Intergenerational Earnings and Income Mobility in Vietnam

Thang Dang

Abstract. This paper empirically examines the intergenerational mobility of earnings and income in Vietnam using the two-sample two-stage least squares estimation. The baseline intergenerational elasticity estimates show that Vietnam occupies the intermediate degrees of intergenerational mobility of earnings and income for both sons and daughters. In particular, a rise of 10 per cent in fathers' earnings is on average associated with an increase of 3.61 per cent and 3.94 per cent for sons' earnings and income, respectively. The corresponding figures for daughters' earnings and income are 2.84 per cent and 3.33 per cent, respectively.

1. Introduction

Inequality has increasingly been viewed as a stylized problem facing a modern state in the twenty-first century (Piketty, 2014, 2015). As social scientists and policy-makers have paid considerable attention to inequality, they have placed prominence to equality of opportunity in addition to how socio-economic outcomes are equally distributed among social classes (Corak, 2013a; Krueger, 2012). The extent to which a child's socio-economic status in the current generation is determined by his or her parents' socio-economic outcome in the antecedent generation probably gives an in-depth understanding of the degree of equality of opportunity (Corak, 2013a). This has been a very important motivation for massive academic investigations of intergenerational mobility that has been witnessed over the last three decades (Black and Devereux, 2011; Solon, 1999).

Importantly, evidence also shows that there is a strong and positive correlation between economic inequality in a society and intergenerational persistence of income which has been known as 'The Great Gatsby Curve' (Corak, 2013b). Countries with a high level of inequality are likely to have a high persistence of income and thus a low level of income mobility across generations whereas countries which are more equal would have a low income persistence across generations and thus enjoy a high degree of intergenerational mobility. This research topic has been investigated by both sociologists and economists (Blanden, 2013; Torche, 2015). The main difference in the approach to intergenerational

This paper is mainly from my master's thesis at Victoria University of Wellington, New Zealand. I am deeply grateful to Yu-Wei Luke Chu my postgraduate supervisor for his valuable guidance and supports. I would like to thank Pham Khanh Nam, Le Van Chon and the participants in the Honour Symposium at Victoria University of Wellington (VUW), the STBI (Small Talks Big Ideas) Seminar at School of Economics, University of Economics Ho Chi Minh City (UEH) for useful suggestions and comments. Errors are only mine.

Department of Economics, University of York, Heslington, York,YO10 5DD, UK.
E-mail: thang.dang@thangdang.org

LABOUR •• (••) ••–•• (2019) DOI: 10.1111/labr.12164

JEL D31, J31, J62

mobility between sociologists and economists is how they define a measure of socio-economic status or outcome.

From sociologists' perspective, a proxy for the socio-economic status is usually related to social classes such as occupation (Hout, 1988; Mazumder and Acosta, 2015).[2] In a different manner, economists predominantly emphasise earnings and income as key indicators of socio-economic success (Black and Devereux, 2011; Solon, 1999).[3] From an economic perspective, this paper examines the persistence of earnings and income between fathers and offspring in Vietnam. In particular, this study uses the Vietnamese household survey data to estimate the regressions of offspring's earnings and income on their fathers' earnings. Moreover, the findings are compared to the results from other countries to reveal if the Vietnamese society is relatively mobile.

From the existing literature in economics, previous research studies have been predominantly implemented in Northern American and European countries such as the United States (Aaronson and Mazumder, 2008; Bhattacharya and Mazumder, 2011; Björklund and Jäntti, 1997; Chetty *et al*., 2014a,b; Mazumder, 2005; Solon, 1992; Zimmerman, 1992), Canada (Aydemir *et al*., 2009; Corak and Heisz, 1999; Fortin and Lefebvre, 1998), the United Kingdom (Atkinson, 1981; Atkinson *et al*., 1983; Dearden *et al*., 1997; Nicoletti and Ermisch, 2008), Sweden (Björklund and Chadwick, 2003; Björklund and Jäntti, 1997; Gustafsson, 1994; Hirvonen, 2008; Österberg, 2000), Norway (Bratberg *et al*., 2005), France (Lefranc and Trannoy, 2005), and Italy (Mocetti, 2007; Piraino, 2007). In Asia, few analogous studies are mainly conducted in developed countries such as Japan (Lefranc *et al*., 2014; Ueda, 2009), South Korea (Lee, 2014; Ueda, 2013), Taiwan (Kan *et al*., 2015; Sun and Ueda, 2015), and Singapore (Ng, 2007, 2013; Ng *et al*., 2009).[4]

In intergenerational mobility studies, researchers' main objectives are to estimate intergenerational elasticity (IGE) or correlation (IGC) of earnings or income between fathers and children. This study focuses on the former estimate. IGE is a reasonable statistic that accounts for the degree of the intergenerational association between parental economic resources and children's economic status. In principle, a high IGE estimate explicitly provides an implication of a low degree of mobility with a measurable magnitude of intergenerationally perpetuated inequality. In other words, a poor child is less likely to escape poverty and move upwardly while the likelihood for a child who was born in a wealthy family to remain at the top position from the social ladder of an economic outcome as his or her parents is comparatively high. In such a society with high IGE, the degree of equality of opportunity is relatively modest. In contrast, a modest IGE estimate indicates a high level of economic mobility across generations, and therefore a high degree of the equality of opportunity.

To obtain IGE estimates, researchers ideally demand a representative sample in which information on the permanent economic outcome for both parents and children as adults is available. Unfortunately, such data sets are rarely available, especially in developing countries including Vietnam. To surmount the problem of lack of data, this study uses the two-sample two-stage least squares (TS2SLS) estimator to estimate IGEs.[5] In particular, two primary samples of father-son pairs and father-daughter pairs are taken from Vietnam Household Living Standards Survey (VHLSS) of 2012, and one secondary sample of 'potential' fathers is extracted from Vietnam Living Standards Survey (VLSS) of 1997–98.

This paper finds that the baseline IGE estimates of Vietnamese sons are 0.36 and 0.39 for earnings and income, respectively. Meanwhile, the baseline IGE estimates of Vietnamese daughters are 0.28 and 0.33 for earnings and income, respectively. These IGE estimates

explicitly reveal that Vietnam has the intermediate degrees of earnings and income mobility across generations for both sons and daughters by international comparison.

2. Institutional background and data

2.1. Institutional background

The post-war era starting in 1975 had witnessed a moribund state facing the economy of Vietnam due to extremely deficient resources, employing out-of-date technologies, holding an internationally-isolated position, and most importantly functioning managerial mistakes, for instance implementing collectivized agriculture (Dinh, 2000). Therefore, Vietnam launched a pivotal economic reform (so-called Đổi Mới) in 1986, which had re-directed the economy from a centrally planned to a market-oriented system with the aim to recuperate the economy from its crumbling situation (Glewwe *et al*., 2004). The economic reform has considerably transformed the economy of Vietnam with high economic growth, increased per capita income and reduced poverty over the last decades (World Bank, 2013).

However, Vietnam has been admittedly characterised by increasing inequality parallel to economic achievements (Haughton, 2001). Extensive research on economic inequality has been carried out for Vietnam (Adger, 1999; Nguyen *et al*., 2007; van de Walle and Gunewardena, 2001). However, most studies primarily focus on the measure of how the economic outcome is distributed among social classes at a specific year or a period within one generation. Such measure, therefore, cannot reveal the transmission of inequality across generations as well as the degree of equality of opportunity in Vietnam. Therefore, Vietnam is an important case to investigate intergenerational mobility. The study written by Emran and Shilpi (2011), one of rarely qualified studies on intergenerational mobility in Vietnam, show that a high degree of the occupational mobility across generations in Vietnam using the data from the Vietnam Living Standards Survey of 1993. However, Emran and Shilpi do not show intergenerational mobility of economic outcomes such as income as done by the current paper.

2.2. Data

The sources of data used in this study include VLSS and VHLSS. The first source is VLSS, that elicits households' socio-economic information, including education, employment, health, agricultural production, non-agricultural production, housing, migration, fertility, and savings and credit (World Bank, 2001). Meanwhile, the second source is VHLSS, which make the inquiries of representative households' key socio-economic information, including demographic information, expenditure, income, employment, education, health, housing, consumptions, and the programs of poverty reduction.

In this paper, two primary samples of father-son pairs and father-daughter pairs are extracted from VHLSS of 2012, which comprises 23,235 households surveyed across Vietnam. The secondary sample of 'potential' fathers used in this study is extracted from the VLSS of 1997–98, that includes 6,000 households from the representative communes across the country (World Bank, 2001).

Descriptive statistics of the three samples are summarized in Table 1. Firstly, the primary sample of son-father pairs consists of 1344 observations, and sons' age are restricted to

25–54 in 2012. The average ages of sons and fathers are 29 and 58, respectively. Therefore, their average ages were respectively 15 and 44 in 1998. Secondly, the primary sample of daughter-father pairs includes 632 observations with daughters aged 25–47. The average age of daughters is 28 while their fathers' corresponding figure is 58. Hence, the average ages for daughters and fathers were 14 and 44 in 1998, respectively. Thirdly, for the secondary sample of 'potential' fathers, 1,041 male workers aged 31–51 are included.

It is important to quantitatively show the differences between earnings and income measures which are used as two main outcomes in this paper. While earnings is only the wage one achieves in the labour market for his or her main paid job, income includes all sources of income that one is able to generate in addition to his or her earnings.

Observations' essential socio-economic variables including education, employment occupation, employment industry, and geographical region are uniformly coded in three samples. For education, there are five dummy variables, including (1) non-diploma or primary, (2) secondary, (3) vocational, (4) high school, and (5) tertiary. For occupation, there are seven variables, including (1) very highly skilled professionals, supreme government officials and administrators, and high-class managers, (2) high-grade professionals, administrators, and government officials, high-grade technicians, and supervisors of non-manual workers, (3) typical non-manual workers, higher grade (administration and commerce) and lower grade (sales and services), (4) lower-grade technicians, supervisors of manual workers, (5) skilled manual workers, (6) semi- and unskilled manual workers, and (7) farmers and farm workers in agricultural production. Meanwhile, industry group consists of (1) agriculture, (2) manufacturing, (3) public management, (4) health and education, (5) trade and finance, (6) utilities, (7) transportation and communication, (8) construction, (9) mining, and (10) community and social services. For geographical region, there are six dummy variables, including (1) Red River Delta (RRD), (2) Northern Midland and Mountain Areas (NMMA), (3) North Central and Central Coastal Areas (NCCCA), (4) Central Highlands (CH), (5) South East (SE), and (6) Mekong River Delta (MRD).

Empirically, economists often concern the sources of measurement errors that likely cause lifecycle bias and attenuation bias. Referring to lifecycle bias, Haider and Solon (2006) show that when a child's short-run economic outcome potentially generates lifecycle bias in IGE estimates. Specifically, the economic outcome measured in early or late ages of a child's working life probably produces underestimated or overestimated IGE estimates. They also suggest that a sub-sample with children aged around 40 is an apropos choice because economic outcome around age 40 is the most apposite proxy for permanent status, and then potential lifecycle bias is minimized. Therefore, using different age ranges to construct the sample for the analysis would affect the estimated results. In particular, the sample of too young children probably produces the life-cycle biased estimates (Haider and Solon, 2006).

However, due to the small size of available datasets in Vietnam, this paper employs a wider range of ages for sons and daughters. In particular, the sons' age range is 25–54 while the age interval for daughters is 25–47. Moreover, Haider and Solon's (2006) rule of age selection is also applied to achieve sub-samples for estimating IGEs and comparing them with the baseline results from full samples although the sizes of these sub-samples are relatively small. Eventually, there are a sub-sample of 450 sons aged 30–50, equivalent to 33 per cent of the full sample, and a sub-sample of 182 daughters aged 30–47, equivalent to 29 per cent of the full sample.

Individuals in these two primary samples in this paper are relatively young. Illustratively, there are 73.36 per cent of sons aged 25–30 while the corresponding figure for daughters is

Table 1. Descriptive statistics of samples

	Secondary sample (VLSS 1997–98)		Primary sample of son-father pairs (VHLSS 2012)				Primary sample of daughter-father pairs (VHLSS 2012)			
	Potential fathers		Fathers		Sons		Fathers		Daughters	
Variables	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
Age (years)	39.97	5.90	57.59	7.29	29.06	4.04	57.60	6.81	28.46	3.52
Education										
(1) non-diploma or primary (=1 if yes, = 0 if no)	0.13	0.34	0.40	0.50	0.20	0.42	0.34	0.49	0.17	0.37
(2) secondary (= 1 if yes, = 0 if no)	0.34	0.47	0.32	0.47	0.20	0.41	0.29	0.46	0.16	0.37
(3) vocational (= 1 if yes, = 0 if no)	0.14	0.34	0.06	0.22	0.07	0.25	0.08	0.27	0.04	0.20
(4) high school (= 1 if yes, = 0 if no)	0.26	0.44	0.15	0.37	0.33	0.48	0.20	0.40	0.33	0.48
(5) tertiary (= 1 if yes, = 0 if no)	0.13	0.34	0.07	0.26	0.20	0.41	0.09	0.29	0.30	0.47
Occupation										
(1) very highly skilled (= 1 if yes, = 0 if no)	0.14	0.34	0.07	0.26	0.16	0.36	0.09	0.28	0.21	0.42
(2) lower highly skilled (= 1 if yes, = 0 if no)	0.09	0.29	0.04	0.17	0.09	0.28	0.05	0.18	0.18	0.39
(3) typical non-manual (= 1 if yes, = 0 if no)	0.21	0.40	0.14	0.34	0.12	0.32	0.17	0.37	0.18	0.38
(4) lower-grade (= 1 if yes, = 0 if no)	0.10	0.30	0.04	0.20	0.15	0.36	0.05	0.22	0.14	0.35
(5) skilled manual (= 1 if yes, = 0 if no)	0.21	0.41	0.16	0.36	0.01	0.09	0.16	0.36	0.01	0.07
(6) semi- and un-skilled manual (= 1 if yes, = 0 if no)	0.17	0.38	0.11	0.32	0.27	0.45	0.10	0.29	0.16	0.36
(7) farmers and farm workers (= 1 if yes, = 0 if no)	0.08	0.29	0.44	0.50	0.20	0.41	0.40	0.49	0.12	0.32

Table 1. Continued

Variables	Secondary sample (VLSS 1997–98)		Primary sample of son-father pairs (VHLSS 2012)				Primary sample of daughter-father pairs (VHLSS 2012)			
	Potential fathers		Fathers		Sons		Fathers		Daughters	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Industry										
(1) agriculture (= 1 if yes, = 0 if no)	0.12	0.32	0.53	0.50	0.10	0.30	0.51	0.50	0.09	0.20
(2) manufacturing (= 1 if yes, = 0 if no)	0.17	0.37	0.10	0.30	0.20	0.40	0.09	0.29	0.38	0.49
(3) public management (= 1 if yes, = 0 if no)	0.16	0.37	0.07	0.25	0.09	0.29	0.09	0.29	0.08	0.27
(4) health and education (= 1 if yes, = 0 if no)	0.20	0.40	0.03	0.16	0.07	0.25	0.03	0.18	0.23	0.42
(5) trade and finance (= 1 if yes, = 0 if no)	0.10	0.30	0.07	0.26	0.10	0.30	0.09	0.28	0.10	0.31
(6) utilities (= 1 if yes, = 0 if no)	0.01	0.11	0.02	0.05	0.03	0.10	0.01	0.04	0.01	0.09
(7) transportation and communication (= 1 if yes, = 0 if no)	0.06	0.23	0.05	0.21	0.09	0.29	0.05	0.22	0.03	0.16
(8) construction (= 1 if yes, = 0 if no)	0.11	0.31	0.08	0.28	0.23	0.42	0.07	0.26	0.03	0.18
(9) mining (= 1 if yes, = 0 if no)	0.01	0.11	0.02	0.11	0.04	0.15	0.03	0.10	0.01	0.10
(10) community, and social services (= 1 if yes, = 0 if no)	0.06	0.23	0.03	0.17	0.05	0.18	0.03	0.17	0.04	0.20
Geographical Region										
(1) Red River Delta (RRD) (= 1 if yes, = 0 if no)	0.27	0.44	0.24	0.43	0.24	0.43	0.22	0.41	0.22	0.41
(2) Northern Midland and Mountain Areas (NMMA) (= 1 if yes, = 0 if no)	0.07	0.25	0.14	0.35	0.14	0.35	0.10	0.31	0.10	0.31

Table 1. Continued

	Secondary sample (VLSS 1997–98)		Primary sample of son-father pairs (VHLSS 2012)				Primary sample of daughter-father pairs (VHLSS 2012)			
	Potential fathers		Fathers		Sons		Fathers		Daughters	
Variables	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
(3) North Central and Central Coastal Areas (NCCCA) (= 1 if yes, = 0 if no)	0.26	0.44	0.25	0.43	0.25	0.43	0.24	0.43	0.24	0.43
(4) Central Highlands (CH) (= 1 if yes, = 0 if no)	0.02	0.13	0.03	0.16	0.03	0.16	0.02	0.15	0.02	0.15
(5) South East (SE) (= 1 if yes, = 0 if no)	0.21	0.42	0.11	0.32	0.11	0.32	0.15	0.36	0.15	0.36
(6) Mekong River Delta (MRD) (= 1 if yes, = 0 if no)	0.17	0.37	0.23	0.42	0.23	0.42	0.27	0.44	0.27	0.44
Log of monthly earnings (VND 1000)	5.64	0.89	5.04	0.42	7.84	0.60	5.07	0.43	7.71	0.63
Log of monthly income (VND 1000)					7.93	0.63			7.82	0.66
Observations	1041		1344				632			

Note: Potential fathers' age range is 31–54 in the secondary sample. Sons' age range is 25–54 in the primary father-son sample. Daughters' age range is 25–47 in the primary father-daughter sample.

77.85 per cent. The distribution of sons' and daughters' ages are respectively demonstrated in Figures A1 and A2 of Appendix. It can be explained by the fact that Vietnam has a relative young labour force.

The literature also records that using a short-run measure of economic outcome for 'potential' fathers in the secondary sample probably generates substantial underestimations for the IGE estimates because the temporary economic outcome is a 'noisy' proxy for long-run one (Solon, 1992; Zimmerman, 1992). This bias is called attenuation bias. This study employs the TS2SLS estimator to solve the problem of measurement error stemming from using a one-year measure of 'potential' fathers' earnings. The reason is that when transitory shocks are not correlated with predictors of fathers' economic outcome, the estimates from the TS2SLS estimator are consistent (Inoue and Solon, 2010).

When comparing the distributions of fathers' socio-economic groups between the primary and secondary samples in Table 1, it can be recognized that these two samples are relatively matched in some groups. For example, in the education group, secondary amounts to 34 per cent in the secondary sample, 32 per cent in the primary sample of father-son pairs, and 29 per cent in the primary sample of father-daughter pairs. However, there are also less matched distributions for some variables. For example, non-diploma or primary is the most frequent group for fathers' education in both the primary sample of son-father pairs with 40 per cent and the primary sample of daughter-father pairs with 34 per cent but it only has 13 per cent in the secondary sample.

3. Research methods

In the study of intergenerational mobility, IGE is typically estimated from the following regression:

$$Y_i = \beta_0 + \beta_1 X_i + \epsilon_i, \qquad [1]$$

where Y_i is the log of the i^{th} children's permanent economic outcome, X_i correspondingly denotes the log of their father's long-run economic outcome, and ϵ_i is error term. In this study, children's economic outcome is measured by two variables including earnings and income; and the proxy for fathers' economic outcome is their earnings.

The coefficient β_1 in equation [1] is the parameter of interest, that is a measure of IGE, and then $(1-\beta_1)$ measures intergenerational economic mobility. If the information on lifetime economic outcome for both children and fathers is available, ordinary least squares (OLS) estimator can consistently estimate β_1. However, in many available data sets, children's economic outcome (Y_i) is reported while parental economic outcome (X_i) is not recorded. Fortunately, parents' socio-economic characteristic variables are available, and these variables are used to predict fathers' economic outcome. Vietnamese data used in this study is not an exception.

This paper uses the two-sample two-stage least squares (TS2SLS) estimation to overcome the problem of unavailable data. The TS2SLS estimator, based on the idea of the two-sample instrumental variable (TSIV) estimator invented by Angrist and Krueger (1992), is first applied by Björklund and Jäntti (1997). Arguably, Inoue and Solon (2010) show that in the two-sample environment, TS2SLS is asymptotically more efficient than TSIV. Numerous studies have used TS2SLS to investigate intergenerational mobility such as Fortin and Lefebvre (1998) for Canada, Lefranc and Trannoy (2005) for France, Dunn

(2007) for Brazil, Gong *et al*. (2012) for urban China, Piraino (2015) for South Africa, Lefranc *et al*. (2014) for Japan, or Cervini-Plá (2014) for Spain.

TS2SLS uses two samples to estimate β_1 with two regression stages. The primary sample consists of observations on son-father or daughter-father pairs in which information on children's economic outcome and socio-economic characteristics, and fathers' socio-economic characteristics, denoted by Z_i, are available.

However, because information on fathers' real economic outcome is not available in this sample, the regression of children's economic status on that of fathers cannot be done. Therefore, in the first stage a secondary sample of 'potential' fathers, that are male workers from another sample that includes both observations' economic outcome and same socio-economic characteristics classified and coded as in the primary sample, is employed to generate a regression of 'potential' fathers' economic outcome on their socio-economic characteristics variables. Fortunately, a fact that both VLSS of 1997–98 and VHLSS of 2012 that contains necessary information adult respondents' characteristics such as education, occupation, industry, and location allow this study to apply for the first-stage estimation.

In particular, to predict 'true' fathers' economic status in the primary sample, 'true' fathers' socio-economic characteristics, Z_i, are plugged into the regression presented as the following equation:

$$\widehat{X}_i = \hat{\gamma} Z_i, \qquad [2]$$

where $\widehat{X}_i$ represents fathers' predicted economic outcome, and $\hat{\gamma}$ is the corresponding coefficients of Z_i estimated in the first stage. It is important to note that the IGE estimates using TS2SLS estimator may be upper bound estimates. This is mainly because the estimates could be likely biased upward by the transmission of workers' characteristics across generations.

Empirically, the predictor set of fathers' economic outcome is probably education (Lefranc *et al*., 2010), or occupation (Fortin and Lefebvre, 1998), or education and occupation (Björklund and Jäntti, 1997; Núñez and Miranda, 2010; Ueda, 2013), or education, occupation, and industry (Gong *et al*., 2012; Kim, 2013), or education, occupation, and geographical region (Lefranc *et al*., 2014). This study uses the set of education, occupation, industry, and geographical region to predict fathers' earnings.

In the second stage, children's economic outcome is regressed on fathers' imputed economic outcome. From this regression, β_1 that is IGE of children's economic status with respect to their fathers' economic success is obtained in this study.

4. Empirical results

4.1. First-stage results

The analysis of the first-stage regression focuses on the estimates for these socio-economic characteristics because these are parameters of interest. The results are presented in Table 2. Accordingly, the model has the R^2 of 0.19, which suggests that about 19 per cent of the variation in the log of earnings of 'potential' fathers can be explained by these socio-economic characteristics.

In Table 2, it can be seen that wage differentials occur among categories within each group as well as across groups. For example, tertiary generates the highest returns with

Table 2. Preferred first-stage regressions. Dependent variable: Earnings (monthly, VND 1,000, in the log)

Preferred variable	Coefficient
Education	
(2) Secondary	0.27**
	(0.12)
(3) Vocational	0.30**
	(0.13)
(4) High school	0.45***
	(0.11)
(5) Tertiary	0.57***
	(0.12)
Occupation	
(1) Very highly skilled	0.25
	(0.19)
(2) Lower highly skilled	0.38**
	(0.18)
(3) Typical non-manual	0.22
	(0.19)
(4) Lower-grade	0.29
	(0.21)
(5) Skilled manual	0.12
	(0.21)
(6) Semi- and un-skilled manual	0.06
	(0.18)
Industry	
(1) Agriculture	−0.07
	(0.27)
(2) Manufacturing	0.11
	(0.23)
(3) Public management	−0.18
	(0.25)
(4) Health and education	0.14
	(0.26)
(5) Trade, and finance	0.08
	(0.26)
(6) Utilities	0.20
	(0.31)
(7) Transportation and communication	0.19
	(0.27)
(8) Construction	−0.29
	(0.27)
(10) Community and social services	−0.27
	(0.27)
Geographical Region	
(1) Red River Delta (RRD)	0.50**
	(0.21)
(2) Northern Midland and Mountain Areas (NMMA)	0.48**
	(0.22)
(3) North Central and Central Coastal Areas (NCCCA)	0.31
	(0.21)
(5) South East (SE)	0.29
	(0.24)

Table 2. Continued

Preferred variable	Coefficient
(6) Mekong River Delta (MRD)	−0.04
	(0.23)
R^2	0.19
Observations	1041

Note: Omitted variables: (1) non-diploma or primary in the education group; (7) farmers, and farm workers in the occupation group; (9) mining in the industry group; and (4) Central Highlands (CH) in the geographical region group.
***, **, and * represent statistical significance at the 1%, 5%, and 10% level, respectively.

56.7 per cent compared to non-diploma or primary (the omitted variable) from education group while two categories utilities and construction yield the highest and the lowest returns with 19.7 per cent higher and 28.6 per cent lower than mining (the omitted variable) respectively from the industry group. Moreover, education and geographical region groups have larger variations on male workers' earnings rather than occupation and industry.[6] This can be explained by the accretion of wage differentials along with increasing returns to education (Imbert, 2013; Liu, 2006), and aggrandised earnings gaps among different geographical areas (van de Walle and Gunewardena, 2001; World Bank, 2014) in Vietnam over the last two decades.

It is important to note that age and age-squared are included in the group of independent variables in the first-stage model. However, its estimated coefficients are not used to generate missing values of the log of 'true' fathers' earnings in the primary samples because 'true' fathers' earnings imputed must be a proxy for permanent rather than the short-run outcome.

4.2. Empirical results for sons

In Table 3, it can be seen that the baseline IGE estimates for sons are all statistically significant at the level of 1 per cent for both earnings and income. In Column 1, an IGE estimate of 0.36 is found for earnings. Meanwhile, an IGE estimate of 0.39 is found for income in Column 2. These IGE estimates meaningfully point out that a 10 per cent difference in fathers' earnings likely leads to roughly 3.6 per cent and 3.9 per cent differences in sons' earnings and income, respectively.

These results also indicate that the baseline IGE estimate for income is higher than that for earnings. This is reasonable because a son's income equals his earnings plus other adjunct incomes, the marginal effect of his father's earnings on his income equals the sum of the marginal effect of his father's earnings on his earnings and the marginal effect of his fathers' earnings on his other additional income.

Compared to other countries, these baseline IGE estimates for Vietnamese sons are ranked at the intermediate levels. These findings are relatively similar to the previous findings such as 0.42 in Spain (Cervini-Plá, 2014), 0.40 in South Korea (Kim, 2013), 0.35 in Japan (Lefranc *et al*., 2014), and 0.40 in French (Lefranc and Trannoy, 2005).

These IGE results are apparently lower than those in some other countries such as 0.62 in South Africa (Piraino, 2015), 0.60 in Brazil (Ferreira and Veloso, 2006), 0.63 in urban China (Gong *et al*., 2012), 0.57 in Chile (Núñez and Miranda, 2010), and 0.50 in Italy (Mocetti, 2007; Piraino, 2007).

Table 3. Baseline IGE estimates for sons (full sample)

	Dependent variable (monthly, VND 1000, in the log): Sons'	
	Earnings (1)	**Income (2)**
β_1	0.36***	0.39***
	(0.04)	(0.04)
R^2	0.08	0.08
Observations	1344	1344

Note: Bootstrapping standard errors (with 1000 replications) are in parentheses. Father's earnings is predicted using education, occupation, industry, and geographical region.
***, **, and * represent statistical significance at the 1%, 5%, and 10% level, respectively.

4.3. Empirical results for daughters

Table 4 shows the baseline IGE estimates for daughters. The baseline IGE estimate of 0.28 is found for earnings in Column 1. This IGE degree manifests that a 10 per cent difference in fathers' earnings is likely to result in a 2.8 per cent variation in daughters' earnings.

When the dependent variable is income, the IGE estimate is 0.33 as in Column 2. This figure implicates that a 10 per cent variation in fathers' earnings is likely to lead to a 3.3 per cent difference in daughters' income in Vietnam. The baseline IGE estimate for income is relatively 17.25 per cent higher than that for earnings.

These IGE estimates for Vietnamese daughters' earnings and income explicitly demonstrate the average levels of intergenerational mobility compared to other countries. These average degrees of intergenerational mobility in Vietnam are nearly analogous to the estimates of around 0.39 in Spain (Cervini-Plá, 2014), 0.35 in Japan (Lefranc *et al*., 2014), and 0.4 in South Korea (Ueda, 2013). Meanwhile, some countries have lower IGE estimates for daughters than that of Vietnam such as 0.25 from Sweden (Hirvonen, 2008).

Also, it can be recognised that the patterns of intergenerational mobility of earnings and income are the same for both Vietnamese sons and daughters. Particularly, the degree of persistence between children's income and fathers' earnings is higher than that between children's earnings and fathers' earnings. Importantly, daughters have smaller degrees of economic outcome persistence from fathers' background than sons for all two measures of

Table 4. Baseline IGE estimates for daughters (full sample)

	Dependent variable (monthly, VND 1000, in the log): Daughters'	
	Earnings (1)	**Income (2)**
β_1	0.28***	0.33***
	(0.06)	(0.06)
R^2	0.06	0.07
Observations	632	632

Note: Bootstrapping standard errors (with 1000 replications) are in parentheses. Father's earnings is predicted using education, occupation, industry, and geographical region.
***, **, and * represent statistical significance at the 1%, 5%, and 10% level, respectively.

economic outcome although these gaps are not considerable. Specifically, the baseline IGE estimates for sons and daughters are respectively 0.36 and 0.28 for earnings, and 0.39 and 0.33 for income.

This finding is similar to estimates from previous studies. For example, Chadwick and Solon (2002) find estimates of 0.54 and 0.43 for American sons and daughters. Nilsen *et al*. (2012) conclude the IGE coefficients are between 0.16 and 0.34 for sons, and between 0.12 and 0.23 for daughter in Norway. On the contrary, sons are more mobile than daughters in some other countries. For example, Lefranc *et al*. (2014) find the baseline IGE estimates for sons are close to 0.34 while the corresponding figures for daughters are nearly 0.39 although the difference between these baseline estimates is small in Japan.

5. Robustness checks

5.1. Robustness checks of IGE estimates to different first-stage specifications

As noted in the literature, the TS2SLS estimator may endogenously biased because the socio-economic characteristics employed to predict fathers' economic outcome probably have a direct impact on children's economic outcome. Moreover, the magnitude of the bias depends on the set of socio-economic characteristics used to predict fathers' economic outcome. Therefore, it is necessary to investigate the robustness of the baseline IGE estimates to the different sets of first-stage predictors.

5.1.1. Analysis for sons. The full sample of sons is used to estimate the IGEs. Table 5 presents the results for fifteen cases in which different sets of fathers' earnings predictors are used in the first-stage model.

Firstly, Column 1 reports the results of robustness checks for the IGE estimates of sons' earnings with respect to their fathers' earnings. The estimated coefficients of IGE are all statistically significant at 1 per cent. The IGE estimates using the different sets of fathers' economic outcome predictors modestly vary around the baseline IGE estimate of 0.36 (education, occupation, industry, and geographical region). In particular, the IGE estimates are between 0.26 (occupation and industry) and 0.40 (occupation and geographical region). These extreme IGE estimates are smaller with a maximum proportion of 26.87 per cent or higher with a maximum proportion of 9.70 per cent than the baseline IGE estimate.

When using an individual predictor in the first-stage model, the results from cases 1–4 in Column 1 indicate that the estimator with education generates the largest IGE with an estimate of 0.37 while that with industry produces the smallest IGE with an estimate of 0.27.

Secondly, the robustness check for sons' income is shown in Column 2. The coefficients of the IGE estimates in all cases are statistically significant at 1 per cent. The results demonstrate that when changing the set of socio-economic characteristics for predicting fathers' earnings, the IGE estimates insignificantly alter around the baseline value of 0.39 (education, occupation, industry, and geographical region). Specifically, the minimum IGE estimate is 0.32 (geographical region), and the maximum IGE estimate is 0.43 (occupation and region).

When using an individual predictor in the first stage model as shown in cases 1–4, the estimator with education produces the largest IGE of 0.40 while that with geographical region creates the smallest IGE estimate of 0.32. However, the gap between these two extreme IGE estimates is relatively small with a degree of 0.08.

Table 5. Robustness check for sons to different first-stage model specifications

	Dependent variable (monthly, VND 1000, in the log): Sons'			
	Earnings (1)		Income (2)	
The set of fathers' earnings predictors in the first stage	β_1	R^2	β_1	R^2
(1) Education	0.37***	0.06	0.40***	0.07
	(0.05)		(0.05)	
(2) Occupation	0.30***	0.03	0.36***	0.04
	(0.06)		(0.06)	
(3) Industry	0.27***	0.02	0.34***	0.03
	(0.07)		(0.08)	
(4) Geographical region	0.32***	0.03	0.32***	0.03
	(0.07)		(0.07)	
(5) Education and occupation	0.38***	0.07	0.42***	0.07
	(0.04)		(0.05)	
(6) Education and industry	0.35***	0.06	0.39***	0.07
	(0.04)		(0.05)	
(7) Education and geographical region	0.35***	0.07	0.36***	0.07
	(0.04)		(0.04)	
(8) Occupation and industry	0.26***	0.03	0.32***	0.04
	(0.06)		(0.06)	
(9) Occupation and geographical region	0.40***	0.06	0.43***	0.07
	(0.05)		(0.05)	
(10) Industry and geographical region	0.33***	0.05	0.36***	0.05
	(0.05)		(0.05)	
(11) Education, occupation and industry	0.35***	0.06	0.39***	0.07
	(0.04)		(0.05)	
(12) Education, occupation and geographical region	0.39***	0.08	0.41***	0.08
	(0.04)		(0.04)	
(13) Education, industry and geographical region	0.34***	0.07	0.37***	0.08
	(0.04)		(0.04)	
(14) Occupation, industry and geographical region	0.37***	0.06	0.41***	0.06
	(0.05)		(0.05)	
(15) Education, occupation, industry and geographical region	0.36***	0.08	0.39***	0.08
	(0.04)		(0.04)	

Note: Bootstrapping standard errors (with 1000 replications) are in parentheses. Sample size is 1344 observations. ***, **, and * represent statistical significance at the 1%, 5%, and 10% level, respectively.

The above analysis shows that the baseline IGE estimates for sons are highly robust. The degrees of the IGE estimates when changing the set of fathers' earnings predictors is varied insignificantly for both sons' earnings and income.

5.1.2. Analysis for daughters. The full sample of daughters is used to check the robustness for the IGE estimates to the first-stage model specifications. The results are presented in Table 6.

Firstly, Column 1 shows that the IGE estimates for earnings in different cases vary around the baseline IGE estimate of 0.28 (education, occupation, industry, and geographical region). Specifically, the estimates span from 0.24 (education) to 0.41 (occupation, and geographical region). All estimated coefficients are statistically significant at 1 per cent.

Compared to the baseline estimate, the IGE estimates can be smaller with a maximum proportion of 16.55 per cent, or higher with a maximum proportion of 42.96 per cent.

When using only one sole socio-economic characteristic in the first-stage model, the results from cases 1–4 indicate that the estimator with occupation produces the largest IGE estimate of 0.38 while that with education yields the smallest IGE of 0.24. The result is different from the finding for in which education produces the largest IGE estimate.

Secondly, the robustness check for daughters' income is provided in Column 2. Accordingly, all IGE estimates are statistically significant at 1 per cent. The IGE estimates from the various first-stage specifications fluctuate around the baseline estimate of 0.33 (education, occupation, industry, and geographical region). In particular, the IGE estimates vary from 0.27 (education) to 0.48 (occupation, and geographical region). Hence, these IGE

Table 6. Robustness check for daughters to different first-stage specifications

	Dependent variable (monthly, VND 1000, in the log): Daughters'			
	Earnings (1)		**Income (2)**	
The set of fathers' earnings predictors in the first stage	β_1	R^2	β_1	R^2
(1) Education	0.24***	0.04	0.27***	0.05
	(0.06)		(0.07)	
(2) Occupation	0.38***	0.05	0.43***	0.06
	(0.08)		(0.08)	
(3) Industry	0.32***	0.04	0.39***	0.04
	(0.10)		(0.10)	
(4) Geographical region	0.31***	0.04	0.37***	0.04
	(0.10)		(0.11)	
(5) Education and occupation	0.30***	0.06	0.35***	0.06
	(0.07)		(0.07)	
(6) Education and industry	0.25***	0.05	0.29***	0.05
	(0.07)		(0.07)	
(7) Education and geographical region	0.27***	0.06	0.31***	0.06
	(0.06)		(0.06)	
(8) Occupation and industry	0.29***	0.04	0.34***	0.05
	(0.08)		(0.08)	
(9) Occupation and geographical region	0.41***	0.08	0.48***	0.09
	(0.07)		(0.07)	
(10) Industry and geographical region	0.31***	0.05	0.37***	0.06
	(0.07)		(0.08)	
(11) Education, occupation and industry	0.26***	0.05	0.31***	0.05
	(0.07)		(0.07)	
(12) Education, occupation and geographical region	0.33***	0.07	0.38***	0.08
	(0.06)		(0.06)	
(13) Education, industry and geographical region	0.26***	0.06	0.31***	0.06
	(0.06)		(0.059)	
(14) Occupation, industry and geographical region	0.33***	0.06	0.39***	0.07
	(0.07)		(0.07)	
(15) Education, occupation, industry and geographical region	0.28***	0.06	0.33***	0.07
	(0.06)		(0.06)	

Note: Bootstrapping standard errors (with 1000 replications) are in parentheses. Sample size is 632 observations. ***, **, and * represent statistical significance at the 1%, 5%, and 10% level, respectively.

estimates are higher or smaller than the baseline estimate with a maximum proportion of 43.24 per cent or 18.02 per cent, respectively.

When using the sole predictor, the specification with occupation produces the largest IGE estimate of 0.43 while the estimator with education yields the smallest IGE estimate of 0.27. This result is different for sons' income where the estimator with education produces the largest IGE and the estimate with the geographical region is the smallest one.

5.2. Robustness checks of IGE estimates to different age ranges

As shown in the existing literature, the changes in children's age range in the primary sample may lead to the variation of the IGE estimates (Grawe, 2006; Haider and Solon, 2006). In this section, the sensitivity of the IGE estimates to different sub-samples of various age intervals is analyzed for both sons and daughters.

5.2.1. Analysis for sons. Table 7 presents the IGE estimates for sons in various sub-samples of different age ranges. The IGE estimates are reported for two measures of sons' economic outcome including earnings in Column 1 and income in Column 2. There are three age intervals considered including 25–29 in Panel A, 30–34 in Panel B, and 35–54 in Panel C. The IGE coefficients are all statistically significant at 1 per cent.

The results explicitly provide evidence on the variation of IGE estimates across sub-samples. In Column 1, the IGE estimates span from 0.34 in the 25–29 sub-sample in Panel A to 0.48 in the 35–54 sub-sample in Panel C for earnings. The result in Column 2 gives an analogous pattern with a range of the IGE estimates between 0.36 in the 25–29 sub-sample and 0.49 in the 35–54 sub-sample for income. The IGE estimates are generally larger in the older sub-samples than the younger sub-samples.

In addition, using a rule of age selection from Haider and Solon (2006), a sub-sample of 450 sons aged 30–50 is formed to achieve the IGE estimates with the minimized lifecycle bias as shown in Panel D. In particular, the IGE estimates for earnings and income are respectively 0.41 and 0.47. These estimates are all statistically significant at 1 per cent. These estimates are 14.13 per cent and 18.78 per cent higher than the baseline IGE estimates, respectively for earnings and income. Therefore, the estimates produced using a sub-sample of sons aged around 40 is likely less biased than the estimates by the full sample of sons aged 25–54 for both earnings and income.

5.2.2. Analysis for daughters. Table 8 reports the IGE estimates using sub-samples of daughters with different age ranges, including 25–29 in Panel A, and 30–47 in Panel B. The IGE coefficients are all statistically significant at 1 per cent.

The results show that changes in the IGE estimates of the different age intervals for daughters are the same as the results for sons. The IGE estimates rise from 0.24 to 0.44 for earnings, and from 0.29 to 0.48 for income. There are differences among the IGE estimates from these two sub-samples. Specifically, the increased percentages of the IGE estimates in the 30–34 sub-sample compared to the 25–29 sub-sample are 82.08 per cent and 66.21 per cent for earnings and income.

When applying Haider and Solon's (2006) rule of age selection, there is a sample limited to 182 daughters aged 30–50. The corresponding IGE estimates are found to be 0.40 and 0.45 for earnings and income as shown in Panel C. In comparison with the baseline results, these lifecycle-minimised IGE estimates are higher. In particular, the IGE estimates

Table 7. IGE estimates by different age ranges for sons

	Dependent variable (monthly, VND 1000, in the log): Sons'	
	Earnings (1)	**Income (2)**
Panel A. Sons aged 25–29		
β_1	0.34***	0.36***
	(0.05)	(0.05)
R^2	0.07	0.07
Observations	892	892
Panel B. Sons aged 30–34		
β_1	0.39***	0.46***
	(0.07)	(0.07)
R^2	0.10	0.13
Observations	317	317
Panel C. Sons aged 35–54		
β_1	0.48***	0.49***
	(0.15)	(0.17)
R^2	0.10	0.10
Observations	135	135
Panel D. Sons aged 30–50		
β_1	0.41***	0.47***
	(0.07)	(0.07)
R^2	0.09	0.11
Observations	450	450

Note: Bootstrapping standard errors (with 1000 replications) are in parentheses. Father's earnings is predicted using education, occupation, industry, and geographical region.
***, **, and * represent statistical significance at the 1%, 5%, and 10% level, respectively.

increase from 0.28 to 0.40 for earnings, and from 0.33 to 0.45 for income, equivalent to the increased proportions of 41.90 per cent and 43.23 per cent, respectively.

6. Concluding remarks

This paper uses household survey data to investigate the intergenerational mobility of earnings and income for sons and daughters in Vietnam. The baseline IGE estimates explicitly reveal that Vietnam has the intermediate degrees of both earnings and income mobility across generations for both sons and daughters by the conventional international scale of intergenerational mobility as shown in Black and Devereux (2011), and Blanden (2013). These results indicate that Vietnam has comparatively the same mobile position as Japan (Lefranc *et al.*, 2014), Taiwan (Kan *et al.*, 2015), and South Korea (Kim, 2013) in Asia. Meanwhile, the results indicate that Vietnam is more mobile than other developing countries such as Brazil (Dunn, 2007), and South Africa (Hertz, 2001; Piraino, 2015).

The baseline results are highly robust when using various specifications of the first-stage model. The paper also finds the existence of age effects on the IGE estimates and this result is consistent with the literature. Apparently, this paper provides more empirical evidence for the literature of intergenerational mobility in developing countries and Vietnam as well.

Last three decades have witnessed the impressive transition of Vietnam's economy from the planning system to the market-oriented one with the increasing integration into the

Table 8. IGE estimates by different age ranges for daughters

	Dependent variable (monthly, VND 1000, in the log): Daughters'	
	Earnings (1)	**Income (2)**
Panel A. Daughters aged 25–29		
β_1	0.24***	0.29***
	(0.07)	(0.07)
R^2	0.04	0.05
Observations	450	450
Panel B. Daughters aged 30–34		
β_1	0.44***	0.48***
	(0.14)	(0.14)
R^2	0.10	0.10
Observations	149	149
Panel C. Daughters aged 30–47		
β_1	0.40***	0.45***
	(0.11)	(0.12)
R^2	0.10	0.10
Observations	182	182

Note: Bootstrapping standard errors (with 1000 replications) are in parentheses. Fathers' earnings is predicted using education, occupation, industry, and geographical region.
***, **, and * represent statistical significance at the 1%, 5%, and 10% level, respectively.

international economy (Irvin, 1995). During this period, Vietnamese labour markets also have reformed and more actively functioned in the context of the emergence of other economic sectors including the private and the foreign investment sectors in addition to the traditional state sector. The transition has created more jobs and economic opportunities for many Vietnamese workers to improve their earnings and income and escape poverty (Sakellariou and Fang, 2014) relatively compared to their previous generations who had lived in an isolated economy.

Moreover, over the last decades Vietnam made educational reforms providing more opportunities for its citizens to access to schooling and thus to improve educational outcomes which in turn has advanced economic outcomes for the next generations compared to their parents (Cornelissen and Dang, 2019; Dang, 2018, 2019). Therefore, many Vietnamese labourers have upwardly moved in the ladder of income compared to their parents' economic status, and then the relative degree inequality of opportunity in Vietnam is not low compared to other developing countries which have the similar context of development like Vietnam. This is likely an appropriate explanation for the intermediate positions of intergenerational mobility for Vietnam found from this paper.

Although providing the estimates for the intergenerational elasticities of earnings and income in Vietnam, this paper has several limitations. First, it is important to note that this paper does not take into account for internal migration which may affect local economic development (Dang *et al*., 1997) and thus may affect the estimates of intergenerational mobility. Moreover, by showing how migration among regions, in particular immigration from rural to urban areas, affects intergenerational mobility, we may know better the mechanisms behind possible geographical differences in economic mobility across generations in addition to other factors such as economic and education reforms as discussed above. Regional differences in intergenerational economic mobility are likely

because evidence shows that there is a difference in intergenerational mobility between rural and urban areas on other outcomes such as occupation (for example, Emran and Shilpi, 2011). Unfortunately, the available data would not allow this study to examine such an issue. Finally, this study does not produce the intergenerational mother-offspring elasticities of earnings and income. This is because although Vietnamese women have a high rate of the labor market participation (Banerji *et al*., 2018), they have a large share involving in informal employment (McCaig and Pavcnik, 2015). Working with informal jobs leads to the lack of exact information on mothers' earnings and income information in the household survey which is an important obstacle for producing the precise estimates of the intergenerational elasticities for mothers and children.

Appendix

Figure A1. The distribution of sons' age in the primary sample.

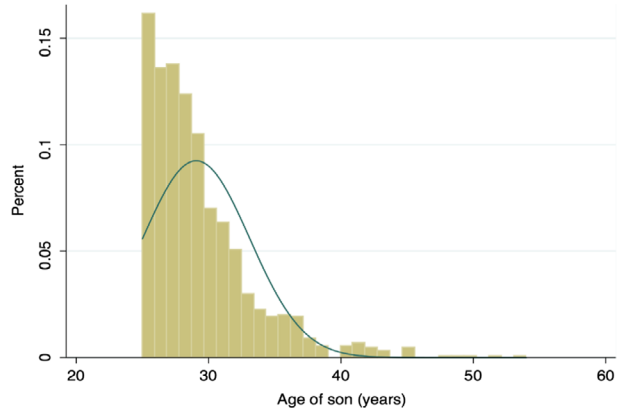
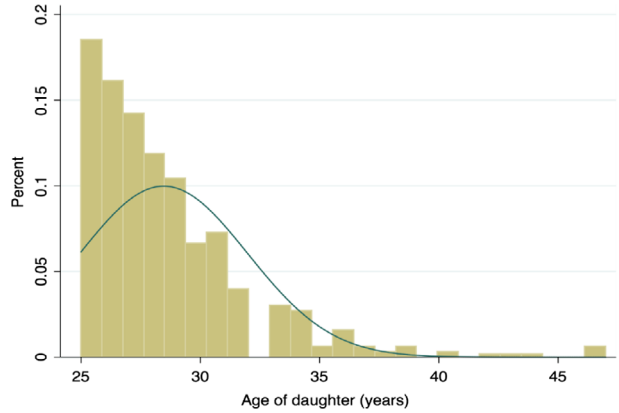


Figure A2. The distribution of daughters' age in the primary sample.



Notes

[1] In addition to occupation, education can be used as another measure of socio-economic status in intergenerational social mobility studies (Bauer and Riphahn, 2009; Binder and Woodruff, 2002; Organization for Economic Co-operation and Development, 2003).

[2] Other measures of economic status used in the literature include wealth (Asadullah, 2012; Charles and Hurst, 2003), and consumption expenditure (Aughinbaugh, 2000; Charles *et al*., 2014; Waldkirch *et al*., 2004).

[3] For previous intensive surveys, see Björklund and Jäntti (2009), Black and Devereux (2011), Blanden (2013), Corak (2006), and Solon (2002).

[4] The TS2SLS is first developed by Björklund and Jäntti (1997) to estimate intergenerational earnings mobility in Sweden and the United States.

[5] The findings of the returns to schooling levels in this study are highly consistent with the estimates from other papers which also use the same datasets (the VLSS of 1997–98) in terms of both the sign and the maginitude, for example Liu (2006).

References

Aaronson D. and Mazumder B. (2008) 'Intergenerational Economic Mobility in the US: 1940–2000', *Journal of Human Resources* 43: 139–172.

Adger W. N. (1999) 'Exploring Income Inequality in Rural, Coastal Viet Nam', *Journal of Development Studies* 35: 96–119.

Angrist J. D. and 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.

Asadullah M. N. (2012) 'Intergenerational Wealth Mobility in Rural Bangladesh', *Journal of Development Studies* 48: 1193–1208.

Atkinson A. B. (1981) 'On Intergenerational Income Mobility in Britain', *Journal of Post Keynesian Economics* 3: 194–218.

Atkinson A. B., Maynard A. K. and Trinder C. G. (1983) *Parents and Children: Incomes in Two Generations*, London: Heinemann.

Aughinbaugh A. (2000) 'Reapplication and Extension: Intergenerational Mobility in the United States', *Labour Economics* 7: 785–796.

Aydemir A., Chen W. and Corak M. (2009) 'Intergenerational Earnings Mobility Among the Children of Canadian Immigrants', *Review of Economics and Statistics* 91: 377–397.

Banerji A., Gjonbalaj A., Hlatshwayo S. and Le A. V. (2018) 'Asian Women at Work: As Women Advance in Asia's Labour Force, Vietnam is a Standout', *Finance and Development* 55: 12–17.

Bauer P. and Riphahn R. T. (2009) 'Age at School Entry and Intergenerational Educational Mobility', *Economics Letters* 103: 87–90.

Bhattacharya D. and Mazumder B. (2011) 'A Nonparametric Analysis of Black– White Differences in Intergenerational Income Mobility in the United States', *Quantitative Economics* 2: 335–379.

Binder M. and Woodruff C. (2002) 'Inequality and Intergenerational Mobility in Schooling: The Case of Mexico', *Economic Development and Cultural Change* 50: 249–267.

Björklund A. and Chadwick L. (2003) 'Intergenerational Income Mobility in Permanent and Separated Families', *Economics Letters* 80: 239–246.

Björklund A. and Jäntti M. (1997) 'Intergenerational Income Mobility in Sweden Compared to the United States', *American Economic Review* 87: 1009–1018.

Björklund A. and Jäntti M. (2009). 'Intergenerational Income Mobility and the Role of Family Background' in Nolan B., Smeeding T. and Salverda W. (eds.) *Oxford Handbook of Economic Inequality*, New York: Oxford University Press: 491–521.

Black S. E. and Devereux P. J. (2011). 'Recent Developments in Intergenerational Mobility' in Ashenfelter O. and Card D. (eds.) *Handbook of Labor Economics*, Amsterdam: North-Holland: 1487–1541.

Blanden J. (2013) 'Cross-Country Rankings in Intergenerational Mobility: A Comparison of Approaches From Economics and Sociology', *Journal of Economic Surveys* 27: 38–73.

Bratberg E., Nilsen Ø. A. and Vaage K. (2005) 'Intergenerational Earnings Mobility in Norway: Levels and Trends', *Scandinavian Journal of Economics* 107: 419–435.

Cervini-Plá M. (2014) 'Intergenerational Earnings and Income Mobility in Spain', *Review of Income and Wealth* 61: 1–17. forthcoming.

Chadwick L. and Solon G. (2002) 'Intergenerational Income Mobility Among Daughters', *American Economic Review* 92: 335–344.

Charles K. K. and Hurst K. (2003) 'The Correlation of Wealth Across Generations', *Journal of Political Economy* 111: 155–182.

Charles K. K., Danziger S., Li G. and Schoeni R. (2014) 'The Intergenerational Correlation of Consumption Expenditures', *American Economic Review* 104: 136–140.

Chetty R., Hendren N., Kline P. and Saez E. (2014a) "Where is the Land of Opportunity? The Geography of Intergenerational Mobility in the United States', *Quarterly Journal of Economics* 129: 1–71. forthcoming.

Chetty R., Hendren N., Kline P., Saez E. and Turner N. (2014b) 'Is the United States Still a Land of Opportunity? Recent Trends in Intergenerational Mobility', *American Economic Review* 104: 141–147.

Corak M. (2006). 'Do Poor Children Become Poor Adults? Lessons from a Cross Country Comparison of Generational Earnings Mobility'. IZA Discussion Papers No. 1993, Institute for the Study of Labor (IZA).

Corak M. (2013a) 'Income Inequality, Equality of Opportunity, and Intergenerational Mobility', *Journal of Economic Perspectives* 27: 79–102.

Corak M. (2013b) 'Inequality from Generation to Generation: The United States in Comparison' in Rycorft R. S. (ed.) *The Economics of Inequality, Poverty, and Discrimination in the 21st century*, Santa Barbara: ABc–cLIO: 107–123.

Corak M. and Heisz A. (1999) 'The Intergenerational Earnings and Income Mobility of Canadian Men: Evidence From Longitudinal Income Tax Data', *Journal of Human Resources* 34: 504–533.

Cornelissen T. and Dang T. (2019) 'Does Compulsory Schooling Raise Investments in the Human Capital of the Next Generation? Evidence from Vietnam'. Working Paper.

Dang T. (2018) 'Do the More Educated Utilize More Health Care Services? Evidence From Vietnam Using a Regression Discontinuity Design', *International Journal of Health Economics and Management* 18: 277–299.

Dang T. (2019) 'Quasi-Experimental Evidence on the Political Impacts of Education in Vietnam', *Education Economics* 27: 207–221.

Dang A., Goldstein S. and McNally J. (1997) 'Internal Migration and Development in Vietnam', *The International Migration Review* 31: 312–337.

Dearden L., Machin S. and Reed H. (1997) 'Intergenerational Mobility in Britain', *Economic Journal* 107: 47–66.

Dinh Q. X. (2000) 'The Political Economy of Vietnam's Transformation Process', *Contemporary Southeast Asia* 22: 360–388.

Dunn C. E. (2007) 'The Intergenerational Transmission of Lifetime Earnings: Evidence From Brazil', *The B.E. Journal of Economic Analysis and Policy* 7: 1935–1682.

Emran M. S. and Shilpi F. (2011) 'Intergenerational Occupational Mobility in Rural Economy: Evidence From Nepal and Vietnam', *Journal of Human Resources* 20: 427–458.

Ferreira S. G. and Veloso F. A. (2006) 'Intergenerational Mobility of Wages in Brazil', *Brazilian Review of Econometrics* 26: 181–211.

Fortin N. M. and Lefebvre S. (1998). 'Intergenerational Income Mobility in Canada' in Corak M. (ed.) *Labour Markets, Social Institutions, and the Future of Canada's Children*, Ottawa: Statistics Canada: 51–64.

Glewwe P., Agrawal N. and Dollar D. (2004) *Economic Growth, Poverty, and Household Welfare in Vietnam*, Washington: World Bank.

Gong H., Leigh A. and Meng X. (2012) 'Intergenerational Income Mobility in Urban China', *Review of Income and Wealth* 58: 481–503.

Grawe N. D. (2006) 'Lifecycle Bias in Estimates of Intergenerational Earnings Persistence', *Labour Economics* 13: 551–570.

Gustafsson B. (1994) 'The Degree and Pattern of Income Immobility in Sweden', *Review of Income and Wealth* 40: 67–85.

Haider S. and Solon G. (2006) 'Life-Cycle Variation in the Association Between Current and Lifetime Earnings', *American Economic Review* 96: 1308–1320.

Haughton J. (2001). 'Introduction: Extraordinary Changes' in Haughton J., Haughton D. and Nguyen P. (eds.) *Living Standards During an Economic Boom: The Case of Vietnam*, Hanoi: UNDP and Statistical Publishing House: 9–32.

Hertz T. N. (2001) 'Education, Inequality and Economic Mobility in South Africa', Unpublished doctoral dissertation, University of Massachusetts, Boston.

Hirvonen L. H. (2008) 'Intergenerational Earnings Mobility Among Daughters and Sons: Evidence From Sweden and a Comparison With the United States', *American Journal of Economics and Sociology* 67: 777–826.

Hout M. (1988) 'More Universalism, Less Structural Mobility: The American Occupational Structure in the 1980s', *American Journal of Sociology* 93: 1358–1400.

Imbert C. (2013) 'Decomposing the Labor Market Earnings Inequality: The Public and Private Sectors in Vietnam, 1993–2006', *World Bank Economic Revew* 27: 55–79.

Inoue A. and Solon G. (2010) 'Two-Sample Instrumental Variables Estimators', *Review of Economics and Statistics* 92: 557–561.

Irvin G. (1995) 'Vietnam: Assessing the Achievements of Doi Moi', *Journal of Development Studies* 31: 725–750.

Kan K., Li I. and Wang R. (2015) 'Intergenerational Income Mobility in Taiwan: Evidence From TS2SLS and Structural Quantile Regression', *The B.E Journal of Economic Analysis and Policy* 15: 257–284.

Kim S. (2013). 'Intergenerational Earnings Mobility in Korea'. Department of Economics Working Paper, Michigan State University, Lansing.

Krueger Alan. B. (2012) 'The Rise and Consequences of Inequality in the United States', White House. https://www.whitehouse.gov/sites/default/files/krueger_cap_speech_final_remarks.pdf accessed 3 March, 2015.

Lee Y. S. (2014) 'Exams, Districts, and Intergenerational Mobility: Evidence From South Korea', *Labour Economics* 29: 62–71.

Lefranc A. and Trannoy A. (2005) 'Intergenerational Earnings Mobility in France: Is France More Mobile Than the US?', *Annales d'Economie et de Statistique* 78: 57–77.

Lefranc A., Ojima F. and Yoshida T. (2010) 'The Intergenerational Transmission of Income and Education: A Comparison of Japan and France' in Dronkers J. (ed.) *Quality and Inequality of Education: Cross-National Perspectives*, Dordrecht, The Netherlands: Springer: 229–253.

Lefranc A., Ojima F. and Yoshida T. (2014) 'Intergenerational Earnings Mobility in Japan Among Sons and Daughters: Levels and Trends', *Journal of Population Economics* 27: 91–134.

Liu A. Y. C. (2006) 'Changing Wage Structure and Education in Vietnam, 1992-98', *Economics of Transition* 14: 681–706.

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.

Mazumder B. and Acosta M. (2015) 'Using Occupation to Measure Intergenerational Mobility', *Annals* 657: 174–193.

McCaig B. and Pavcnik N. (2015) 'Informal Employment in a Growing and Globalizing Low-Income Country', *American Economic Review* 105: 545–550.
Mocetti S. (2007) 'Intergenerational Earnings Mobility in Italy', *The B.E. Journal of Economic Analysis and Policy* 7: 1935–1682.
Ng I. Y. (2007) 'Intergenerational Income Mobility in Singapore', *The BE Journal of Economic Analysis and Policy* 7: 1935–1682.
Ng I. Y. (2013) 'The Political Economy of Intergenerational Income Mobility in Singapore', *International Journal of Social Welfare* 22: 207–218.
Ng I. Y., Shen X. and Ho K. W. (2009) 'Intergenerational Earnings Mobility in Singapore and the United States', *Journal of Asian Economics* 20: 110–119.
Nguyen B. T., Albrecht J. W., Vroman S. B. and Westbrook M. D. (2007) 'A Quantile Regression Decomposition of Urban–Rural Inequality in Vietnam', *Journal of Development Economics* 83: 466–490.
Nicoletti C. and Ermisch J. F. (2008) 'Intergenerational Earnings Mobility: Changes Across Cohorts in Britain', *The B.E. Journal of Economic Analysis and Policy* 7: 1935–1682.
Nilsen Ø. A., Vaage K., Aakvik A. and Jacobsen K. (2012) 'Intergenerational Earnings Mobility Revisited: Estimates Based on Lifetime Earnings', *Scandinavian Journal of Economics* 114: 1–23.
Núñez J. I. and Miranda L. (2010) 'Intergenerational Income Mobility in a Less-Developed, High-Inequality Context: The Case of Chile', *The B.E. Journal of Economic Analysis and Policy* 10: 1935–1682.
Organization for Economic Co-operation and Development (2003) 'Literacy Skills for the World of Tomorrow: Further Results from PISA 2000'. http://www.oecd.org/edu/school/2960581.pdf (accessed 3 January, 2015).
Österberg T. (2000) 'Intergenerational Income Mobility in Sweden: What do Tax-Data Show?', *Review of Income and Wealth* 46: 421–436.
Piketty T. (2014) *Capital in the Twenty-First Century*, Cambridge: Harvard University Press.
Piketty T. (2015) 'About Capital in the Twenty-First Century', *American Economic Review: Papers and Proceedings* 105: 1–6.
Piraino P. (2007) 'Comparable Estimates of Intergenerational Income Mobility in Italy', *The B.E Journal of Economic Analysis and Policy* 7: 1935–1682.
Piraino P. (2015) 'Intergenerational Earnings Mobility and Equality of Opportunity in South Africa', *World Development* 67: 396–405.
Sakellariou C. and Fang Z. (2014) 'The Vietnam Reforms, Change in Wage Inequality and The Role of The Minimum Wage', *Economics of Transition* 22: 313–340.
Solon G. (1992) 'Intergenerational Income Mobility in the United States', *American Economic Review* 82: 393–408.
Solon G. (1999) 'Intergenerational Mobility in the Labor Market' in Ashenfelter O. and Card D. (eds.) *Handbook of Labor Economics*, Amsterdam: North-Holland: 1761–1800.
Solon G. (2002) 'Cross-Country Differences in Intergenerational Earnings Mobility', *Journal of Economic Perspectives* 16: 59–66.
Sun F. and Ueda A. (2015) 'Intergenerational Earnings Mobility in Taiwan', *Economics Bulletin* 35: 187–197.
Torche F. (2015) 'Analyses of Intergenerational Mobility: An Interdisciplinary Review', *Annals* 657: 37–62.
Ueda A. (2009) 'Intergenerational Mobility of Earnings and Income in Japan', *The BE Journal of Economic Analysis and Policy* 9: 1–25.
Ueda A. (2013) 'Intergenerational Mobility of Earnings in South Korea', *Journal of Asian Economics* 27: 33–41.
Waldkirch A., Ng S. and Cox D. (2004) 'Intergenerational Linkages in Consumption Behavior', *Journal of Human Resources* 39: 355–381.

van de Walle D. and Gunewardena D. (2001) 'Sources of Ethnic Inequality in Viet Nam', *Journal of Development Economics* 65: 177–207.

World Bank (2001) 'Vietnam Living Standards Survey (VLSS), 1997–98: Basic Information,' World Bank. http://siteresources.worldbank.org/INTLSMS/Resources/3358986-1181743055198/3877319-1181827303756/vn98bifBasicInformation.pdf (accessed 12 December, 2014).

World Bank (2013) *Well Begun, Not Yet Done: Vietnam's Remarkable Progress on Poverty Reduction and the Emerging Challenges*, Washington: The Work Bank.

World Bank (2014) *Taking Stock: An Update on Vietnam's Recent Economic Developments*, Hanoi: The World Bank.

Zimmerman D. J. (1992) 'Regression Towards Mediocrity in Economic Stature', *American Economic Review* 82: 409–429.