of reverse causation. Indonesian FDWs, in contrast, are not expected to be subject to the same potential bias. As will be shown later, both Filipino and Indonesian FDWs produce positive estimated effects on children's express schooling which are broadly similar, confirming our expectation that reverse causation is not a serious issue because we excluded high-income households from the samples and only included middle-income households in our regression analysis.

⁵ The emotional bond developed between children and their live-in FDWs underlies the importance of their relationship at home where working parents often spend little time with their children. Parents, especially the mothers, are often envious of the close relationship between their children and live-in FDWs.

Because Census data does not provide direct measures of educational achievement of school children, we further investigated the effects of FDWs on children's educational achievement by conducting a survey of school children in selected schools in Hong Kong. The results based on detailed data returned from 151 families with school children show strong evidence of higher school marks in English for children with a live-in FDW, especially if Filipino. The survey data also reveals that the age of FDWs is an important factor in children's schooling achievement: children scored a higher average mark for the three core academic subjects (Chinese, English and Mathematics) when an older live-in FDW is employed in the household. Older FDWs, many of whom are mothers themselves, have the experience and training to be children's quality carers. The survey results thus corroborate the findings of the Census data that live-in FDWs contribute positively to children's academic achievement.

Previous studies on the effects of FDWs on school children's educational achievement are rare. Economists are drawn into studying FDWs (or domestic workers in general) mainly by the question of how wage is determined for FDWs (Suen, 2000), or of the effects of legislating a minimum wage law on the wage and employment of domestic workers (Dinkelman and Ranchhod, 2012), or of the effect of tax reductions on the employment of domestic workers (Flipo et al., 2007). To the best of our knowledge, the paper by Cheo and Quah (2006) is the closest to the present study which investigates the effects of maternal employment, FDWs, and private tutoring, among other factors, on school children's academic results. Their empirical findings, based on a survey of 429 grade eight students from three premier schools in Singapore, find that students with working mothers, spending less time with a private tutor and less traveling time to school, produce better academic results. However, FDWs are found to have little effect on school children's academic achievement. One important difference between theirs' and the present study is that we uses a much larger random sample set which consists of more than 20,000 school children from middle-income families. Our random sample set generated from the Census data contains detailed family characteristics of school children and thus provides more comprehensive controls for the covariates of academic achievement. Also, excluding school children from high-income families in our study ensures that school quality is relatively homogeneous. Moreover, our survey sample is drawn from typical government schools which are not premier schools in Hong Kong. Finally, the effects of FDWs on school children's academic performance should decline with children's age, and by the time the children are admitted to grade eight when they are already 13 or 14 years old, the effects of FDWs may not be easily detectable with a small sample set.

This paper is organised into five sections. Section 2 discusses sample statistics obtained from the Hong Kong 2001 Population Census and the 2006 Population Bi-census, and the measures of educational achievement using "express" and "late" schoolings. Section 3 reports and interprets the regression results based on samples taken from the Census data. Section 4 discusses the design and results of the school survey. Section 5 summarises and concludes the paper by drawing attention to the policy implications of our findings.

2. Census Data and Measures of Educational Achievement

The first part of our empirical analysis explored the two most up-to-date Hong Kong Census datasets, the 2001 Population Census and the 2006 Population Bi-census. The 2001 Population Census covered all Hong Kong residents, and the 2006 Population Bi-census sampled one-tenth of all quarters in Hong Kong with all households residing in the sampled quarters being included in

the enquiry.⁶ Both censuses contained a broad range of demographic and socioeconomic characteristics of the population including age, education, income, occupation, language, housing, place of origin and transportation. The Census and Statistics Department of Hong Kong (CSDHK) permitted a 5% sample of the 2001 Population Census and the 2006 Population Bi-census to be used for the study. We constructed a dataset of school children for each 5% sample. The 2001 dataset contained a total of 57,053 school children whereas the 2006 dataset contained 41,441 school children. The two datasets contained detailed characteristics of school children and all other persons who were living with the children in the same household (including FDWs).

Local families are required by the Immigration Department to have a minimum monthly household income of HK\$15,000 to qualify for employing an FDW. This policy excludes lower income families from employing an FDW. Consequently, school children who belong to families with a monthly household income below HK\$15,000 are excluded in the datasets. Also excluded from the datasets are pre-primary school children and school children who did not live with at least one of their parents.⁷ Table 1 and 2 summarise the key characteristics of school children, their parents and FDWs for the 2001 and 2006 Census datasets respectively.

In Table 1, school children from the 2001 Population Census were divided into three groups. The first group included only school children with a Filipino FDW, the second with an Indonesian FDW and the third without an FDW. Filipino FDWs, on average, are about eight years older than Indonesian FDWs. The difference in educational attainment is also substantial between Filipino and Indonesian FDWs. On average, Filipino FDWs have 13 years of schooling whereas Indonesian FDWs have only nine. It is important to note that Filipino FDWs are almost as educated as the mothers. For the Indonesian FDWs, they had on average three years less education than the mothers. One other noticeable difference between Filipino and Indonesian FDWs was the duration of their stay in Hong Kong; a typical Filipino FDW works in Hong Kong for five years, but only two years for the Indonesian FDW. In sum, Filipino FDWs are older, more educated and have spent a longer period of time working in Hong Kong.

Table 1 reveals differences in household and parent characteristics among school children who lived with a Filipino FDW, an Indonesian FDW and without an FDW. Households employing a Filipino FDW show a much higher household income (income of both parents) than households employing an Indonesian FDW (HK\$63,860 per month compared to HK\$40,470). In turn, households employing an Indonesian FDW show a much higher household income (income of both parents) than households not employing an FDW (HK\$40,470 per month compared to HK\$24,500). Also, parents in households employing a Filipino FDW have the highest level of educational attainment (13 years) compared to parents in households employing an Indonesian FDW (11 years) and in households not employing an FDW (nine years). Other than incomes and education, we did not observe marked differences in household size, the number of children, number of elderly, age of parents, and years of Hong Kong residency for mothers across the three household types.

Although Census data provides detailed socioeconomic characteristics of the population, they do not provide information on the academic performance of school children. In order to study how well school children perform in school, we adopt a measure which compares the age and grade of a child. This measure is referred to as grade for age (GAGE) and is calculated as follows:

⁶ Census data is organized in to three different categories: individuals, households and quarters. All individual residents belong to a particular household. A household can occupy a quarter by itself or share a quarter with other households.

⁷ Pre-primary schooling is voluntary in Hong Kong. Compulsory schooling starts from Primary 1 to 6 and Secondary 1 to 3. Under the current system, students can receive free schooling for 12 years.

$$(1) \quad GAGE = \left(\frac{Grade}{Age - Entry\ Age} \right) * 100$$

A GAGE value of 100 indicates complete schooling attainment and a value greater than 100 indicates advanced placement or “express” schooling. In government or government-aided schools in Hong Kong, a child can only start grade one (primary 1) when the child reaches six years of age, giving a GAGE value of 100 (entry age is set to five). If a child starts grade one at seven years old, the GAGE value is then 50. This, however, does not necessarily indicate the child is falling behind in schooling; it can simply indicate that the child was born after the cut-off date for a particular year’s new intake for grade one. If a child falls behind in schooling by two or more years compared to children of the same age, then the child is considered to be “late” in schooling. Table 1 shows the incidence of express and late schoolings for the three different groups in the 2001 dataset.

Table 1 shows that the proportion of express schooling is highest (20.6%) among children who live with a Filipino FDW than those who live with an Indonesian FDW (16.2%) and those who do not have a live-in FDW (11.2%). Conversely, the proportion of late schooling is lowest among children who live with a Filipino FDW (2.5%) than those who live with an Indonesian FDW (3%), and those who do not have a live-in FDW (12.2%). It should be noted that late schooling is relatively rare for children who live with a live-in FDW compared to children who do not have a live-in FDW. Table 1 also shows the proportion of cross-district schooling among children in the three different groups. Children attending a cross-district school require more time on traveling to and from schools, which may affect their educational achievement. Alternatively, cross-district schooling may indicate that some children are willing to travel to a better quality school than attending a school nearby their home. Table 1 shows that the proportion of cross-district schooling is highest among children who live with a Filipino FDW (51.5%) than those who live with an Indonesian FDW (42.5%), and those who do not have a live-in FDW (45.4%).

Table 2 reveals little quantitative differences between the 2006 and 2001 datasets. We observe similar gaps in incomes and education among parents in households employing a Filipino FDW, an Indonesian FDW and those without an FDW. Also, Filipino FDWs are older, better educated and have resided longer in Hong Kong compared to their Indonesian counterparts. Other household and parents characteristics are roughly the same between the 2006 and 2001 datasets. There is, however, a marked difference in the proportion of express schooling in households employing a Filipino FDW between the 2006 and 2001 datasets. In 2006, there was only 15.5% of express schooling in households employing a Filipino FDW compared to 20.6% in 2001. Another difference between the 2006 and 2001 datasets is the FDW’s monthly salary. In 2006, the mean monthly salary an FDW was HK\$3320, which is less than the 2001 mean of HK\$3670. The reduction in the FDW mean salary is due to a retraining levy imposed by the government on FDWs in October 2003.

The use of express schooling to measure educational achievement requires some care. It is admittedly a proxy for overall academic performance because it only captures those children who perform well above their peers academically and thus are able to jump one or more grades. Express schooling does not measure how well children perform in any particular subject, nor does it provide any indication of which children may be performing well above their peers, but are not allowed to obtain advanced placement due to school policy or lack of opportunity. These are limitations of the measure which we should be borne in mind when interpreting the results. Moreover, some privately-funded schools in Hong Kong (such as the English Foundation Schools) admit children

into grade one when children are five years old rather than six years old and thus are included in the group of express schooling in the datasets. To counter this potential pitfall, we will exclude all high-income households and include only middle-income households in all our analyses. Private education is expensive in Hong Kong, costing about HK\$10,000 in tuition fees alone per month. Middle-income households with a median monthly income of HK\$18,000 in 2001 are unlikely to be able to send their children to private schools. The datasets containing only school children from middle-income households tend to reduce potential measurement errors from this source.

Although we can only obtain proxy measures of academic achievement from the Census data, the large number of school children (over 20,000 excluding high-income households) and the detailed profile of these children given by the Census data, provide a powerful test of the hypothesis under study. In addition, results of the Census data can be checked by comparing them with the results obtained from the survey data. If the two sets of results are broadly similar, then stronger conclusions can be drawn from the study.

3. Methods and Results: Census Data

3.1 Methods- Census Data

The starting point for the empirical investigation is to separate the school children into two groups according to whether their mother is working in the labour force or not.⁸ Working mothers may spend less time with their children compared to non-working mothers, but they can afford to provide their children with more learning resources such as private tuition. By grouping school children into working mothers and non-working mothers, we can control for the effects of maternal employment on children's educational achievement. In addition, we can also compare the estimated effects of FDWs on children's academic achievement between working mothers and non-working mothers. The estimated effects of FDWs on children's schooling achievement are expected to be stronger in the group of school children with a working mother than in the group with a non-working mother. FDWs are the main carers of the children when mothers are working and thus are expected to have a greater influence on children compared to FDWs who are mainly employed for providing domestic services in households where mothers are not working in the labour force.

To test the effects of FDWs on children's educational achievement, we formulate an empirical model as follows:

$$(2) \quad GAGE_i = \beta_1(FFDW_i) + \beta_2(IFDW_i) + \alpha(\mathbf{Control}_i) + \mu_i$$

GAGE is a binary variable denoting express or late schooling for the *i*th child. *FFDW* and *IFDW* are binary variables representing the household employment of a Filipino or an Indonesian FDW. *Control* is a vector of variables which have been shown to be important in affecting children's educational achievement. These control variables include socioeconomic and household characteristics of the child such as household income, parents' education, the number of children in the family, gender of the child, number of elderly in the family, and length of mother's residence in Hong Kong. The parameters of interest are β_1 and β_2 , which indicate the impact of employing a Filipino FDW or an Indonesian FDW on the children's probability of achieving express schooling.

⁸ School children whose mothers are working are more likely to have a live-in FDW than school children whose mothers are not working. Our Census datasets show that around 21% of school children have a live-in FDW when their mothers are working compared to just 6% when their mothers are not working.

The error term in Eq. (2) is assumed to be normally distributed with a mean of zero and a unit variance, which calls for the use of the PROBIT estimation technique for Eq. (2).

In the literature, economists have long been interested in the estimation of the educational production function, which concerns the impacts of financial constraint, family characteristics and school quality on schooling achievement. Poorer families facing financial constraint are less willing to invest in the human capital of their children (Becker and Tomes, 1986). Family income, however, may not be the cause but the effects of some family characteristics which make poorer parents less successful in the labour market and worse at parenting (Mayer, 1997). Family characteristics can also affect motivation, access to career information or the discount rate of the child (Card, 1999). Heckman (1995), among others, argues that cognitive ability mainly determines success at school; the long-term effects of family background characteristics on ability and motivation outweigh the short-term effect of financial constraints on schooling achievement. Chevalier and Lanot (2002) find evidence to support the notion that family characteristic effects dominate the financial constraint effects in explaining educational achievement. In relation to the impacts of school quality and resources available to schools, Hanushek et al. (1996) conclude that increasing teacher salary or reducing teacher-pupil ratio have little systematic effect on student achievement. It also has been showed that after controlling for a family's decisions on where to live and maternal employment, the effects of school quality on student attainment reduce substantially (Liu et al., 2010).

The preceding discussion motivates the specification of Eq. (2) in which we include variables representing family income, family background and child characteristics. Family income is included to capture learning resources and opportunities available to the child, keeping in mind as discussed above that it can also be a proxy for the parents' ability and some unobserved family characteristics. The direction of effect of family income on schooling achievement is expected to be positive. Parents' educational attainment, especially maternal educational attainment, is an important determinant of children's educational achievement. Both parents' years of schooling are thus included in Eq. (2) to capture the intergenerational effect of education. The number of children in the household is included to capture attention and resources flowing from parents to the child. It is commonly believed that a child can receive greater attention and resources from the parents the fewer the numbers of children in the household (i.e., quality versus quantity). However, it can also be possible that siblings provide support for each other's school work. Thus, the direction of effect of the number of children in the household on schooling achievement may be ambiguous.

We also add in Eq. (2) the gender of the child, the number of elderly in the household, the age of the parents and the length of mother's residence in Hong Kong. Developmental differences between genders and how these gender differences contribute to differences in educational achievement are also considered in the regressions. The existing evidence appears to indicate that females tend to dominate males in school performance. The estimated effect of being female on schooling achievement is then expected to be positive. The number of elderly living in the household can also play a part in influencing children's educational achievement. Hong Kong's families are predominantly Chinese and in the Chinese culture paternal grandparents often live with one of their children and grandchildren. Grandparents residing with their immediate families can provide valuable childrearing support and have direct influence on children. However, because of the increasing age gap between parents and children, grandparents are often too old to assist in childrearing. Thus, their presence in the household might have little impact on the children.

The age of parents is another factor that can have an important impact on children. As in other industrialised countries, women in Hong Kong are delaying childbearing until later in life. The 2001 Census dataset indicates that women, on average, had their first newborn at 28.2 years old and this average childbearing age increased to 28.8 years old in the 2006 Census dataset. The impact of aging mothers on children's schooling achievement is not clear. On the positive side, more mature mothers are more emotionally and financially stable than younger ones. However, they might have less time to spend with their children. Also, aging mothers can pose an increasing health risk for their children and themselves. For fathers, the increasing age gap between them and their children generates greater financial pressure as they need to work harder before their retirement in order to save for their children. The financial pressure can reduce fathers' time and attention spent on their children. We also add the length of the mother's residence in Hong Kong to Eq. (2). We believe that newly immigrated mothers are at a disadvantage in guiding their children compared to local mothers who have better networking skills and a knowledge of the education system.

Potential reverse causality in Eq. (2) could generate biased results and misleading conclusions. Specifically, we cannot rule out the possibility that children's schooling achievement might affect the family's decision to employ an FDW, although this possibility is unlikely in our samples of middle-income households. Unlike high-income households, middle-income households, facing greater financial constraints, are less likely to employ an FDW mainly for the reason of improving children's schooling achievement. They need someone to care for the children and do the household chores so that both parents can work. Thus, their decision to employ an FDW is exogenous to children's schooling achievement. Moreover, even when some middle-income households employ an FDW for improving or maintaining their children's schooling achievement, they will employ a Filipino rather than an Indonesian FDW given Filipino FDWs are more experienced and educated than their Indonesian counterparts. Thus, the estimated effect of Indonesian FDWs should not be contaminated by potential reverse causality. As will be shown in the next section, Indonesian FDWs still generate an estimated effect on children's schooling achievement which is statistically significant and close to that of the Filipino FDWs. Consequently, we are confident that reverse causality does not impose a serious threat to our estimation results.

3.2 Results – Census Data

The estimation results for the samples of children whose mothers are working are presented in Table 3, and those for children whose mothers are not working are presented in Table 4. In Table 5, we present the estimation results for the pooled 2001 and 2006 Census datasets including both working and non-working mothers.

Column 1, Table 3 shows the estimation results when express schooling is used as the dependent variable for the 2001 Census dataset. It shows that employing a live-in Filipino FDW increases the probability of express schooling for children under their care by 3.7%, which has a P-value of 0.000. Employing an Indonesian FDW also increases the probability of express schooling for children under their care by 3.3%, which has a P-value of 0.007. As expected, household income, being a female child, parents' education, and the length of the mother's residency in Hong Kong all increase the school child's probability of express schooling. On the other hand, the greater the number of children in the household and mother's age decrease the children's chances of express schooling. All the coefficients in Column 1, Table 3 are precisely estimated except for the number of elderly in the household and the father's age, both of which are not statistically significant at the conventional levels. Column 2, Table 3 shows the estimation results of Eq. (2) for

the 2006 Census dataset when express schooling is used as the dependent variable. Again, the estimated effect of employing a Filipino FDW or an Indonesian FDW on children's probability of achieving express schooling is positive and highly significant, being 3.8% and 3.2% respectively, similar to the outcomes of the 2001 Census dataset. Moreover, as in Column 1, the estimated effects of other control variables in Column 2 are consistent with our prior expectation, even though household income, being a female child, the number of elderly, and mother's education are no longer estimated precisely.

Columns 3 and 4 of Table 3 present estimation results of Eq. (2) when late schooling is used as the dependent variable. Column 3 shows the results for the 2001 Census dataset and Column 4 for 2006 Census dataset. Both Columns 3 and 4 show that employing a live-in Filipino FDW reduces the children's chances of late schooling, but the estimated effect is only marginally significant in Column 3 and non-significant in Column 4. For Indonesian FDWs, both estimates in Columns 3 and 4 show little effect on the children's probability of late schooling. Estimated coefficients in both Columns 3 and 4 relating to the child being female, the number of elderly in the household, parents' education, parents' age, and the length of mother's residency in Hong Kong are all consistent with our prior expectation. An exception is that the estimates for the number of children in the household show negative signs in Columns 3 and 4, which is statistically significant, indicating that the greater the number of siblings in the family reduces the chances of late schooling for the children.

Table 4 presents the estimation results of Eq. (2) for the sample of non-working mothers. Mothers who are not in the workforce are able to spend relatively more time with their children and thus the effects of FDWs on children are expected to be weaker. When express schooling is used as the dependent variable in Columns 1 and 2, both the 2001 and 2006 Census datasets show that employing a live-in Filipino or Indonesian FDW is estimated to increase the probability of children's express schooling. However, only the 2006 estimates are statistically significant, while those of the 2001 are not. When late schooling is used as the dependent variable in Columns 3 and 4, both the 2001 and 2006 datasets show little effects of (Filipino or Indonesian) FDWs on children's late schooling. Other estimates in Table 4 are similar to those of Table 3, except for the length of mother's residency in Hong Kong which is estimated to reduce children's express schooling in Table 4. This result seems to suggest that mothers who arrive and continue to live in Hong Kong but are unable to find work have a negative effect on children's express schooling.

Table 5 shows the estimation results when both 2001 and 2006 Census datasets are pooled for estimating Eq. (2). Pooling the two datasets increases the precision of estimates by increasing the number of observations. A 2001 dummy variable is added to the regression to control for the year effect. Column 1, Table 5 shows that for children whose mothers are working, a Filipino FDW increases their probability of express schooling by 6.2% and an Indonesian FDW by 3.7%, both of which have a P-value less than the 1% level. Column 2 shows that for children whose mothers are working, a Filipino FDW reduces their probability of late schooling by 3.3%, which is statistically significant at less than 1% level. In contrast, the estimated effect of Indonesian FDWs' on children's probability of late schooling is non-significant. Estimates in Columns 3 and 4 show that for children whose mothers are not working, employing either a Filipino or Indonesian FDW increases the children's probability of express schooling, but has little effect on the children's probability of late schooling. The 2001 dummy indicates that there is a significant increase in both express and late schooling in 2006 compared to 2001 for working and non-working mothers. Other

estimates in Table 5 are largely similar to those in Tables 3 and 4 and thus are not reported in the interests of space.

In sum, the estimation results based on the Census datasets shown in Tables 3, 4 and 5 indicate that employing a live-in Filipino or Indonesian FDW improves the probability of express school for children under their care by as much as 6%. As expected, this estimated FDW effect is stronger and more statistically significant for the sample of working mothers than for non-working mothers. Also, Indonesian FDWs generally show a weaker estimated effect on the children's probability of express schooling compared to that of the Filipino FDWs. If we use late schooling as the dependent variable, the FDW effect is harder to detect but is still clearly reflected in the case of children who are cared for by a Filipino FDW while their mothers are working. The overall results from the Census datasets thus show evidence of FDWs contributing to children's schooling achievement, which is not explained by household income, family background and children's characteristics.

4. Methods and Results: Survey Data

4.1 Methods- Survey Data

To complement the Census data study, a survey of school children and their families was conducted to investigate in greater depth the relationship between FDWs and children's schooling achievement. Specifically, we were interested in finding out what quality of FDWs is important for influencing children's schooling achievement in the core academic subjects of Chinese, English and Mathematics. Results from the survey data provide a better understanding of the role played by the FDWs in influencing children's schooling achievement.

Schools located in a particular middle-income school district are randomly selected from the Hong Kong Education Department website. These schools include both primary and secondary schools and are all funded by the government (i.e. privately funded schools are excluded). Invitation letters and survey forms are sent to the heads of school who were requested to distribute the forms to the children in their schools at their own discretion. The survey forms were to be completed by parents and returned to the school for collection. In total, around 10% of invited schools participated in the survey and around 7% of survey forms were returned by the children. The survey form, written in both Chinese and English, contained questions on the child's academic performance in the core subjects (Chinese, English and Mathematics) and class ranking, in addition to questions about the child's family characteristics and the characteristics of any live-in FDW.

Table 6 reports the descriptive statistics of the responses to the survey. In Panel A, of a total of 2040 forms distributed, 151 forms were returned, giving a response rate of approximately 7%. The 151 returned forms included 81 primary school children and 70 secondary school children. The children were aged between six and 19 years with 75 males and 76 females. Mathematics has the highest average score among the three core subjects (80.2% for the primary school children and 68% for the secondary school children). Primary school children spend an average of 4.6 hours in after-school tutoring classes every week, whereas secondary school children spend around 2.4 hours per week. Mothers and their primary school children spend an average of 2.8 hours together daily (excluding sleep) and secondary school children 2.6 hours. The surveyed families were predominantly Cantonese-speaking with 82% speaking only Cantonese at home, while 11.3% spoke at least some English. Of the surveyed households, 39% of them employed a live-in FDW of which Filipino and Indonesian FDWs accounted for 48% and 49%, respectively, with the balance being of

other nationalities. In general, FDWs were six to eight years younger than the mothers in the households, but had almost the same number of years schooling as the mothers.

4.2 Results- Survey Data

Although the survey data is small compared to the Census datasets, it provides detailed schooling performance in academic core subjects and family characteristics. For example, the survey data provided information about how much time mothers spent with their children, which potentially affects children's schooling achievement and can be controlled for in the regressions.

Table 7 presents regression results of the survey data using individual academic core subjects and class ranking as the dependent variable. Column 1 shows that after controlling for family and child characteristics, employing an FDW has little impact on the Chinese scores of school children. Also, none of the family and child characteristics had a statistically significant impact on the children's Chinese scores in Column 1 except for the hours of after-school tutoring and the secondary school dummy. The estimate for after-school tutoring suggests that increasing the time spent in after-school tutoring classes reduces children's Chinese scores. However, it is more likely that academically weaker children tend to attend more after-school tutoring classes. The estimate for the secondary school dummy indicates that children's Chinese scores tend to decrease from primary to secondary schools, which possibly reflects differences in marking and the curriculum content.

Column 2 reports the regression results for the English scores. The estimate of 10.620 suggests that employing a Filipino FDW increases the English scores of children by around 10.6%, which has a P-value of 0.024. This result is consistent with our expectation that Filipino FDWs have the greatest effect on children's English achievement through their childrearing role. Indonesian FDWs also appear to have some positive effect on children's English scores, but this positive effect is not precisely estimated with a P-value of 0.372. The positive estimated effect of father's education is close to being significant with a P-value of 0.138. Again, the time spent in after-school tutoring classes is negative and statistically significant.

Columns 3 and 4 show the regression results for children's mathematics scores and class ranking. The estimates for FDWs in these two columns are all statistically insignificant, indicating that employing either a Filipino or Indonesian FDW leads to little improvement in children's mathematics scores or class ranking. Father's education appears to have an important impact on children's mathematics scores since it is positive and statistically significant (every additional year of a father's schooling increases children's mathematics score by 0.975% with a P-value of 0.063). In contrast, Column 4 shows that none of the family and child characteristics used in the regression precisely predict children's academic ranking in their class.

The estimation results in Table 7 do not lend support to the contention that the estimated effects of FDWs on children's schooling achievement are driven by reverse causality. Children's schooling performance is usually consistent across different subjects, especially core subjects. In our survey data, children's performances in the three core academic subjects are closely correlated with a correlation coefficient of around 0.65 between them. If families whose children perform well in school have a high tendency to employ an FDW, then we can expect that all three core subjects should be significantly affected by employing an FDW. However, the estimation results in Table 7 show that English is the only core subject which is significantly affected by employing a Filipino FDW. Hence, the lack of consistency in the effects of FDWs in explaining children's performance

in other core subjects except English undermines the contention that reverse causality is driving the estimation results.

Table 7 shows the estimation results which include all the survey children in the regressions. The results show that children's English scores are strongly affected by whether a Filipino FDW is employed in the household. It should be noted that this result is obtained by comparing those children who have a live-in FDW with those who do not. If we now focus only on the children who have a live-in FDW, we can ask which characteristic or quality of the FDWs has the greatest impact on children's schooling achievement. The qualities under examination are language, experience and educational attainment. Filipino FDWs speak mostly English and Indonesian FDWs mostly learn to speak Cantonese with their employers in Hong Kong. Age of FDWs is an important quality which reflects not only on-the-job experience, but also their experience in raising children in their own country (marital status). Educational attainment of FDWs is clearly an important quality which is believed to have a direct effect on children's average score.

Table 8 reports the estimation results of the survey data when only those survey children living with an FDW are included in the regressions. The dependent variable is the average score of the three core subjects (Chinese, English and Mathematics). In Column 1, the estimate for Filipino FDWs, which is a binary variable, is positive (5.853), but statistically insignificant with a P-value of 0.177. This result shows that employing a Filipino FDW who speaks English at home may not necessarily improve children's average school score. However, the estimate for household elderly (-8.975) shows that having an elderly relative living at home while employing an FDW reduces children's schooling performance (P-value is 0.084). The estimate for the secondary school indicator (-11.714) also shows a significant fall in performance from primary to secondary school (P-value is 0.002). Other estimates in Column 1 are not precisely estimated.

Column 2 uses the age of FDWs, family background and child characteristics to explain children's average score for the three core subjects. The age of FDWs is estimated to have a positive impact on children's average score which is highly statistically significant (P-value is 0.02). The estimate of 0.524 indicates an increase of 0.524% in children's average score for each additional year of the FDWs' age. This result suggests that older FDWs are more experienced in childrearing, which leads to better schooling performance for children under their care. Similar to Column 1, Column 2 reveals that estimates for both household elderly and the secondary school dummy are negative and statistically significant. Column 3 uses the educational attainment of FDWs to check whether better educated FDWs help improve the children's average score. The resulting estimate in Column 3 (-0.737) shows little evidence that better educated FDWs help improve children's average score (P-value is 0.565).

In sum, Table 8 provides evidence for the age of FDWs as the most important quality of FDWs in increasing the average score of children's core subjects. Employing a Filipino FDW who speaks English at home has some positive but imprecisely estimated effect. Better educated FDWs, contrary to our expectation, do not appear to play a positive role in increasing children's average score. It should be noted again that only those survey children who have a live-in FDW are included in the regressions in Table 8. Although the sample size is smaller, the estimates reported in Table 8 have better control for unobserved family background characteristics because they are generated *within* the group of survey households currently employing an FDW. Hence, the results reported in Table 8 provide strong evidence that FDWs, especially older FDWs, help improve children's schooling achievement.

5. Conclusion

In this paper, we set out to study the effects of FDWs on children's educational achievement in Hong Kong. Using samples from the two most currently available Census datasets that include more than 20,000 observations on school children's family background characteristics, we find that children whose mothers are working have a significantly higher chance of achieving express schooling if they have a live-in FDW (an increase of 4–6%). This finding is unlikely to be the result of income effects or reverse causation because we exclude children of high-income households from the samples and only include children of middle-income households in the analysis. Moreover, we control for the effects of household income, family background and child characteristics on educational achievement in the regressions. We also find that FDWs employed in households where the mothers are not working have a weaker but still significant effect on children's express schooling compared to FDWs employed in households where the mothers are working (an increase of 3–5% compared to 4–6%). This result supports the claim that even when FDWs are employed mainly for providing domestic services, they still have an important impact on children's educational achievement.

The second part of this paper conducts a survey of school children to examine whether and how FDWs affect children's performance in core academic subjects. The survey dataset consists of 151 school children aged between 6 and 19 from either public funded primary or secondary schools within a typical school district. We find that children who live with a Filipino FDW tend to have a significantly higher score for English, but not for Chinese and Mathematics. Also, Indonesian FDWs appear to have little effect on children's performances in core academic subjects. Again, this survey result is unlikely an indicator of reverse causation because performances in core academic subjects are highly correlated, but we observe only a significant FDW effect on the English score. To study how FDWs affect children's academic performance, we include only children who have a live-in FDW in the survey data and regress the average score of academic subjects on Filipino FDWs, the age of FDWs and their educational attainment. The results from this analysis show that it is the age of FDWs that is most critical to the success of children's academic performance. If age represents working experience and possibly motherhood, FDWs who are older have a distinct advantage over younger FDWs in childrearing and improving children's academic performance.

The results of this paper have crucial implications for decision-makers on the formulation of FDW policies, which are not only relevant for Hong Kong, but also for other countries where the number of live-in FDWs is substantial. This paper finds that live-in FDWs make significant contributions to children's schooling achievement. In the absence of adequate childcare provisions for working mothers, live-in FDWs fill in the gap of parenting and indirectly enhance the long-term economic growth prospect of Hong Kong by increasing the educational achievement of children under their care. It is thus ironical that Hong Kong government enacts policies that ban experienced live-in FDWs from living in Hong Kong permanently. Also, the imposition of a retraining levy on FDWs reduces the minimum wage for FDWs and discourages experienced FDWs from working in Hong Kong. In light of current research findings in the literature, these policies will eventually inflict a cost to Hong Kong's long-term economic growth. This paper does not go so far as to estimate this cost to Hong Kong's long-term economic growth, which is a topic for future research, but provides only the empirical basis for recognizing the important contributions made by one of the most neglected groups of workers in the economy where they continue to suffer from prejudices, discrimination and even abuses.

Table 1: Household Characteristics of School Children with Working Mothers Based on a Random Sample of Middle-Income Households from the 2001 Population Census

	Filipino FDW	Indonesian FDW	No FDW
FDW age (years)	33.4	25.7	n/a
FDW schooling (years)	12.4	8.5	n/a
FDW/mother schooling	1.09	0.80	n/a
FDW income (HK\$/month)	3,707	3,632	n/a
FDW HK residence (years)	4.3	1.8	n/a
Household income (HK\$/month)	33,902	32,268	24,774
Household size (no. of persons)	5.1	5.2	4.3
Household workers (no. of persons)	3.0	3.1	2.3
Household children < 15 (number)	1.8	1.8	1.1
Household elderly > 60 (number)	0.1	0.1	0.1
Father age (years)	41.5	41.1	45.4
Father income (HK\$/month)	15,697	15,746	13,534
Father schooling (years)	10.9	10.2	8.6
Mother age (years)	38.1	38.0	41.5
Mother income (HK\$/month)	13,555	11,752	8,421
Mother schooling (years)	11.4	10.6	8.5
Mother HK residence (years)	19.0	19.3	17.6
Cross-district schooling (number)	399 (40.3%)	215 (35.1%)	5,053 (42.5%)
Express schooling: GAGE > 100	180 (18.2%)	102 (16.7%)	1,188 (10.0%)
Late schooling (number)	26 (2.6%)	19 (3.1%)	1,558 (13.1%)
No. of observations (sum = 13,485)	989	612	11,884

Notes:

- a. School children from a household with income below HK\$15,000 per month or above HK\$45,000 per month are excluded. Also, children who attend pre-primary school programs are not included.
- b. Cross-district schooling refers to a child attending a school which is not located in the district where the child lives.
- c. Express schooling is defined by a GAGE score greater than 100, which indicates that a school child is schooled at least one grade ahead of his or her age.
- d. Late schooling refers to a school child who is at least two grades behind his or her age. For example, a 10 year old child attends grade 3 instead of grade 5.
- e. For cross-district, express and late schoolings, the percentages in parentheses are calculated using the respective sum in the column.

Table 2: Household Characteristics of School Children with Working Mothers Based on a Random Sample of Middle-Income Households from the 2006 Population Bi-Census

	Filipino FDW	Indonesian FDW	No FDW
FDW age (years)	34.8	27.7	n/a
FDW schooling (years)	11.9	9.3	n/a
FDW/mother schooling	1.07	0.81	n/a
FDW income (HK\$/month)	3,470	3,405	n/a
FDW HK residence (years)	5.8	3.2	n/a
Household income (HK\$/month)	34,293	32,416	25,021
Household size (no. of persons)	5.0	5.0	4.1
Household workers (no. of persons)	3.1	3.1	2.4
Household children < 15 (number)	1.6	1.6	1
Household elderly > 60 (number)	0.1	0.1	0.1
Father age (years)	44.0	42.7	46.4
Father income (HK\$/month)	15,439	15,077	13,134
Father schooling (years)	11.6	11.1	9.4
Mother age (years)	41.0	39.6	42.6
Mother income (HK\$/month)	14,326	13,057	8,944
Mother schooling (years)	11.1	11.5	9.3
Mother HK residence (years)	19.1	19.2	17.2
Cross-district schooling (number)	234 (39.1%)	238 (36.5%)	4,164 (44.7%)
Express schooling: GAGE > 100	98 (16.4%)	106 (16.2%)	929 (10.0%)
Late schooling (number)	25 (4.2%)	28 (4.3%)	1,579 (17.0%)
No. of observations (sum = 10,529)	599	653	9,277

Notes:

- a. School children from a household with income below HK\$15,000 per month or above HK\$45,000 per month are excluded. Also, children who attend pre-primary school programs are not included.
- b. Cross-district schooling refers to a child attending a school which is not located in the district where the child lives.
- c. Express schooling is defined by a GAGE score greater than 100, which indicates that a school child is schooled at least one grade ahead of his or her age.
- d. Late schooling refers to a school child who is at least two grades behind his or her age. For example, a 10 year old child attends grade 3 instead of grade 5.
- e. For cross-district, express and late schoolings, the percentages in parentheses are calculated using the respective sum in the column.

Table 3: Explaining Educational Achievement for School Children with Working Mothers in Middle-Income Households (Census Data)

	Express Schooling		Late Schooling	
	(1) 2001	(2) 2006	(3) 2001	(4) 2006
Filipino FDW	0.037 (0.000)	0.038 (0.002)	-0.026 (0.101)	-0.018 (0.390)
Indonesian FDW	0.033 (0.007)	0.032 (0.008)	0.003 (0.858)	0.006 (0.748)
Household income	0.043 (0.000)	0.013 (0.237)	0.022 (0.020)	-0.008 (0.472)
No. of children in household	-0.045 (0.000)	-0.030 (0.000)	-0.050 (0.000)	-0.089 (0.000)
Female child	0.014 (0.009)	0.006 (0.292)	-0.011 (0.025)	-0.018 (0.007)
Household elderly	0.003 (0.698)	0.002 (0.851)	-0.027 (0.002)	-0.005 (0.638)
Mother education	0.003 (0.008)	0.001 (0.361)	-0.007 (0.000)	-0.008 (0.000)
Mother age	-0.007 (0.000)	-0.006 (0.000)	0.007 (0.000)	0.007 (0.000)
Mother HK residence	0.002 (0.002)	0.004 (0.000)	-0.016 (0.000)	-0.014 (0.000)
Father education	0.003 (0.016)	0.002 (0.040)	-0.002 (0.014)	-0.003 (0.005)
Father age	-0.001 (0.115)	-0.002 (0.005)	0.002 (0.006)	0.002 (0.014)
Observations	12,783	10,384	12,783	10,384
Wald Chi-sq. (Prob.>Chi-sq.)	342.63 (0.000)	228.65 (0.000)	1,594.88 (0.000)	1,153.77 (0.000)

Notes:

- The dependent variable is express schooling or late schooling. Express schooling is measured by a dummy which takes the value of one if GAGE is greater than 100 and zero otherwise. Late schooling is measured by a dummy which takes the value of one if a school child is at least 2 grades behind his or her age and zero otherwise.
- Middle- income households refer to households with a total monthly income between HK\$15,000-45,000.
- 2001 refers to the 2001 Population Census and 2006 refers to the 2006 Population Bi-Census.
- Probit regressions are used and the estimated coefficients shown above are mean marginal effects. P-values are in the parentheses.
- The Wald Chi-sq. model test is defined as $2(L_1 - L_0)$, where L_1 is the log likelihood of the full model and L_0 is the log likelihood of the constant-only model.

Table 4: Explaining Educational Achievement for School Children with Non-Working Mothers in Middle-Income Households (Census Data)

	Express Schooling		Late Schooling	
	(1) 2001	(2) 2006	(3) 2001	(4) 2006
Filipino FDW	0.012 (0.528)	0.053 (0.012)	-0.011 (0.623)	-0.029 (0.437)
Indonesian FDW	0.033 (0.163)	0.056 (0.009)	-0.042 (0.275)	0.024 (0.482)
Household income	0.028 (0.008)	0.022 (0.090)	-0.009 (0.351)	-0.008 (0.560)
No. of children in household	-0.028 (0.000)	-0.021 (0.000)	-0.030 (0.000)	-0.070 (0.000)
Female child	0.020 (0.001)	0.004 (0.574)	-0.007 (0.159)	-0.014 (0.100)
Household elderly	-0.006 (0.576)	-0.023 (0.145)	0.006 (0.529)	-0.039 (0.012)
Mother education	0.004 (0.001)	0.002 (0.168)	-0.006 (0.000)	-0.006 (0.000)
Mother age	-0.004 (0.000)	-0.001 (0.328)	0.005 (0.000)	0.005 (0.000)
Mother HK residence	-0.002 (0.000)	-0.002 (0.005)	-0.011 (0.000)	-0.009 (0.000)
Father education	0.003 (0.004)	0.002 (0.203)	-0.004 (0.000)	-0.006 (0.000)
Father age	-0.001 (0.291)	-0.004 (0.000)	0.002 (0.000)	0.003 (0.000)
Observations	10,995	6,731	10,995	6,731
Wald Chi-sq. (Prob.>Chi-sq.)	159.75 (0.000)	95.35 (0.000)	926.01 (0.000)	554.34 (0.000)

Notes:

- The dependent variable is express schooling or late schooling. Express schooling is measured by a dummy which takes the value of one if GAGE is greater than 100 and zero otherwise. Late schooling is measured by a dummy which takes the value of one if a school child is at least 2 grades behind his or her age and zero otherwise.
- Only middle-income households with a total monthly income between HK\$15,000–45,000 are included in the samples.
- 2001 refers to the 2001 Population Census and 2006 refers to the 2006 Population Bi-Census.
- Probit regressions are used and the estimated coefficients shown above are mean marginal effects. P-values are in the parentheses.
- The Wald Chi-sq. model test is defined as $2(L_1 - L_0)$, where L_1 is the log likelihood of the full model and L_0 is the log likelihood of the constant-only model.

Table 5: Pooling the 2001 and 2006 Census Data

	Working Mothers		Non-Working Mothers	
	(1) Express	(2) Late	(3) Express	(4) Late
Filipino FDW	0.062 (0.000)	-0.033 (0.007)	0.033 (0.072)	-0.026 (0.176)
Indonesian FDW	0.037 (0.002)	-0.009 (0.480)	0.050 (0.013)	-0.004 (0.847)
Household income	0.021 (0.019)	0.007 (0.319)	0.028 (0.003)	-0.015 (0.056)
Female child	0.014 (0.006)	-0.009 (0.032)	0.021 (0.000)	-0.005 (0.267)
No. of children in household	-0.103 (0.000)	-0.057 (0.000)	-0.065 (0.000)	-0.037 (0.000)
Household elderly	0.005 (0.496)	-0.020 (0.004)	-0.012 (0.233)	-0.016 (0.058)
Mother education	-0.001 (0.074)	-0.002 (0.000)	-0.000 (0.667)	-0.001 (0.000)
Mother age	-0.006 (0.000)	0.009 (0.000)	-0.003 (0.001)	0.007 (0.000)
Mother HK residence	0.002 (0.000)	-0.013 (0.000)	-0.003 (0.000)	-0.010 (0.000)
Father education	-0.000 (0.637)	-0.001 (0.001)	0.000 (0.711)	-0.001 (0.000)
Father age	-0.002 (0.000)	0.002 (0.000)	-0.002 (0.000)	0.003 (0.000)
2001 dummy	-0.177 (0.000)	-0.017 (0.000)	-0.139 (0.000)	-0.033 (0.000)
Observations	23,167	23,167	17,726	17,726
Wald Chi-sq. (Prob.>Chi-sq.)	1659.88 (0.000)	2394.96 (0.000)	959.90 (0.000)	1396.75 (0.000)

Notes:

- The dependent variable is express schooling or late schooling. Express schooling is measured by a dummy which takes the value of one if GAGE is greater than 100 and zero otherwise. Late schooling is measured by a dummy which takes the value of one if a school child is at least 2 grades behind his or her age and zero otherwise.
- Only middle-income households with a total monthly income between HK\$15,000–45,000 are included in the samples.
- Samples from the 2001 Population Census and the 2006 Population Bi-Census are pooled.
- Probit regressions are used and the estimated coefficients shown above are mean marginal effects. P-values are in the parentheses.
- The Wald Chi-sq. model test is defined as $2(L_1 - L_0)$, where L_1 is the log likelihood of the full model and L_0 is the log likelihood of the constant-only model.

Table 6: Descriptive Statistics of the School Children Survey

<i>Panel A: Survey Response Rate</i>								
	No. of forms distributed				No. of forms returned		Response rate (%)	
Primary school	1160				81		6.98	
Secondary school	1080				70		6.48	
Total	2240				151		6.74	
<i>Panel B: Descriptive Statistics</i>								
	Primary				Secondary			
	Mean	SD	Min	Max	Mean	SD	Min	Max
Child age	9	1.8	6	12	15.2	1.9	11	19
Child schooling	3.4	1.7	1	6	9.6	1.5	8	11
Child English result (%)	68.8	20.5	15.5	100	64.3	14.8	15	84
Child Chinese result (%)	74.3	15.9	30	97	57.1	11.3	30	85
Child Math result (%)	80.2	12.7	36	98	68.0	17.8	20	96
Child class rank (%)	57.7	28.9	0	96.7	65.0	24.9	0	97.7
Child hours of tutoring	4.6	12.3	0	103	2.4	4.8	0	35
Mother age	38.9	6.0	27	50	43.7	5.6	30	60
Mother schooling	11.3	2.7	6	17	10.2	2.3	6	16
Mother hours of work	30.9	25.3	0	105	23.8	20.4	0	60
Mother hours spent with kid	19.3	10.9	3	63	17.9	14.5	0	82
Father age	43.8	7.2	29	65	47.7	6.0	30	60
Father schooling	11.4	2.9	6	18	10.8	2.8	6	17
Father hours of work	43.5	22.2	4	119	35.6	21.9	0	72
FDW age	33.3	7.0	21	54	34.5	8.7	21	54
FDW schooling	10.2	2.2	6	16	10.5	2.0	6	13
FDW number (F/I/O)	20 / 25 / 0				8 / 4 / 2			
Child gender (male/female)	44 / 37				31 / 39			
Only language spoken at home (C/P/E/O)	66 / 1 / 2 / 1				58 / 0 / 2 / 0			
Bilingual at home (C&P/C&E/C&O/P&E/E&O)	4 / 5 / 1 / 0 / 0				1 / 4 / 1 / 0 / 1			
Trilingual at home (C&P&E/C&P&O)	0 / 1				3 / 0			

Notes:

- A higher class ranking is converted to a higher percentage by using $(1 - \text{rank}/\text{total}) \times 100$.
- Hours refer to average weekly hours spent on the activities. Schooling refers to years of schooling.
- FDW refers to foreign domestic workers. F, I and O refer to Filipino, Indonesian and Others respectively.
- Languages spoken at home include Cantonese (C), Putonghua (P), English (E), and Others (O).

Table 7: Explaining School Children’s Academic Performance in Survey Data

	(1) Chinese	(2) English	(3) Maths	(4) Class Ranking
Filipino FDW	5.074 (0.260)	10.620 (0.024)	0.092 (0.981)	-0.093 (0.330)
Indonesian FDW	-0.315 (0.949)	4.366 (0.372)	-3.444 (0.427)	-0.039 (0.638)
No. of children in household	-2.456 (0.418)	-2.105 (0.516)	3.933 (0.192)	0.090 (0.142)
Female child	0.753 (0.797)	1.960 (0.532)	-2.667 (0.349)	0.003 (0.955)
Household elderly	-0.402 (0.847)	-2.023 (0.496)	-1.947 (0.295)	-0.025 (0.547)
Father education	0.804 (0.234)	0.931 (0.138)	0.975 (0.063)	-0.005 (0.719)
Mother education	-0.533 (0.509)	0.580 (0.422)	0.169 (0.805)	0.007 (0.671)
Mother age	-0.296 (0.315)	0.064 (0.852)	-0.388 (0.171)	0.003 (0.622)
Mother working hours	0.024 (0.724)	0.006 (0.936)	-0.090 (0.231)	-0.001 (0.469)
Mother time with children	0.026 (0.871)	0.077 (0.614)	-0.261 (0.156)	-0.002 (0.494)
Hours of tutoring	-1.222 (0.015)	-1.134 (0.077)	-0.115 (0.789)	-0.023 (0.021)
Secondary school dummy	-14.864 (0.000)	-1.048 (0.782)	-7.622 (0.044)	0.050 (0.485)
Bilingual- C&E	-6.341 (0.160)	-3.477 (0.551)	-7.888 (0.163)	0.009 (0.930)
Observations	83	88	89	75
R-squared	0.4154	0.2687	0.2551	0.2465

Notes:

- The dependent variables are school results (in percentages) for the subjects of Chinese, English and Mathematics respectively in Column 1, 2 and 3. The dependent variable in Column 4 is the children’s class ranking, which is converted to a percentage by using $(1 - \text{rank}/\text{total}) * 100$.
- Mother’s working hours and mother’s time spent with the children (excluding resting) are measured in total numbers of hours per week. Hours of tutoring refers to hours spent after school in activities relating to academic mentoring. Bilingual C&E refers to Cantonese and English being both the main languages spoken at home.
- OLS estimations are used above and the P-values are in parentheses.

Table 8: FDWs' Attributes and School Children's Academic Performance in Survey Data

	(1) ACEM	(2) ACEM	(3) ACEM
Filipino FDW	5.853 (0.177)		
FDW age		0.524 (0.020)	
FDW education			-0.737 (0.565)
No. of children in household	1.578 (0.754)	-0.498 (0.921)	3.091 (0.549)
Female child	4.103 (0.304)	5.486 (0.157)	3.482 (0.444)
Household elderly	-8.975 (0.084)	-8.391 (0.074)	-9.348 (0.071)
Father education	0.486 (0.556)	0.326 (0.698)	0.665 (0.477)
Mother education	0.162 (0.897)	0.161 (0.894)	-0.171 (0.893)
Mother age	-0.535 (0.320)	-0.488 (0.297)	-0.609 (0.186)
Mother working hours	-0.027 (0.770)	-0.063 (0.450)	-0.033 (0.721)
Mother time with children	0.032 (0.936)	-0.110 (0.781)	0.052 (0.905)
Hours of tutoring	-0.642 (0.469)	-0.731 (0.408)	-0.833 (0.423)
Secondary school dummy	-11.714 (0.002)	-12.405 (0.003)	-11.054 (0.006)
Bilingual- C&E	-2.642 (0.576)	-1.759 (0.682)	0.536 (0.908)
Observations	36	36	36
R-squared	0.4919	0.5170	0.4578

Notes:

- The dependent variable is the average school results (in percentages) of Chinese, English and Mathematics (ACEM).
- Mother's working hours and mother's time spent with the children (excluding resting) are measured in total numbers of hours per week. Hours of tutoring refers to hours spent after school in activities relating to academic mentoring. Bilingual C&E refers to Cantonese and English being both the main languages spoken at home.
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