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Doan, Quang Hung and Nguyen, Ngoc Anh

Foreign Trade University, Hanoi, Vietnam and Development and Policies Research Center (DEPOCEN), Chief economist, Development and Policies Research Center (DEPOCEN)

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Hung Quang Doan[1] and Anh Ngoc Nguyen[2]

ABSTRACT

This paper uses five waves of Vietnam Living Standard Survey (VHLSS) in 1992/1993, 1997/1998, 2002, 2010, and 2012 from General Statistics Office of Vietnam (GSO) to estimate income elasticity for Vietnam and contributes it to the growing of literature review on intergenerational mobility. The result of analysis, employing the two-sample two-stage least squares technique, shows that intergenerational income mobility is about 0.48 – 0.49 in Vietnam and it is one of the most mobility in developing countries. In terms of distribution income, the findings from transition matrix and two-sample instrumental variable quantile regression highlight that the bottom quintile has the lowest mobility, implying that opportunities for children in poor families escape the poverty being still fragile. Income mobility at top quintile, in addition, has increase over time. Finally, educational mobility at bottom and second groups has significant upper mobility and the top is "like father, like son".

Keyword: intergenerational income mobility, Vietnam, Two-sample two-stage least squares (TS2TLS), transition matrix, quantile regression.

JEL: J6; J28

[1] Foreign Trade University, Hanoi, Vietnam and Development and Policies Research Center (DEPOCEN); email: hungdq@ftu.edu.vn

[2] Chief economist, Development and Policies Research Center (DEPOCEN); email: ngocanh@depocen.org

1. Introduction

Intergenerational mobility is the research interest of many economists and sociologists in the world, both the mobility inside their countries and the comparison among them. The main idea is that higher mobility makes the society more equal, which many people consider as a social development goal in long term. In particular, the poor have equal opportunities to be as successful the rich and so family background does not have an influence on the achievement of hard- working people. As a matter of fact, the children in wealthy families could plausibly earn more income than those in poor families because the parents have more investment in human capital and get more education (Solon, 2004). Consequently, Solon (2004) suggested to providing an equitable financial opportunities for personal education or public education provision for people, especially the poor. Economists have concentrated on estimating elasticities and correlations over generations, as well as investigated causes and determinants of intergenerational mobility (henceforth, IM) on income, education, occupation or health. The intergenerational elasticity (henceforth, IGE) is expected to be zero, which means the society achieves the highest level of equality or, in other words, all children are given the same opportunities. Therefore, smaller elasticity coefficient states higher mobility level. Moreover, a lot of studies (Blanden et al., 2005, Causa et al., 2009, Jantti et al., 2006) have shown that Nordic countries have the highest level of mobility.

In Vietnam, economic growth is impressive in recent years averaged more than 7.1 percent during 1990 – 2008, and about 5.8 percent after global economic crisis[3]. As a result, GDP per capita increased more than twenty-fold, from nearly $100 in 1990 to up $2,000 in 2014, and the

[3] http://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG/countries

poverty rate declines consistently and sharply from 58 percent in 1993 to 14 percent in 2010 (GSO, 2011). Most of the Millennium Development Goals (MDGs) – especially in health and education – are achieved or within reach. Despite this, whether Vietnam has inclusive growth or Vietnam still remains relatively underdeveloped with certain regions and groups of population left behind its progress. For example, a recent report of World Bank implemented by Kozel (2014) about Vietnam's poverty assessment based on VHLSS 2010, it displayed that 46 percent, and 58 percent of poor households and severely poor households, respectively, head of them was not completed primary school. The children born in these families will thus begin to drop off from school gradually as lower secondary and upper secondary than the children do not fall into this category. Furthermore, the inequality enrolment has increased when 40 percent of people aged 21 years and older completed university in the top quintile and only 2% for the bottom quintile of the household income distribution. And if this inequality is not improved, their children in poor households will repeat exactly what their parents did. Thus, the result will be the intergenerational transmission of poverty and well-being in Vietnam. This is also true with the statement of Solon (2004) suggested that countries have higher inequality, they will be the lower mobility.

Broadly, this paper has determined on intergenerational mobility in Vietnam in terms of income and education. It allows us to explore change over two decades, 1992 – 2012. Furthermore, on average, it estimates income elasticity over generations and compares with other developing countries. Secondly, in terms of distribution of income, the paper also investigates the mobility of different quintiles. In addition, education is important transmission channel of income, thus, the paper also estimates a long-term educational mobility in Vietnam from 1992 to 2012. To the best of my knowledge, the paper is the first attempt to study income mobility in Vietnam and to answer the questions such as is mobility of society in Vietnam different from or the same developing countries?; Whether have the children in poor families had opportunities to escape

poverty?; and whether have the children had more opportunities in education than their parents? Moreover, whether have inequality in income reduced in Vietnam for two decades or "like father, like son?

2. Literature review

Economists started to pay more attention to intergenerational mobility thanks to the recommendation of Becker and Tomes (1979), especially when Solon (1992) and Zimmerman (1992) estimated intergenerational elasticity of father-son pairs to be around 0.4 in U.S, significantly larger than that of previous studies, 0.2. Furthermore, Solon (1999) emphasized on how to estimate the children's income, educational level, and occupation elasticity of parents' and other factors affecting IGE. Most of previous papers estimated the elasticity for father- son pairs, while some of others provided the estimates for mother- daughter pairs, mother- son pairs or sometimes parents- children pairs.

In the United States, researchers recently have concluded that the mobility is found to be smaller than the earlier findings (Mazumder, 2005, Grawe, 2004, Lee and Solon, 2009). The most common datasets have been used to be Panel Study on Income Dynamics (PSID) and the National Longitudinal Surveys (NLS). The fact is that the number of father- son observations is not large enough to select a proper sample. For instance, Solon (1992) used PSID with 290 father- son pairs in five-year averages of fathers' income to provide the estimated IGE of 0.4 and suggest that this number could be higher. On the other hand, Zimmerman (1992) employed NLS with only 192 father- son pairs in four-year average and IGE was also 0.4. Due to this limitation of data, Mazumder (2005) used the methodology of Baker and Solon (2003) and the dataset from Survey of Income and Program Participation (SIPP) in 1984 merged with the Social Security Administration's Summary Earnings Records (SER) which recorded the income of parents and children during the long period of 16 years. Mazumder (2005) claimed that the long-term estimated IGE is around 0.6. The fact worth mentioning here is that most

previous studies relying on short-term period made the IGE become smaller and downward consistence (Böhlmark and Lindquist, 2006, Grawe, 2006, Haider and Solon, 2006). The increase or decrease of IGE coefficients significantly depends on ages of fathers and sons, together with the life cycle of earnings of sons and fathers. Previously, Solon (1992) and Zimmerman (1992) used the average earnings of fathers in four or five years to eliminate the effect of fathers' earnings shock. The following work by Mazumder (2005) and Nilsen et al. (2012) also used the average income in longer period to estimate better IGE. We will discuss more detail in methodology section of the paper.

2.1 Inequality in intergenerational mobility

It is notable that different income quintiles have different effect on intergenerational mobility. For instance, in Norway, Bratberg et al. (2005) showed robust evidences that there was a great fluctuation for average income group, while it was quite stable for high and low income group. This finding conforms with results of Jantti et al. (2006), who compared Nordic countries with the UK and US by using transition matrices. Their finding was that around 40 percent of sons were born in the bottom quintile group if their fathers were also in this group; it is called "poorest-to-poorest" mobility. This proportion is higher than the percentages of Nordic countries, with 26 percent, 28 percent, 28 percent, and 25 percent of Sweden, Norway, Finland and Denmark, respectively, and the UK with 30 percent. Corak (2006) also had the similar findings. Corak added France to the group of the UK, and Canada to the group of Nordic countries. Another interesting problem is the probability that a sons in top quintile group, who live in the family, which have the father in bottom quintile is high – "poorest-to-richest" mobility is the smallest in U.S comparing with remaining countries (Björklund et al., 2012, Jantti et al., 2006). On the other hand, "richest-to-poorest" mobility in the UK and US are both equal to 10 percent, which are greater than 5 percent of Nordic countries (Jantti et al., 2006).

From the above findings, we can conclude that in a higher mobility society, children born in bottom quintile of father have higher opportunities to move to higher income group. The paper also applies the above method to determine the mobility in different groups of income.

2.2 Trends in intergenerational mobility

Thanks to the availability and quality of data in some countries, we can evaluate intergenerational mobility changes over time. In the US, Lee and Solon (2009), as other authors, used the secondary data in PSID dataset and concluded that income elasticity of generations in US over the past 20 years does not decrease significantly for those people born in 1995-1975. On the contrary, Solon (2004) claimed that intergeneration mobility would reduce from generation to generation if there was income inequality. In France, Lefranc (2011) extracted a sample of male born from 1931 to 1975 from the FQP[4] surveys conducted by INSEE in 1964, 1970, 1977, 1985 and 1993. Lefranc concluded that the IGE slightly declined in different cohorts and had the V shape. Regarding the shape, the highest IGE point was 0.6 belonging to male born in 1930s while it reduced to 0.45 for those born in the period from 1940 to 1950, increasing to 0.55 for people born in 1970. The average point was 0.55, which is considerably larger than previous finding of Lefranc and Trannoy (2005). Moreover, after the World War II, intergenerational income mobility of France benefited from the educational and social equality policy. In Norway, Bratberg et al. (2005) employed the dataset of children who were born in this country in 1950, 1955, 1960 and 1965 together with their parents' income over the period from 1967 to 1995. The authors found out that the income mobility was relatively high degree and there was not a downward trend over the cohorts. The mobility is high in the middle of income group, but it is quite stable for high and low income one. Furthermore, the income mobility for boys increased over time while proved an unclear trend for girls. In the UK,

[4] Formation, Qualification, Profession survey including information about Education, Training and Occupation

Nicoletti and Ermisch (2008) extracted a sample of boys born in 1950-1972 from British Household Panel Survey during the period 1991–2003. They had found that the change of income between generations was stable for people born from 1950 to 1960 before increasing significantly for those born from 1961 to 1972, which conformed with findings of Blanden et al. (2004) and Feinstein (2003). Meanwhile, in Australia, Leigh (2007) comprised four different surveys over 40 years including Social stratification in 1965, Social mobility in 1973, National Social Science Survey in 1987-1988, and Household, Income and Labor Dynamics Survey (HILDA) in 2001-2004 and had a sample of people from 25 to 54 years old. Leigh (2007) stated that there was no clear evidence on the increase or decrease of intergenerational income mobility.

The findings from many countries regarding intergenerational income mobility over time confirmed that IM varied across countries. Several countries witnessed an upward trend, while others had the opposite trend or were unchanged over time and generations. Moreover, the societies have higher investment in education may leads to higher mobility (Blanden, 2009).

2.3 Family background in intergenerational mobility

Recently, another approach to investigating intergenerational mobility is to estimate the role of family background to future income of children. The results vary across countries. In particular, family background plays an important role in the US and Italy (Piraino, 2007), but it is not a significant factor in Northern Europe (Black and Devereux, 2011, Björklund and Jäntti, 2009). Björklund and Jäntti (2009) claimed that family background has different effects in different point of time. Among other factors belonging to family background such as siblings and neighborhood, family was proven to be more important than neighborhood and insignificant effect, which is far from the belief of most people. This conclusion conforms with the previous evidences of Page and Solon (2003a, 2003b), which estimated the effect of neighborhood on long-run income to be half of that of the siblings by using PSID dataset. More recent, Raaum

et al. (2006) estimated the correlation between the years of education and long-run income, which equals to a third of that of siblings, by Norwegian census data. The above findings confirm that the effect of family background is not constant and is under the influence of cultural and political differences (Björklund and Jäntti, 2009).

In several developed countries, data on adopted children or adaptive fathers, together with IQ index of father and children are mentioned in recent papers. In the US, with the 1957 and 1992 Wisconsin Longitudinal Survey (WLS) dataset, Plug (2004) estimated the effect of mother's education to her adopted children, which is in line with Behrman and Rosenzweig (2002)'s findings by using twins data. Plug and Vijverberg (2003) also used WLS dataset as Plug (2004) to confirm that children in families with higher educational level tend to have higher education. On the other hand, Plug and Vijverberg (2003) used parents' IQ to evaluate the effect to offspring children and adopted children, but there was no clear clue of a different among them. Moreover, 55-60 percent of children educational level depends on parents' IQ when other things like family income are constant.

A large number of estimation between intergenerational mobility and IQ used the data of Scandinavia countries. For example, Björklund et al. (2006) and Björklund et al. (2007) used the data on adopted children and parents (born 1962-1966) in Sweden and concluded that birth parents are considered as endogenous factors, while adoptive parents plays as environmental factors affecting educational and income level of children as well as intergenerational mobility. Björklund et al. (2010) also employed the dataset of Sweden to find out that, in terms of IQ, the correlation coefficient of father-son pairs is 0.35 and brothers pairs is about 0.47, suggesting that a half of IQ depends on the family background. Moreover, Black et al. (2008) used census data from Statistics Norway in 1960, 1970 and 1980 and estimated correlation of IQ over generations. They found that intergenerational IQ mobility is crucial between fathers and sons.

In Vietnam, there were two studies on IM. Firstly, Hertz et al. (2008) employed a dataset of father and son in 42 countries including Vietnam, to estimate correlation coefficient and elasticity of education. For Vietnam particularly, data from Vietnam Living Standard Survey (VLSS) 1997/1998 provided the elasticity of education is 0.58 for a pair of parent and child, in which age is from 20 to 69. In addition, Emran and Shilpi (2011) compared occupational mobility of Nepal and Vietnam, used the VLSS 1992/1993. High correlation coefficients of occupation between fathers and sons, mothers and daughters are found in both Vietnam and Nepal. In case of Vietnam, there is robust evidence between fathers and daughters, mothers and sons. Furthermore, the probability of daughter getting non-farm occupation when her mother takes part in non- farm sectors is higher than that in the pair of father and son.

Both of these papers might not be aware of a problem in Vietnam is the majority of the married daughters who will stay at their husbands' house and are daughters-in-law. And we will not be able to distinguish between the daughters and daughters-in-law in the data (except VHLSS 1992/1993 with this distinction, but the rest of the surveys are not alarm). VHLSS 1992/1993 had reported it but Emran and Shilpi (2011) used marital status variable in their regression equation, Emran and Shilpi did not control this difference. And the unmarried females are offspring of the parents who were very young in this time. In short, among two groups are heteroscedasticity and influence to IGE coefficient.

To sum up, a growing body of literature has evaluated many dimensions affecting intergenerational mobility. First, in developed countries, for instance, the studies use father-son, mother-daughter, and parents-children pairs to estimate the IM in them because their data has traced over generations in long time. In Vietnam and other developing countries, however, they common use father-son pairs taking from household survey data, in which father and son live together. Next, they have been likely to propose to need estimating the IM on different quintiles for comparison and we also apply various methods to investigate IM in Vietnam. Final,

once again, to determine the trends and family background (siblings, neighborhood, IQ) in IM in Vietnam and developing countries, this work is difficult due to lack of data.

3. Data and methodology

3.1 Data sources

The paper uses the Vietnam Household Living Standard Survey (VHLSS) data in five waves, including 1992/1993, 1997/1998, 2002, 2010, and 2012 conducted by General Statistics Office of Vietnam (GSO) under technical assistance of World Bank in Vietnam. The first survey implemented in 1992/1993 and the biannual one begins at 2002. We only take the first three waves and the last two waves because the waves in 2004, 2006, and 2008 are sons beginning at income life cycle, at which leads to bias when we estimate intergenerational mobility.

The households are surveyed was variation over years, the first implemented in 1992/1993 had about 4,800 households, and 6,000; 30,000; 9,399; 9,399 in 1997/1998, 2002, 2010, and 2012, respectively. It includes rich information about income, education level, and demographics of individuals. Importantly, the random sample is selected from Vietnam household population. Therefore, it is confident enough for estimating intergenerational mobility in Vietnam.

In the first sample, the following Dunn (2007) and Mocetti (2007) we conduct a pooling sample from three waves of VHLSS (1992/1993, 1997/1998, and 2002). Next, we select individuals who reported positive earnings aging between 30 and 50, or born from 1942 to 1962 are representative-fathers in the second sample. According to Mazumder (2005), a transitory shock affecting fathers' earnings is U-shaped curve over the life cycle and disappears by 40, mean of fathers' age in representative-fathers is by 44 (Table 1A). Again, we select individuals who are sons and have positive earnings. We have two sons' samples, one takes from 2012 wave and other pooled two waves, 2010 and 2012. In those samples, we select sons aging between 30 and 40, born from 1972 to 1982; 1970 – 1980 in 2012 and 2010, respectively. In the different

rule, sons' ages are a range of 30 to 50, born from 1962 to 1982 in 2012; 1960 to 1970 in 2010. Haider and Solon (2006) noted that if we use current sons' earnings to proxy for son's lifetime earnings will be been downward estimation. Thus, measurement error will minimized when current sons' earnings is the range of early thirties and mid-forties.

The representative-fathers' sample and sons' sample are independent random samples, the distribution of fathers' education in the first sample is similar to the distribution of ones in the second sample reported by sons. Table 2A compares the distribution of representative-fathers with fathers reported by sons in Table 3A and Table 4A and it shows that mean and standard deviation are likely to match in both. However, frequency distribution of fathers reported by sons is higher at university level than its representative-fathers' sample. It can have been explained by the widen education polices from 2002, especially in university education.

Finally, the direct OLS and IV samples are selected from waves of VHLSS 2012 and pool VHLSS 2010 and 2012, in which sons' age ranges of 24 – 40 and 24 – 50 in each data. Table 5A presents descriptive statistics about these samples. In general, the number of father-son pairs is various over samples, however, means of sons' age, income and means of fathers' age, income are insignificant difference. For example, mean of sons' age is 28 and mean of fathers' age is 55. Income of fathers is lower 400 thousand VND[5] per month being equivalent to $20 than income of sons.

3.2 Methodology

This subsection presents three different techniques to measure IM in Vietnam. Each of them has its own shortcomings and aims. Two-sample two-stage least squares method estimates coefficient of intergenerational income mobility on average, while two-sample instrumental variable quantile regression estimates distribution of income in different groups. Intuitively, it

[5] Incomes of fathers and sons in various years are constant price in 2010.

reports elasticity of income in disparate tiers. We consider the first is special case of the second. Last, transition matrix, non-parametrics, allows us to determine probabilities of sons' income (education) conditional on fathers' income (education) for disparate tiers and how the probabilities change over time.

The life cycle variations and lifetime income between sons and fathers are more likely to affect the IGE. We need to observe longitudinal data two or more generations in many years. It only has several countries, commonly developed countries. As a result, an estimate using these data is likely to be true IGE. On the other hand, data in other countries is cross-sectional or rotating panel. A proposal in order to reduce these biases uses two-sample instrumental variables (TSIV) approach, which introduced by Angrist and Krueger (1992) and Arellano and Meghir (1992). Both studies claim that we may combine two data sets for the aim of estimation if they have the same instruments, but outcome variable and endogenous regressors are only taken one of them. Intuitively, to determine normal cause of x and y, we regress directly y on x, however, x may be endogenous. Alternatively, we could find a third variable, z that correlates with x directly, but does not correlate with y. In instrumental estimation method, z variable must be the both data; it means that the estimation of covariance (y,z) and covariance (x,z) can implement in two different data as well as z is in both (Grawe, 2004). Using this method, Björklund and Jäntti (1997) applied the first to estimate intergenerational mobility, they compared Sweden to the US. Next, Grawe (2001) also used it to estimate mobility taking cross-sectional data from World Bank Living Standards Measurement Study data of four developing countries including Ecuador, Nepal, Pakistan, and Peru. Grawe (2001) separated the data into two samples, one is sons' sample ranging age of 24-35 and one is fathers' sample, 45 – 60 age. The education of fathers (z variable) in both samples was instrumental variable. He agreed himself that TSIV used to estimate for these countries can be downward bias of IGE. To solve partially problem,

a variation of TSIV has been proposed by Inoue and Solon (2010)[6] is two-sample two-stage least squares (TS2SLS). Inoue and Solon (2010) pointed out that the TS2SLS estimator is better than TSIV estimator in asymptotic efficiency in finite samples is. Many empirical researchers have applied it to estimate IM of countries using rotating panels as Dunn (2007) in Brazil, Gong et al. (2012) in China, Mocetti (2007) in Italy and Kan et al. (2015) in Taiwan. This paper also applies the TS2SLS framework to compute the IM in Vietnam. Especially, the first sample regresses the log of income of representative-fathers on their demographic variables

$$y_{oi} = \gamma_0 + \sum_{j=1}^{k} \gamma_{1j} z_{0ji} + \gamma_2 age_{oi} + \gamma_3 age_{0i}^2 + \varepsilon_{0i} \quad (7)$$

In above equation (7), y_0 is the log of income of fathers and z_0 includes the invariant-time individual characteristics as education and occupation variables. In this model, we use the vector of four dummy variables for the five education levels but not use occupation because the Vietnam economy is rapid change resulting in significant fluctuations of income representative-fathers among true fathers in term of occupation. For example, Mocetti (2007) included both for Italy and while Dunn (2007) only use education level. Finally, age and age squared variables handling time-variation affecting non-linear income of fathers. At this stage, we use an OLS regression to obtain $\widehat{\gamma_1}$ vector and report the bootstrap standard errors with 1,000 replications.

In the second stage of TS2SLS process, we use the fathers' education reported their sons in the second sample and use the estimated $\widehat{\gamma_1}$ vector from equation (7) to predict fathers' log of income[7], y_o^p. After that, we regress log of sons' income on predicted log of fathers' income and sons' ages. Again, we also use bootstrap standard errors in this stage.

[6] Inoue and Solon released the working paper version in 2005 on NBER (http://www.nber.org/papers/t0311).

[7] We know that the education of fathers in the first sample has the same distribution in the second sample, which is likely to report their sons. The Table 2A and Table3A in Appendix show that education is roundly perfect match in terms of mean and standard deviation.

$$y_{1i} = \beta_0 + \rho y_{0i}^{p} + \beta_1 age_{1i} + \beta_2 age_{1i}^2 + \varepsilon_{1i} \quad (8)$$

We control for sons' ages because the relationship between life cycle of income and age is an inverted U-shape. We use OLS estimate to obtain the coefficients in equation (8) in which ρ is interesting. It is intergenerational income or earnings elasticity.

Comparably, we also regress the direct log of sons' income on log of fathers' income (true fathers) and control for sons' ages and fathers' ages. When we perform OLS estimate with those samples to obtain the elasticity between current sons' income and current fathers' income is downward estimation (Solon, 1992, Zimmerman, 1992). An alternative technique uses fathers' education to instrument for fathers' income. Solon (1992) pointed out that human capital of father can has correlation with his sons' income, IV estimate will be downward-inconsistent or upward depending on positive or negative correlation. Intuitively, if the fathers have highly educated, their sons are likely to have high income, thus the IV estimate will overestimate. Conversely, their sons are likely to have low income if the fathers have highly educated, it will underestimate. Solon (1999) and Corak (2006) discussed deeply two methods to estimate intergenerational mobility.

Finally, the above methods estimate the intergenerational income mobility, on average. However, we need to understand how to mobilize in different quintiles. Whether it has "like father, like son" in distribution of income. To explore that, we use two techniques to discover them using non-parametrics, transition matrix (Ueda, 2009, Hnatkovska et al., 2013, Yuan, 2015, Piraino, 2007, Leigh, 2007, Jantti et al., 2006, Black and Devereux, 2011, Bhattacharya and Mazumder, 2011) and quantile regression (Yuan, 2015, Kan et al., 2015, Ueda, 2009, Grawe, 2001, Bratsberg et al., 2007). As Black and Devereux (2011) has proposed in a literature survey about growing of intergenerational mobility studies in recent years. The transition matrix computes the probabilities of sons' income conditional on fathers' income for different

quintiles. While Grawe (2001) has been the first author used quantile regressions to estimate IM and highlighted that specifically in heteroskedastic income data, this method may view widen picture more than mean regressions. The shortcomings in each method have debated long; however, the comparisons are vital to conclude. Therefore, we apply it in second stage called two-sample instrumental variable quantile regression to compare the result estimation in Vietnam with other countries.

4. The results of regression

4.1 Intergenerational income mobility in Vietnam

Table 1A in appendix displays the results of OLS estimate of individuals who is male and ages of 30-50 and were born in 1942 - 1962. The coefficients of education level increase substantial to base group (no degree). For example, the income of individuals have university degree are 140 percent higher than ones have no degree. We use these coefficients and integrate with education level of fathers reported by their sons in second sample, sons' samples, to predicted fathers' income. The IGEs in Table 1 presents the results of regression of log of sons' income on predicted fathers' income and control for age and age squared of sons. Column (1) and (2) report the estimations to sons' sample in 2012 wave and others are sons' sample pooled 2010 and 2012 waves. In all models, we control for age of father born in 1942 and above in sons' sample, our objective control is similar to distribution of representative-fathers' ages in first sample[8]. Thus, number of son-father pairs in 30-40 of column (1) and (3); and 30-50 of column (2) and (4) are insignificant difference. Interestingly, the intergenerational elasticity in Vietnam is consistent in the different rules and range of 0.48 – 0.49.

[8] I also remove this condition from model, number of observations in 30-40 sample is 320, and 365 for 30-50. As the result, the mobility reduces about 3% comparing with controlling the father's birth-year.

Table 1: Intergenerational elasticity in Vietnam (TS2SLS)

	(1)	(2)	(3)	(4)
	2012		2010 - 2012	
Predicted log of fathers' income	0.475***	0.478***	0.475***	0.487***
	(0.067)	(0.066)	(0.055)	(0.052)
Age of sons (mean)	30-40 (32)	30-50 (33)	30-40 (32)	30-50 (33)
N	243	248	417	424
R^2	0.164	0.165	0.148	0.151

*Bootstrap standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$*
Source: Author's calculation from data

Comparison with international findings, Mocetti (2007) figured out that the comparison of intergenerational mobility across countries needs to pay attention because the results are sensitive to the varied patterns as estimate methods; sample selection; available data and change in cohorts. Therefore, we select the international studies only using two-sample instrumental variable method for the comparisons with Vietnam and the countries over the world. Table 2 shows that the IM estimates using this method across countries. The U.S and Italy are the lowest mobility in developed countries, while Brazil and China the lowest mobility in the world. Interestingly, the findings in Vietnam, 0.48 - 0.49, are more likely mobility in developing countries and it is similar to Italy.

Table 2: Comparable intergenerational mobility across countries using Two-sample instrumental variable method

Country	**Study**	**Estimated IGE**	**Range of son's age**	**Range of father's age**
Developed countries				
Australia	Leigh (2007)	0.2 – 0.3	30 – 49	30 – 49
Canada	Fortin and Lefebvre (1998)	0.21	30-39	-
France	Lefranc and Trannoy (2005)	0.41	30-40	55-70
Italy	Piraino (2007)	0.55	30-45	30-50
Italy	Mocetti (2007)	0.51	30-50	30-50
Sweden	Björklund and Jäntti (1997)	0.28	30-39	43
UK	Nicoletti and Ermisch (2008)	0.29	37	53
US	Björklund and Jäntti (1997)	0.42	28-36	45
Developing countries				

Brazil	Dunn (2007)	0.69	25-34	30-50
Brazil	Ferreira and Veloso (2006)	0.58	25-64	25-64
China	Gong et al. (2012)	0.62	30 – 42	–
Ecuador	Grawe (2001) and Grawe (2004)	1.13	24-40	45-60
Malaysia	Grawe (2001) and Grawe (2004)	0.54	24-40	45-60
Nepal	Grawe (2001) and Grawe (2004)	0.32	24-40	45-60
Pakistan	Grawe (2001) and Grawe (2004)	0.24	24-40	45-60
Peru	Grawe (2001) and Grawe (2004)	0.67	24-40	45-60

Source: Reproduced in Table 2 of Mocetti (2007) and added several countries by author

4.2 The results from Direct OLS and IV

In this subsection, we report the results of OLS and IV estimates based on regressing current sons' income on current fathers' income, this is true father. The literature survey has highlighted that if the short-run incomes have proxied for long-run incomes; the IGE has underestimated using OLS. On the other hand, the IV can be upward inconsistent and downward inconsistent depending on education level of fathers (instrumented for fathers' income). Table 3 presents the IGE in Vietnam using OLS and IV estimates based on different rules. The coefficients in column labeled OLS are always lower by 14 percent compared with TS2SLS. While they fluctuates between IV and TS2SLS methods, specifically, IV in sample 2010 is lower seven percent, 0.40 – 0.42; and in pooling sample 2010-2012 is higher three percent, 0.51 – 0.53 than TS2SLS methods. Thus, Solon (1999) pointed out that the IGE has changed over cohorts of sons and fathers selecting to estimate it.

Table 3: The results from direct OLS and IV estimates

	(OLS)	(OLS)	(IV)	(IV)	(OLS)	(OLS	(IV)	(IV)
	2012				2010 - 2012			
Log of fathers' income	0.333***	0.324***	0.401***	0.423***	0.347***	0.340***	0.512***	0.531***
	(0.055)	(0.054)	(0.105)	(0.108)	(0.043)	(0.043)	(0.081)	(0.085)
Age of sons (mean)	24-40 (28)	24-50 (28)	24-40 (28)	24-50 (28)	24-40 (28)	24-50 (28)	24-40 (28)	24-50 (28)
N	246	250	239	243	446	451	433	438
R^2	0.253	0.248	0.229	0.216	0.239	0.235	0.188	0.169

*Robust standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$*
Source: Author's calculation from data

4.3 The distribution of income mobility

In the subsection, we present the distribution of income mobility using transition matrix and quantile regressions. We exploit the difference in intergenerational income mobility in Vietnam, whether Vietnam society has "like father, like son".

Transition matrix

Table 4 presents the income transition matrix (5x5) in which the row is quintiles of fathers' income and the column is quintiles of sons' income. The probability, p_{ij}, is conditional probabilities of each column j of income quintiles of sons on row i of income quintiles of fathers. A high p_{ij} means low intergenerational income mobility in case of sons and fathers in the same quintiles; conversely, a high p_{ij} in case of sons and fathers in the different quintiles has high intergenerational income mobility. Importantly, we determine whether location of fathers in income quintiles demonstrates persistence through next generation and it has changed over time for a decade in Vietnam[9]. First, in 2002 of Table 4, we focus on the diagonal of matrix showing the highest probability in each row of matrix. These results highlight that intergenerational income mobility is persistent over generation, specifically in bottom and top quintiles. Intuitively, if income level of fathers locates in bottom, about 45 percent, their sons maintain the same level and the ratio of top quintile higher nine percent than bottom – like father, like son. Second, again, we pay attention to the diagonal of matrix in 2012. The probabilities reduce slightly in second and third quintiles, and significantly in top quintile after ten years. In contrast, the bottom quintile increases by 5 percent. It implies that the achievement in poverty reduction of Vietnam may be unsustainable and short-run. In summary, the poor families are lowest income mobility, a challenge for poor children evade poverty. This result is different from Yuan (2015) in China.

[9] Similarity to the research of Hnatkovska et.al. (2013) in India, they showed the decrease in persistence for two decades.

Table 4: Income transition matrix

2002					
Sons / Fathers	Bottom	Second	Third	Fourth	Top
Bottom	0.45	0.20	0.15	0.14	0.06
Second	0.25	0.41	0.19	0.11	0.04
Third	0.14	0.21	0.32	0.21	0.11
Fourth	0.06	0.13	0.27	0.32	0.21
Top	0.04	0.08	0.12	0.23	0.54
2012					
Sons / Fathers	Bottom	Second	Third	Fourth	Top
Bottom	0.50	0.15	0.14	0.10	0.11
Second	0.26	0.35	0.22	0.09	0.08
Third	0.18	0.20	0.27	0.22	0.13
Fourth	0.16	0.16	0.16	0.33	0.18
Top	0.09	0.09	0.17	0.29	0.36

Note: we have 1,571 and 462 son-father pairs in 2002 and 2012, respectively.

Source: Author's calculation from data.

Two-sample instrumental variable quantile regressions

The last method to introduce the distribution of income mobility is two-sample instrumental variable quantile regressions. It has favorable characteristics compared with OLS, and transition matrix (Yuan, 2015). For example, recent studies have applied quantile regression to consider the tendency of elasticity in various quantiles and have three different arguments. The first has found upper quantiles is smaller than lower quantiles in Canada and U.S (Grawe, 2004). After that, Bratsberg et al. (2007) indicated that these differences were insignificant in US. The second has not trended in Germany and UK (Grawe, 2004), in Japan (Ueda, 2009), in Taiwan (Kan et al., 2015). Finally, Bratsberg et al. (2007) found out non-linear relationship among quantiles in Denmark, Finland, and Norway and the children were born in poorest families have relatively move up.

In Vietnam, quantile regression results are shown in Table 5 from column (1) to (4) in different sons' cohort showing that IGE coefficients tend to decrease from 10th quantile to 90th quantile, which is opposite to findings in Denmark, Finland, Norway (Bratsberg et al., 2007). The findings also confirm the result of transition matrix above, or the IGE in poorest families is the lowest mobility in Vietnam. To sum up, the poverty reduction policies in Vietnam help to decrease the poverty rate from 58 percent in 1993 to 14 percent in 2010 (GSO, 2011). However, the result suggests that Vietnam needs to do more for the poor, especially in the next their generation. Kozel (2014) has raised the challenges with progress of poverty reduction along in Vietnam including rural area, ethnicity, health care, and clean water.

Table 5: Two-sample Instrumental variable quantile regression results of intergenerational income mobility of father-son pairs.

	(1)	(2)	(3)	(4)
	2012		2010-2012	
Age of sons	20-40	30-50	20-40	30-50
q10				
	0.762***	0.808***	0.684***	0.713***
	(0.173)	(0.171)	(0.141)	(0.141)
q25				
	0.538***	0.513***	0.470***	0.490***
	(0.096)	(0.104)	(0.068)	(0.067)
q50				
	0.427***	0.436***	0.466***	0.468***
	(0.069)	(0.072)	(0.056)	(0.054)
q75				
	0.363***	0.364***	0.409***	0.428***
	(0.068)	(0.070)	(0.065)	(0.064)
q90				
	0.345***	0.337***	0.361***	0.375***
	(0.103)	(0.106)	(0.104)	(0.107)
N	243	248	417	424

*Note: The age and age squared of sons variables do not report in Table. Bootstrap standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$*
Source: Author's calculation from data

4.4 Educational mobility in Vietnam

The education has played a crucial channel in explaining the transmission of income and the human capital of children are invested by their parents and government in long run (Solon,

2004, Becker and Tomes, 1979). For example, Azam and Bhatt (2015) used India Human Development Survey data in 2005 of son-father pairs aged from 20 to 65. They highlighted that educational mobility increase over time. However, In terms of intergenerational correlation, they indicated that it decline at top of distribution of fathers' education and increase at bottom over time. They explained that children in poor families attain the primary school increasing, on average. International comparisons, Hertz et al. (2008) employed a dataset of father and son in 42 countries, including Vietnam, to estimate correlation coefficient and elasticity of education. For Vietnam particularly, data from Vietnam Living Standard Survey (VLSS) 1997/1998 provided the elasticity of education is 0.58 for a pair of parent and child, in which male's age is from 20 to 69.

Table 6 presents the educational mobility by transition matrix using VHLSS 1992/1993 and 2012 data. we select the males who aged from 20 to 65 and no attending. The findings of educational mobility in Vietnam are similar to India. In details, the bottom and second groups decrease by 10 percent in two decades as 26 percent, 42 percent compared with 16 percent, 32 percent in 1992 and 2012, respectively. It means that the children have opportunities more educated than their fathers do. While the third and fourth groups have significant upper mobility. Interestingly, the educational persistence increases at the top of distribution by 55 percent in two decades. There are two reasons, which can explain why the educational mobility is different from bottom and top groups. First, Vietnam today has had a better education system for more than a decade and has had a higher rate of completed primary education than before in the late 1990s and Vietnam is one of countries achieving MDG about compulsory education in primary school completed ahead of schedule. Second, the high-educated parents correlate significantly with their income. Thus, they invest heavily in human capital of their children and the policies have expanded the tertiary education in Vietnam along with increasing sharply in tutoring cost, which is major obstacle to poor children.

In summary, the results highlight that the income mobility in Vietnam is less mobility in developed countries, excluding Italy. On the other hand, it is one of the most mobility in developing countries, which reported the intergenerational elasticity. With low mobility in bottom quintile in Vietnam, however, this implies that the children were born in poor family will be persistent; especially it does not reduce over time. Remarkably, educational mobility at bottom and second groups has significant upper mobility and increase over time.

Table 6: Educational mobility by transition matrix (Age of male ranging of 20 – 65)

	1992						2012				
	(1)	(2)	(3)	(4)	(5)		(1)	(2)	(3)	(4)	(5)
(1)	0.26	0.45	0.19	0.08	0.02	(1)	0.16	0.42	0.27	0.07	0.08
(2)	0.12	0.42	0.31	0.10	0.04	(2)	0.06	0.32	0.37	0.13	0.13
(3)	0.03	0.37	0.36	0.19	0.05	(3)	0.02	0.14	0.33	0.22	0.29
(4)	0.04	0.12	0.53	0.27	0.04	(4)	0.01	0.12	0.19	0.26	0.42
(5)	0.04	0.18	0.35	0.26	0.17	(5)	0.00	0.03	0.13	0.12	0.72

Note: (1) – No degree; (2) Primary; (3) Secondary; (4) High school; (5) University. We have 1,374 and 2,164 father-son pairs in 1992 and 2012, respectively.

5. Conclusions

The growth of studies computing intergenerational income mobility across countries in recent years. This paper computed the intergenerational transmission of income in Vietnam to contribute to this field. Using unique data from five waves of VHLSS for two decades, 1992/1993 – 2012, we estimated income elasticity of father-son pairs employing the two-sample instrumental variables. As the result, the IGE in Vietnam is 0.48-0.49 and is more likely mobility in developing countries and it is similar to Italy. Furthermore, one of questions whether the children were born the poor families having equality opportunities as ones were born in the rich families. To answer this question, we exploited the difference in intergenerational income mobility in Vietnam using transition matrix and two-sample instrumental variable quantile regression methods. The findings are consistent with two techniques. Especially, the income transition matrix confirms that the mobility in poor families is extremely low and the change is

insignificant over time, even though it increases, by 45 percent and 50 percent in 2002 and 2012 respectively. On the other hand, the top quintile is downward mobility. In terms of quantile regression results, the intergenerational income persistence is high in tenth quantile, about 0.7 – 08. It implies that the opportunities for children in poor families escape the poverty being still fragile.

The intergenerational society mobility based on three main dimensions including income (earnings), education, and occupation mobility. In those, the education is crucial channel to transmission of income over generations. We have a large-scale data of father-son pairs, 20-65 age, and no attending, to exploit the distribution of education mobility in Vietnam for two decades, 1992 – 2012. The findings suggest that, over time, the bottom and second groups have an upward mobility and top group has highly persistence. Intuitively, when fathers have no degree, the probability of their children earns the primary and secondary degrees are 42 percent and 27 percent, respectively. This finding is similar to Kozel (2014), Kozel showed that children were born in poor families and head of household is not completed primary school will drop off from lower secondary and upper secondary school gradually compared with the children do not fall into this category. Conversely, the children were born in the families in which fathers earned the university degree; they are more likely to obtain the same their degree increasing from 17 percent only in 1992 up to 72 percent in 2012. Partially, this increase may be explained by the expanding policies of tertiary education in Vietnam.

APPENDIX

Table 1A: First stage regression (OLS)

	(1) Log of representative-fathers' income
No degree	Omitted dummy
Primary school	0.305***
	(0.043)
Secondary school	0.365***
	(0.040)
High school	0.803***
	(0.054)
University	1.395***
	(0.039)
Age	0.617***
	(0.069)
Age squared	-0.007***
	(0.001)
_cons	-7.548***
	(1.509)
N	3865
R^2	0.290

*Bootstrap standard errors in parentheses; * p < 0.10, ** p < 0.05, *** p < 0.01*
Source: Author's calculation from data

Table 2A: Descriptive statistics of Representative-fathers

Variable	Mean	Std. Dev.
Log of representative-fathers' income	6.84	0.98
Age	44.02	3.29
Education	2.10	1.38
No degree	0.15	0.36
Primary school	0.19	0.39
Secondary school	0.30	0.46
High school	0.10	0.30
University	0.25	0.43

Note: Number of observation is 3865
Source: Author's calculation from data.

Table 3A: Descriptive statistics of sons' sample in 2012

	Age 30 – 40 (243*)		Age 30 – 50 (248*)	
Variable	Mean	Std. Dev.	Mean	Std. Dev.
Characteristics of sons				
Log of sons' income	7.90	0.64	7.91	0.64
Age	32.38	2.47	32.63	3.03
Education	2.96	1.36	2.95	1.37
No degree	0.05	0.23	0.06	0.23
Primary school	0.17	0.37	0.17	0.37
Secondary school	0.12	0.32	0.11	0.32
High school	0.09	0.29	0.09	0.29
University	0.57	0.50	0.57	0.50
Characteristics of fathers reported by their sons				
Age	60.49	5.16	60.58	5.18
Education	2.09	1.47	2.09	1.46
No degree	0.15	0.36	0.15	0.36
Primary school	0.28	0.45	0.28	0.45
Secondary school	0.21	0.41	0.21	0.41
High school	0.06	0.24	0.06	0.24
University	0.30	0.46	0.30	0.46

*Note: * is number of observations.*
Source: Author's calculation from data.

Table 4A: Descriptive statistics of sons' sample in 2010 and 2012

	Age 30 – 40 (417*)		Age 30 – 50 (424*)	
Variable	Mean	Std. Dev.	Mean	Std. Dev.
Characteristics of sons				
Log of sons' income	7.88	0.66	7.88	0.67
Age	32.42	2.45	32.61	2.88
Education	2.91	1.39	2.89	1.41
No degree	0.07	0.25	0.07	0.26
Primary school	0.17	0.38	0.17	0.38
Secondary school	0.11	0.32	0.11	0.32
High school	0.09	0.28	0.09	0.28
University	0.56	0.50	0.56	0.50
Characteristics of fathers reported by their sons				
Age	60.21	5.00	60.28	5.01
Education	2.11	1.47	2.10	1.47
No degree	0.15	0.36	0.15	0.36
Primary school	0.27	0.45	0.28	0.45
Secondary school	0.19	0.39	0.19	0.39

High school	0.08	0.28	0.08	0.28
University	0.30	0.46	0.30	0.46

*Note: * is number of observations.*
Source: Author's calculation from data.

Table 5A: Descriptive statistics of direct OLS and IV samples

	2012				2010 and 2012			
	Age 24 – 40 (246*)		Age 24 – 50 (250*)		Age 24 – 40 (446*)		Age 24 – 50 (451*)	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Log of sons' income	7.80	0.69	7.80	0.69	7.75	0.72	7.75	0.72
Age of sons	27.97	3.40	28.24	3.99	27.71	3.25	27.89	3.68
Log of fathers' income	7.60	0.86	7.59	0.86	7.55	0.90	7.54	0.91
Age of fathers	54.55	5.56	54.82	5.90	54.44	5.56	54.64	5.84

*Note: * is number of observations.*
Source: Author's calculation from data

REFERENCES

ANGRIST, J. D. & KRUEGER, A. B. 1992. The effect of age at school entry on educational attainment: an application of instrumental variables with moments from two samples. *Journal of the American Statistical Association,* 87**,** 328-336.

ARELLANO, M. & MEGHIR, C. 1992. Female labour supply and on-the-job search: an empirical model estimated using complementary data sets. *The Review of Economic Studies,* 59**,** 537-559.

AZAM, M. & BHATT, V. 2015. Like father, like son? Intergenerational education mobility in India. *Demography,* forthcoming.

BAKER, M. & SOLON, G. 2003. Earnings Dynamics and Inequality among Canadian Men, 1976–1992: Evidence from Longitudinal Income Tax Records. *Journal of Labor Economics,* 21**,** 289-321.

BECKER, G. & TOMES, N. 1979. An Equilibrium Theory of the Distribution of Income and Intergenerational Mobility. *Journal of Political Economy,* 87**,** 1153-1189.

BEHRMAN, J. R. & ROSENZWEIG, M. R. 2002. Does Increasing Women's Schooling Raise the Schooling of the Next Generation? *The American Economic Review,* 92**,** 323-334.

BHATTACHARYA, D. & MAZUMDER, B. 2011. A nonparametric analysis of black–white differences in intergenerational income mobility in the United States. *Quantitative Economics,* 2**,** 335-379.

BJÖRKLUND, A., HEDEROS ERIKSSON, K. & JÄNTTI, M. 2010. IQ and family background: are associations strong or weak? *The BE Journal of Economic Analysis & Policy,* 10.

BJÖRKLUND, A. & JÄNTTI, M. 1997. Intergenerational Income Mobility in Sweden Compared to the United States. *The American Economic Review,* 87**,** 1009-1018.

BJÖRKLUND, A. & JÄNTTI, M. 2009. Intergenerational income mobility and the role of family background. *Oxford Handbook of Economic Inequality, Oxford University Press, Oxford*.

BJÖRKLUND, A., JÄNTTI, M. & SOLON, G. 2007. Nature and nurture in the intergenerational transmission of socioeconomic status: Evidence from Swedish children and their biological and rearing parents. *The BE Journal of Economic Analysis & Policy,* 7.

BJÖRKLUND, A., LINDAHL, M. & PLUG, E. 2006. The origins of intergenerational associations: Lessons from Swedish adoption data. *The Quarterly Journal of Economics,* 121**,** 999-1028.

BJÖRKLUND, A., ROINE, J. & WALDENSTRÖM, D. 2012. Intergenerational top income mobility in Sweden: Capitalist dynasties in the land of equal opportunity? *Journal of Public Economics,* 96**,** 474-484.

BLACK, S. E. & DEVEREUX, P. J. 2011. Recent developments in intergenerational mobility. *In:* CARD, D. & ASHENFELTER, O. (eds.) *Handbook of labor economics.*

BLACK, S. E., DEVEREUX, P. J. & SALVANES, K. G. 2008. Like father, like son? A note on the intergenerational transmission of IQ scores. National Bureau of Economic Research.

BLANDEN, J. 2009. How much can we learn from international comparisons of intergenerational mobility? *Working Paper CEE DP 111, Centre for Economics of Education, LSE.*

BLANDEN, J., GOODMAN, A., GREGG, P. & MACHIN, S. 2004. Changes in intergenerational mobility in Britain. *Generational income mobility in North America and Europe***,** 122-46.

BLANDEN, J., GREGG, P. & MACHIN, S. 2005. Intergenerational Mobility in Europe and North America. *London. London School of Economics. Centre for Economic Performance*.

BÖHLMARK, A. & LINDQUIST, MATTHEW J. 2006. Life-Cycle Variations in the Association between Current and Lifetime Income: Replication and Extension for Sweden. *Journal of Labor Economics,* 24**,** 879-896.

BRATBERG, E., ANTI NILSEN, Ø. & VAAGE, K. 2005. Intergenerational Earnings Mobility in Norway: Levels and Trends*. *The Scandinavian Journal of Economics,* 107**,** 419-435.

BRATSBERG, B., RØED, K., RAAUM, O., NAYLOR, R. & ERIKSSON, T. 2007. Nonlinearities in Intergenerational Earnings Mobility: Consequences for Cross-Country Comparisons*. *The Economic Journal,* 117**,** C72-C92.

CAUSA, O., DANTAN, S. & JOHANSSON, Å. 2009. Intergenerational social mobility in European OECD countries. OECD Publishing.

CORAK, M. 2006. Do poor children become poor adults? Lessons from a cross-country comparison of generational earnings mobility. *Research on Economic Inequality,* 13**,** 143-188.

DUNN, C. E. 2007. The intergenerational transmission of lifetime earnings: Evidence from Brazil. *The BE Journal of Economic Analysis & Policy,* 7.

EMRAN, M. S. & SHILPI, F. 2011. Intergenerational Occupational Mobility in Rural Economy Evidence from Nepal and Vietnam. *Journal of Human Resources,* 46**,** 427-458.

FEINSTEIN, L. 2003. Inequality in the early cognitive development of British children in the 1970 cohort. *Economica,* 70**,** 73-97.

FERREIRA, S. G. & VELOSO, F. A. 2006. Intergenerational mobility of wages in Brazil. *Brazilian Review of Econometrics,* 26**,** 181-211.

FORTIN, N. M. & LEFEBVRE, S. 1998. Intergenerational income mobility in Canada. *Labour Markets, Social Institutions, and the Future of Canada's Children. Ottawa: Statistics Canada, Catalogue*.

GONG, H., LEIGH, A. & MENG, N. 2012. Intergenerational income mobility in urban China. *Review of Income and Wealth,* 58**,** 481-503.

GRAWE, N. 2004. Intergenerational mobility for whom? The experience of high-and low-earning sons in international perspective. *In:* CORAK, M. (ed.) *Generational income mobility in North America and Europe*. Cambridge University Press.

GRAWE, N. D. 2001. *Intergenerational mobility in the United States and abroad: Quantile and mean regression measures*. 3019920 Ph.D., The University of Chicago.

GRAWE, N. D. 2006. Lifecycle bias in estimates of intergenerational earnings persistence. *Labour Economics,* 13**,** 551-570.

GSO 2011. *Result of the Vietnam Household living standards survey 2010*, Statistical Publishing House.

HAIDER, S. & SOLON, G. 2006. Life-Cycle Variation in the Association between Current and Lifetime Earnings. *The American Economic Review,* 96**,** 1308-1320.

HERTZ, T., JAYASUNDERA, T., PIRAINO, P., SELCUK, S., SMITH, N. & VERASHCHAGINA, A. 2008. The inheritance of educational inequality: International comparisons and fifty-year trends. *The BE Journal of Economic Analysis & Policy,* 7.

HNATKOVSKA, V., LAHIRI, A. & PAUL, S. B. 2013. Breaking the caste barrier intergenerational mobility in india. *Journal of Human Resources,* 48**,** 435-473.

INOUE, A. & SOLON, G. 2010. Two-sample instrumental variables estimators. *The Review of Economics and Statistics,* 92**,** 557-561.

JANTTI, M., BRATSBERG, B., RØED, K., RAAUM, O., NAYLOR, R., OSTERBACKA, E., BJORKLUND, A. & ERIKSSON, T. 2006. American exceptionalism in a new light: a comparison of intergenerational earnings mobility in the Nordic countries, the United Kingdom and the United States. *IZA Discussion Papers 1938.* Institute for the Study of Labor (IZA).

KAN, K., LI, I. H. & WANG, R.-H. 2015. Intergenerational Income Mobility in Taiwan: Evidence from TS2SLS and Structural Quantile Regression. *The B.E. Journal of Economic Analysis & Policy.*

KOZEL, V. (ed.) 2014. *Well begun but not yet done : progress and emerging challenges for poverty reduction in Vietnam.,* Washington, DC: World Bank.

LEE, C. I. & SOLON, G. 2009. Trends in intergenerational income mobility. *The Review of Economics and Statistics,* 91**,** 766-772.

LEFRANC, A. 2011. Educational expansion, earnings compression and changes in intergenerational economic mobility: Evidence from French cohorts, 1931-1976. *Unpublished manuscript, University of Cergy*.

LEFRANC, A. & TRANNOY, A. 2005. Intergenerational earnings mobility in France: Is France more mobile than the US? *Annales d'Economie et de Statistique***,** 57-77.

LEIGH, A. 2007. Intergenerational mobility in Australia. *The BE Journal of Economic Analysis & Policy,* 7.

MAZUMDER, B. 2005. Fortunate sons: New estimates of intergenerational mobility in the United States using social security earnings data. *Review of Economics and Statistics,* 87**,** 235-255.

MOCETTI, S. 2007. Intergenerational earnings mobility in Italy. *The BE Journal of Economic Analysis & Policy,* 7.

NICOLETTI, C. & ERMISCH, J. F. 2008. Intergenerational earnings mobility: changes across cohorts in Britain. *The BE Journal of Economic Analysis & Policy,* 7.

NILSEN, Ø. A., VAAGE, K., AAKVIK, A. & JACOBSEN, K. 2012. Intergenerational Earnings Mobility Revisited: Estimates Based on Lifetime Earnings*. *The Scandinavian Journal of Economics,* 114**,** 1-23.

PAGE, M. E. & SOLON, G. 2003a. Correlations between Brothers and Neighboring Boys in Their Adult Earnings: The Importance of Being Urban. *Journal of Labor Economics,* 21**,** 831-855.

PAGE, M. E. & SOLON, G. 2003b. Correlations between sisters and neighbouring girls in their subsequent income as adults. *Journal of Applied Econometrics,* 18**,** 545-562.

PIRAINO, P. 2007. Comparable estimates of intergenerational income mobility in Italy. *The BE Journal of Economic Analysis & Policy,* 7.

PLUG, E. 2004. Estimating the Effect of Mother's Schooling on Children's Schooling Using a Sample of Adoptees. *The American Economic Review,* 94**,** 358-368.

PLUG, E. & VIJVERBERG, W. 2003. Schooling, Family Background, and Adoption: Is It Nature or Is It Nurture? *Journal of Political Economy,* 111**,** 611-641.

RAAUM, O., SALVANES, K. G. & SØRENSEN, E. Ø. 2006. The neighbourhood is not what it used to be*. *The Economic Journal,* 116**,** 200-222.

SOLON, G. 1992. Intergenerational income mobility in the United States. *The American Economic Review***,** 393-408.

SOLON, G. 1999. Chapter 29 Intergenerational mobility in the labor market. *In:* ORLEY, C. A. & DAVID, C. (eds.) *Handbook of labor economics.* Elsevier.

SOLON, G. 2004. A model of intergenerational mobility variation over time and place. *In:* CORAK, M. (ed.) *Generational income mobility in North America and Europe.* Cambridge University Press.

UEDA, A. 2009. Intergenerational mobility of earnings and income in Japan. *The BE Journal of Economic Analysis & Policy,* 9.

YUAN, W. 2015. The Sins of the Fathers: Intergenerational Income Mobility in China. *Review of Income and Wealth***,** n/a-n/a.
ZIMMERMAN, D. J. 1992. Regression toward mediocrity in economic stature. *The American Economic Review***,** 409-429.