Trade liberalisation and intra-household poverty in Vietnam: a q2 social impact analysis

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July 2007

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Draft only

Abstract
Following extensive economic and market reforms and more than a decade of negotiations, Vietnam became the latest country to accede to the World Trade Organization in November 2006. While it is expected that greater liberalisation will boost Vietnam's economic growth and contribute to the country's ongoing transition towards a market economy, there are concerns about potentially negative impacts on vulnerable sectors of the population, including remote rural populations, women and children. In order to explore the possible impacts of Vietnam's trade liberalisation on children in poor communities, this paper examines key mediating factors that impact child welfare and the ways that trade liberalisation could affect these variables. It focuses on three key aspects of child well-being – child work (domestic and extra-household), educational attainment and health status. It applies a mixed methods approach: econometrics analysis using data from the first wave of the Young Lives Vietnam longitudinal survey on childhood poverty combined within in-depth qualitative analysis of two key agricultural commodity sectors, aquaculture and sugarcane, that are expected to be significantly impacted by Vietnam's integration into the world economy.

Our main quantitative findings point to significant differences in child well-being outcomes based on ethnicity, household poverty status and vulnerability to declining living standards, parental (especially maternal) education levels, children's involvement in work activities, and access to public services. Our qualitative findings highlight the implications of caregivers' shifting time inputs to productive and care economy work on child well-being, familial coping strategies in the context of economic shocks, the importance of social capital in mediating economic opportunities as well as differences in livelihood patterns among majority and minority ethnic groups. The paper concludes by discussing why mixed methods research can play an important role in focusing greater policy attention on the linkages between economic globalisation and children's experiences of poverty.

CONTENTS

1. Introduction

Linkages between trade, growth and poverty reduction are coming under increasing global scrutiny by a broad array of policy and civil society actors. The collapse of the WTO Doha Development Round—which had once been heralded as an opportunity to advance a more equitable approach to trade reforms—in June 2006 starkly illustrated the contentious nature of these debates. An emerging body of empirical evidence suggests that although in the medium to long-term trade reforms may result in improved growth, trade liberalisation alone is insufficient to reduce poverty and inequality (e.g. Winters et al, 2004; Boussolo and Nicita, 2005). Instead complementary policies—not only policies on competitiveness, investment climate and infrastructure but also policies that consider the social dimensions of trade reforms such as social protection—are necessary (e.g. McCulloch et al., 2004). Attention to country contexts is particularly critical: case study research suggests that there is considerable scope to develop policies to mitigate the adverse impacts of trade liberalisation and promote a more equitable distribution of the positive effects but a one-size-fits-all approach is neither technically nor politically feasible (Edwards, 2001; Polaski 2006). Rather the development of effective pro-poor trade policy approaches necessitates an understanding not only of the diverse impacts of trade reforms on different households—depending on, for example, whether households are net producers or net consumers, their rural/urban location, poverty status, labour market positioning[2]—but also on different household members. Gender analysts have for instance underscored the gendered impacts of trade liberalisation, which are linked to the gendered composition of the labour market, (un)equal access to credit markets and legal rights regarding land title and ownership and cultural norms and practices related to the intra-household division of labour, assets and decision-making (Senapaty 2003; Kabeer, 2003). However, to date little attention has been paid to the potential impacts on child well-being.

This represents a significant lacuna for several reasons. First, a broader body of literature emphasizes that childhood poverty cannot simply be deduced from household poverty but is also shaped by intra-household distribution of power and resources (e.g. Tisdell, 2002; Marshall, 2003). Second, addressing the particular vulnerabilities faced by children living in poverty may be important for tackling life-course and intra-generational poverty transfers. Economic shocks experienced as an infant or child may have lasting impacts on human capital development (e.g. Waddington, 2004; Harper at al., 2003). Lastly, children under 18 years constitute approximately 37 percent of the population in developing countries and 49 percent of the population in least developed countries (UNICEF, 2005:12) so to consider the impacts of macro-economic reforms on poverty reduction without specific attention to childhood poverty effects risks neglecting a very significant proportion of the poor. Accordingly, the aim of this paper is to explore potential pathways through which trade liberalisation may impact intra-household poverty and to highlight related policy challenges.

The analysis focuses on Vietnam, which is undergoing an important trade reform process. Although a low income country, Vietnam has experienced rapid economic growth and a substantial reduction in poverty over the last two decades following the *Doi Moi* reforms of 1986. After 11 years of market restructuring and lengthy negotiations, the country became the latest member of the WTO in November 2006. However, few social

impact analyses of this trade liberalisation process have been undertaken to date (e.g. Hague and Nguyen, 2005), but are urgently needed in order to inform policy debates on Vietnam's future post-WTO accession development trajectory.[3]

Section 2 begins with a brief discussion of existing literature on macro-economic policies, including trade, and their micro-level impacts on women and children. It identifies three main pathways of influence. First, household consumption patterns can be affected by changes in prices of goods and services. In the case of children, particular concerns relate to modifications in the household food basket and children's nutritional intake (e.g. Wagstaff and Ngyuen, 2002; Glewwe et al., 2003); as well as families' ability to afford education and healthcare. Second, impacts on employment opportunities and wages will affect the household labour supply. The effects may differ among men, women and children, with changes in primary care-givers' time use in particular likely to have a spill-over impact on children. Research to date suggests that especially girls may have to help women shoulder productive and caring work responsibilities, with possible negative consequences on their schooling and leisure time (e.g. Kabeer, 2003). Third, while higher growth in the medium term may increase fiscal revenue, reductions in tariffs can have a negative short-term impact on fiscal revenue and translate into social expenditure cuts. This could have a negative impact on access to quality services, especially among rural and poor households (e.g. Mehrotra, 2002).

These impacts are explored through a mixed methods approach. Section 3 overview the methodology which includes an econometric analysis drawing on household survey data facilitates the identification of broad patterns of impact, while complementary indepth qualitative research from two provinces (Phu Yen and Ben Tre) allows us to unpack underlying intra-household and community dynamics.[4]

Section 4 presents the key quantitative findings, paying particular attention to individual age, gender and ethnic differences; household livelihood and risk mitigation variables; as well as community infrastructure and institutional factors. The complementary qualitative findings are discussed in Section 5.

Section 6 discusses the policy implications of our results and the challenges involved in ensuring that trade policies are not just pro-poor but also gender and child-sensitive. We argue that by combining quantitative research, policy entrepreneurs will be better placed to establish credibility with policy-makers persuaded by statistical or econometric models but that qualitative methods are equally important for creating sellable and culturally resonant policy narratives, particularly at the sub-national level.

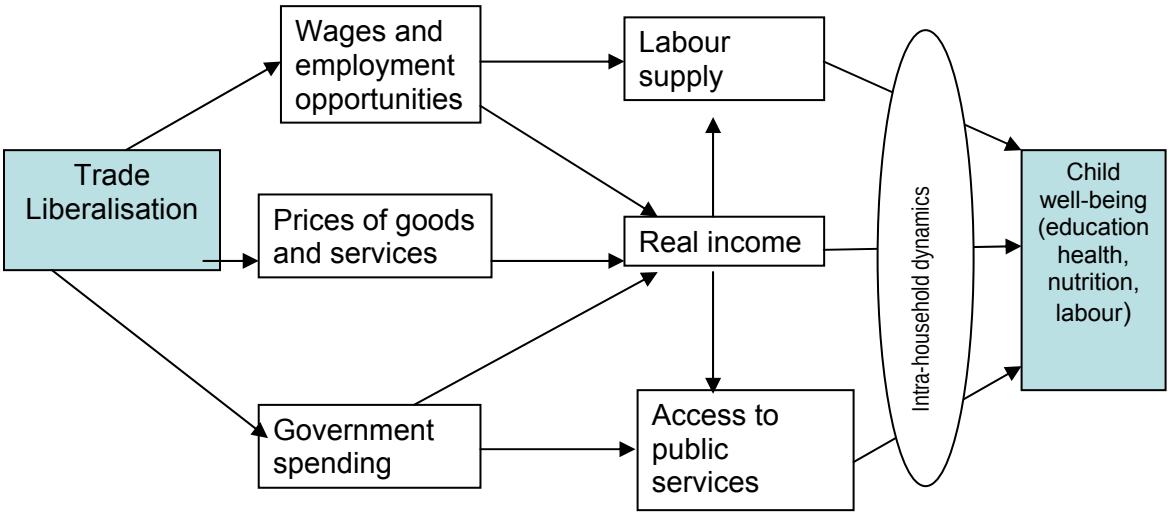
2. Conceptualising linkages between trade liberalisation & child well-being

2.1 Children and macro-micro linkages

The mechanisms through which globalisation in general and trade liberalisation in particular affects poverty are complex. Neither trade liberalisation nor poverty are not easily measured and trade liberalisation takes place in tandem with other macro-economic reforms (e.g. Winters *et al.*, 2002). Analysing the disaggregated effects of macro-policy changes within the household is even more challenging (Waddington, 2004; Anderson et al., 2005). Measures that either aggravate or ameliorate aggregate household poverty may have diverse impacts on men and women, girls and boys. Intra-household differences are dependent upon social and legal factors including the gendered composition of the labour market, (un)equal access to credit markets and legal rights regarding land title and ownership, inheritance, etc and cultural norms and practices surrounding the intra-household division of labour, assets and decision-making (e.g., Ansell, 2005; Kabeer, 2003, Folbre, 2002).

In order to capture these complexities, this paper employs a modified version of a framework elaborated by Waddington (2004) and Andersen et al., (2005). The framework identifies three key pathways of influence between trade liberalisation and child well-being: (a) the effects of policy changes on a country's trade regime and, in turn, on wages and employment opportunities, prices of goods and services and government expenditure patterns; (b) the effects of these macro-economic variables on household income, labour supply, and access to public services; and (c) the impact of these household-level variables on child well-being (mediated by the intra-household division of power and resources, the division of labour and preferences/values). (See Figure 1 below). First, household consumption patterns may be affected by changes in prices of goods and services.[5] In the case of children, particular concerns relate to modifications in the household food basket and children's nutritional intake (e.g. Wagstaff and Ngyuen, 2002; Glewwe et al., 2003); as well as families' ability to afford education and healthcare. Second, impacts on employment opportunities and wages have implications for the household labour supply. The effects may differ among men, women and children, with changes in primary care-givers' time use in particular likely to have a spill-over impact on children. Research to date suggests that especially girls may have to help women shoulder both productive and caring work responsibilities, with possible negative consequences on their schooling and leisure time (e.g. Kabeer, 2003). Third, while higher growth in the medium term may increase fiscal revenue, reductions in tariffs can have a negative short-term impact on fiscal revenue and translate into social expenditure cuts.[6] This could have a negative impact on children's access to quality services, especially children from rural and poor households (e.g. Mehrotra, 2002).

Figure 1: Linkages between trade liberalisation and child welfare
Adapted from Waddington (2004) and Anderson *et al.* (2005)



2.2 Children and liberalisation in Vietnam

Trade liberalisation and the pursuit of integration into the regional and world economy have played a pivotal role in Vietnam's rapid and successful economic reform process. Since the inception of the *Doi Moi* policy in 1986, the trade policy regime in Vietnam has undergone significant changes, in terms of (a) lifting restrictions on trading rights (the right to import and export); (b) reductions in non-tariff-related trade barriers and (c) tariff reductions.[7] Although trade liberalisation has led to improved welfare for the poor (Benjamin and Brandt, 2002) and has not significantly exacerbated inequality (Seshan, 2004, 2005 McCarty and Tran, 2003), as Salazar (2006) emphasises, there have been few analyses of how these economic policy changes have impacted childhood poverty in Vietnam. Existing evidence suggests though that:

> *"the poorest and marginalised groups in society benefit least from trade liberalisation and are at the highest risk of suffering further deterioration of their living conditions. Price fluctuations and subsequent changes in family income are important factors which determine fulfilment or non-fulfillment of child rights in this context" (211).*

In terms of the specific components of Vietnam's WTO accession likely to impact childhood well-being outcomes, Salazar (ibid) argues that we need to pay particular attention to i) the Agreement on Agriculture aimed at liberalisation of the agricultural sector due to its potential impacts on children's right to an adequate standard of living and the right to food and nutrition, ii) the Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS) which may reduce poor families access to inexpensive medical drugs and thus jeopardise their right to health and iii) the General Agreement on Trade in Services (GATS) which could lead to a dual tier of basic social service provision that disadvantages poor children's access to their social rights (200).

With this in mind, this section briefly outlines what we do know about children and the transition to a market economy in Vietnam, and then presents a set of hypotheses based on the general and Vietnam-specific literature which are then examined through our mixed methods approach.

Child work

Recently the potential impact of globalisation on the incidence of child labour has attracted attention from both the Vietnamese public and academics. Although there is consensus that poverty is a key contributing factor (Basu 2004, and Basu and Van 1998, Neumayer and Soysa, 2005 Edmonds and Pacvnik, 2004a and b), too little is yet known about how trade liberalisation will affect children's engagement in work.

As argued by Edmonds (2003a and b), child poverty in general and child labour in particular is a problem of household poverty. Children from better-off families would have a lower probability of having to work to contribute to household consumption. Parents' own schooling may influence whether they send their children to school or to work. The education level of parents is likely to be closely related to the amount of parental encouragement with respect to investment in education received by their children. Children born to more highly educated parents are expected to have a greater chance of schooling than of working. We expect child labour to be negatively related to the level of parental education.

Recent empirical literature (Rosati and Tzannatos, 2000) has shown the importance of the household structure and of the presence of siblings for child work decisions. The

number of siblings in the family may affect the probability of a child working, going to school or doing domestic chores. The importance of this variable derives from a belief that there is a trade-off between child quality and quantity. Families are seen as solving a constrained maximisation problem. Families' utility is maximised with respect to the quantity and quality of children as well as other 'goods', but constrained by financial resources and time. The trade-off exists since parents' resources and time are limited and must be spread more thinly with more children (e.g., Becker and Tomes, 1979, Behrman and Knowles, 1999, Hanushek, 1992). Children within a family are assumed to compete for scarce resources and parents are assumed to allocate time and other resources to maximise the objective function. The theory implies that a reduction in the number of children will free resources for current consumption (of both parents and children). If this reduction is large enough, parents will transfer some surplus resources to future consumption, by reducing the labour supply of their children.

Child education

Education is an important investment in human capital and endows children with the means to improve their skills, knowledge, health and future real incomes (e.g., Becker, 1962). Human capital can be broadly defined as 'an individual's productive skills, talents, and knowledge' (Thurow, 1970: 1) and people invest in human capital to benefit from it in both monetary and non-monetary terms. Vietnam has a long tradition of respect for education and its 90 per cent literacy rates and school enrolment levels were among the highest in Southeast Asia in the 1980s (Swinkels and Turk, 2003). However, during the mid-1990s, school enrolment levels declined, and there were high drop-out rates in the final years of primary school.[8] Some attribute this falling enrolment and rising drop-out rates to economic reforms which resulted in a shrinking education budget and led to a rise in private tuition (Liu, 2001a; Hong, 2000). Vo and Trinh (2004) point out that budget constraints are hindering improvements in the quality of education and training systems in Vietnam. However, recently there has been significant improvement in drop-out rates, which have decreased from 27.7 per cent in 1993 to 12.4 per cent in 2002 (Vo and Trinh, 2004).

Child health

Trade liberalisation and market openness are expected to bring about improved life quality through increased income, greater employment opportunities, better choice of goods and services, including healthcare, through greater market opportunities and competition. But trade liberalisation may also have painful consequences for some groups of the population. On the one hand, greater openness to the international economy may lead to an increase in public demand for government safety nets, and children's health status may benefit from this if these government safety nets are targeted at health. Higher economic growth might also increase the government's tax revenue, which could facilitate an increase in spending on children's health. On the other hand, however, trade liberalisation might affect children's health by influencing the degree to which governments are willing and able to fund public health. Before *Doi Moi*, district hospitals and commune-level health centres provided medical services and essential drugs free of charge. However, as a consequence of liberalisation of the health sector (with the emergence of private hospitals and clinics) and a decrease in government budget support, the public health system deteriorated because of the exodus of thousands of doctors and health workers. By 1991, commune-level health centres were not working (Hong, 2000). According to the World Bank, 'the shortage of funds to the health centre is so acute; it is unclear where the grassroots facilities are going to find the inputs to continue functioning in the future' (cited in Hong, 2000).[9]

However, the situation has improved thanks to the sustained GDP growth rate at over seven per cent and the new State Budget Law which was passed in 2004. According to Tran (2005), the government has given priority to improving the rural healthcare system. Official statistics show that Vietnam spends around five to six per cent of GDP on health expenditure. The share of government health spending at the local level (provincial and below) has also increased (Adam, 2005).

Hypotheses

Our hypotheses regarding the possible impacts of trade liberalisation on child poverty are as follows:

1) Parental income: Trade liberalisation will lead to an increase in child labour if the effect of liberalisation is to increase demand in labour-intensive sectors. However, there is also likely to be an income effect above a certain threshold – if household incomes rise sufficiently, this surplus income may be used to invest in child schooling and to substitute child labour (e.g. Edmonds and Pavcnik, 2004).[10] Because the school day in Vietnam lasts only half a day, this is likely to affect the quality rather than quantity of children's education.

It is expected that children from female-headed households will be worse off than those with male household heads, owing to the feminisation of poverty, and this may therefore affect the probability of children being involved in chores or extra-household work.

If trade liberalisation leads to increasing demand for women's paid labour, children's—especially daughters'--involvement in care economy work may increase, and potentially at the expense of their educational achievement. However, in view of Fontana (2003)'s finding that trade liberalisation gains for women are more limited in the agriculture than manufacturing sectors, we do not expect any significant shifts in women's intra-household decision making power and access to resources that could in turn benefit children.

2) Economic shocks: Trade liberalisation may lead to a decline in child wellbeing outcomes if it results in declining household living standards and no alternative coping strategies are available – e.g. diversification or credit or social protection. We expect that the negative event may compel a child to move from schooling to work activities. As argued by Rosati and Tzannatos (2000), if the parents are altruistic, then they may shield their children from the effects of negative events by re-allocating domestic resources. We further hypothesise that parental expenditure on children's education and health services is also likely to be reduced in the case of negative household shocks.

3) Access to services: Trade liberalisation may exacerbate social disparities and unequal access to services for children as liberalisation tends to generate both winners and losers. We hypothesise that 'losing groups'—i.e. those that are less likely to benefit from new market opportunities and greater income generation potential needed to cover increasing costs of basic services—are likely to be those that are already socially excluded, i.e. poor rural communities, ethnic minority communities and families with unskilled labour/ low education levels.

3. Research data and methodology

Mixed methods approaches

Mixed methods approaches are gaining increased currency in development studies based on the premise that the use of all available insights is likely to facilitate a better understanding of phenomena (e.g. Carvalho and White, 1997; Brannen, 2005).[11] Although labels such as 'qual-quant' or 'q-squared' or 'q-integrated' might suggest that mixed methods entails taking a quantitative method and adding a qualitative method, giving equal weight to each, there are numerous possible combinations, each with assumptions regarding the respective roles, relative importance and desired sequencing of qualitative or quantitative methods. Mixing might have different functions – to enrich or explain, initiate new hypotheses or even contradict rather than confirm or refute, perhaps even telling 'different stories' on the same subject because quantitative methods are good for specifying relationships (i.e. describing) and qualitative for explaining and understanding relationships (Thomas and Johnson, 2002:1). Combination may take place at data collection and/or data analysis stages. In order to decide on the most appropriate approach, the researcher needs to consider two questions both informed by the type of research problem, question (and/or hypothesis) under investigation. First, which is the 'dominant' method - that which will yield most of the data – qualitative or quantitative methods? Second, are methods to be mixed sequentially or simultaneously?

The analysis in this paper adapted a sequential approach, drawing its core findings from quantitative household survey data from the Young Lives Project, an international longitudinal policy-research project on childhood poverty.[12] It then explored these results in greater depth through in-depth qualitative analysis of case studies of two under-investigated export commodities which the Vietnamese government has been promoting as part of its poverty reduction strategy: shrimp aquaculture and sugarcane production.

Quantitative data and methods: Drawing on a sample of 1000 8-year old children from the Vietnam *Young Lives* 2002 survey[13], three separate econometric multinomial logit models incorporating individual child, household and community characteristics were run to analyse the impacts of changes in household income and exposure to economic shocks (proxies for trade liberalization effects) on child educational attainment[14], health (recent illness) and work (both paid work and unpaid household chores) (see Appendix 3). We adopt a modified version of the framework developed by Waddington (2004) and Anderson *et al.* (2005) to examine the impact of trade liberalisation on children. The framework traces the impacts of trade liberalisation to macro-level variables through to household level variables and finally child well-being (as discussed above). Whereas research to date on the relationship between trade liberalisation and child welfare has focused predominantly on the link between trade openness/liberalisation and child labour (Edmonds and Turk, 2004; Edmonds and Pavcnik, 2004), we also consider the potential impact on children's scholastic achievement and health status. Owing to data limitations, we pay greater attention to the link between household level variables and child well-being indicators, drawing on insights from literature on poverty and intra-household dynamics.

Qualitative data and methods: In order to better understand the underlying household and community dynamics underpinning the quantitative results, we undertook in-depth qualitative case studies of two case studies of agricultural commodities that already involve significant poor populations and which are likely to be affected by the WTO

accession in order to better understand how household and community engagement in these sectors has impacted child well-being outcomes to date.

The research sites were purposively selected due to their poverty status and high levels of household involvement in the two export commodities under study – sugarcane or shrimp aquaculture. International market integration was initiated in the late 1990s in both cases and thus the study communities have already experienced the effects of new market opportunities and threats, which are expected to continue and/or accelerate in the post-WTO accession period. In other words, while we lacked two quantitative datasets pre and post-WTO accession, we were able to explore some of the possible effects through qualitative community histories. In addition, the provincial level governments of Ben Tre and Phu Yen were already receptive to arguments about the importance of focusing on childhood poverty (compared to aggregate household poverty) due to a longer-term involvement in the broader Young Lives Project, suggesting some demand for the research findings from a key policy audience from the outset.

In each research site we employed a range of qualitative research tools. Key informant interviews with provincial and district leaders were undertaken in order to understand key policy shifts that have impacted household livelihood patterns over the last decade. These were triangulated with focus group discussions that sought to construct a community economic history. This included questions about changing income-generating opportunities and challenges, experiences of economic shocks and coping strategies, and the affordability of basic social services. In order to explore the way these changes were experienced at the household level, 25 individual and 3 small group semi-structured interviews were held separately with women, men and children/young people in each site. We purposefully included interviewees who were involved in the agricultural commodities under study (shrimp farming and sugarcane) and those who were not in order to understand the ways that diversification into new export-oriented sectors affected children's time use and well-being outcomes.

4. Economic liberalisation and child well-being impacts

4.1 Child labour – household chores and extra-household work

We use a multinomial logit model to explore the determinants of children's involvement in work and chores.[15] Whereas most research on child labour to date has focused on 'work for pay, work in formal household and work in agriculture' (Edmonds, 2005b) and ignored household domestic chores, we include household chores, because this type of work may be equally taxing on children's physical and mental health and constrain children's available time for education and leisure (e.g., Woldehanna *et al.*, 2005; Van, 2005).[16]

Table 4.1 depicts the distribution of children by their work–chore status.[17] It shows there are differences between male and female children: 18.5 per cent of boys do not work and do not do any chores within the household, while the corresponding figure for girls is only 7 per cent. Among boys engaged in work, 63 per cent are involved in domestic chores while for girls the proportion is higher – 74 per cent. Boys and girls engaged in both chores and extra-household activities account for 16.5 per cent and 18 per cent respectively.

Table 4. 1: Work–chores status of 8-year-old children

		Not work not chores	Chores but not work	Work and chores	Work not chores	Total
Male	Frequency	93	318	83	8	10000
	Percentage	18.53	63.35	16.53	1.59	100%
Female	Frequency	35	370	90	3	10000
	Percentage	7.03	74.3	18.07	0.6	100%
Total	Frequency	128	688	173	11	10000
	Percentage	12.8	68.8	17.3	1.1	100%

Note: Authors' calculation using the 2002 Young Lives 8-year-old cohort data.

The variables that may influence the probability of a child working or doing domestic chores include: (a) children's individual characteristics (gender, ethnicity and birth order); (b) household-level variables (family income[18], family structure[19], parental schooling, occupations, employment status and experience of household shocks[20]); and (c) community-level characteristics (cost of primary education, distance to school, presence of a factory, percentage of poor families in the commune, provincial dummy variables[21]) . We provide descriptive statistics in Table 4.2. in Appendix C.

The estimation results are presented in Table 4.3 in Appendix C. In terms of child characteristics, statistically there is some evidence of preference towards boys. Boys are 11 percentage points more likely than girls to be involved in neither work nor chores (j=1) and less likely to do domestic work (j=2). However, there is no evidence of preference towards boys in the third alternative, ie, combining work and chores. Ethnic differences also emerged from the data but in a surprising direction. Kinh children (KIDETHIC) were found to be more likely to be involved in domestic chores than ethnic minority children

(j=2) but less likely to be involved in the first alternative (neither work nor chores). Birth order also emerged as statistically significant – so younger children are less likely to be involved in work activities than their older siblings and more likely to engage in domestic chores.

In terms of the effects of household characteristics on children's work–chore combination, children in female-headed households (FEMALEHEAD) were found to be less likely to do domestic work (chores) only. However, they were found to be 9.3 percentage points more likely than children from male-headed families to combine chores and extra-household work.

Parental education seems to have an effect on children's engagement in work activities. It is worth noting, though, that the level of parental education in our sample is relatively low – among parents of the eight-year-old child cohort, 90 per cent of parents had only a grade 4 level education and the highest level attained was grade 9. As paternal education levels rise (DADEDU), children are more likely to be involved in chores than sit idle, whereas the variable for maternal education (MUMEDU) was not statistically significant.

Other household characteristics were included in the model to control for household size and family structure (BOYBORN, GRLBORN, NUMSIB). The number of siblings did not have any effect. The number of boys born seems to decrease the probability of children sitting idle (j=1) and increase the probability of involvement in chores (j=2). The number of girls born in the household does not have any effect on the work–chore combination.

Contrary to our hypothesis, however, the wealth index – which we used to proxy the impact of poverty on child labour – did not emerge as statistically significant, suggesting that family wealth does not affect the work–chore choice of children. In a cross-regional study, Edmonds and Turk (2004) suggest the possibility of a threshold effect operating here.[22] Similarly, in other micro-econometric studies by Woldehanna *et al.* (2005) for Ethiopia and by Dammert (2005) for Peru, there is strong evidence of nonlinearity in the relationship between wealth/income and child labour and schooling.

Other variables were also included in the model to control for family economic background such as whether the family is currently in debt, the number of rooms per house, house and land ownership. But these variables were also not statistically related to the child work–chore decision. However, given that none of these economic-related variables is a perfect substitute for income and expenditure, it seems important that in subsequent rounds of Young Lives, more detailed information on income and expenditure should be collected.

Economic shocks may influence the child work–chore decision through their impacts on the household. However, the two variables included to control for such effects – whether there is any negative event (NEGATIVEEVENT) and whether that event caused income/job loss (HHJOB) – are not statistically significant. This is a very interesting result, suggesting that in the face of negative events, families may take measures to shield their children from the adverse consequences of such shocks. While more detailed in-depth analysis of intra-household dynamics is clearly called for, in order to explore this dynamic further in this paper, we look at household responses to various shocks (see Table 4.4). Again, the results are interesting: taking children out of school to

cope with economic shocks emerged neither as a first- nor a second-choice coping response. In fact, the number of households that resorted to this measure was very small (0.33 per cent). Moreover, only a very small proportion of households consider sending their children to work as their response strategy in case of economic shocks.

Table 4.4 Response strategies by family in the case of economic shocks

	Response Strategy 1		**Response Strategy 2**		**Response Strategy 3**	
	Freq.	Per cent	Freq.	Per cent	Freq.	Per cent
Nothing	28	4.66	355	59.07	561	93.34
Sell things	17	2.83	9	1.5	-	-
Use savings	44	7.32	8	1.33	2	0.33
Use credit	226	37.6	41	6.82	2	0.33
Eat less	11	1.83	19	3.16	10	1.66
Buy less	11	1.83	14	2.33	9	1.5
Work more/start work	174	28.95	85	14.14	6	1
Take children out of school	-	-	-	-	**2**	**0.33**
Send children to work	**1**	**0.17**	**3**	**0.5**	-	-
Fled/moved away from problem	1	0.17	1	0.17	1	0.17
Migrated to work/ find work	14	2.33	3	0.5	2	0.33
Received help from relatives/friends	37	6.16	38	6.32	3	0.5
Received help from government/NGO	11	1.83	12	2	1	0.17
Insurance paid	-	-	1	0.17	2	0.33
Other: specify	26	4.33	12	2	-	-
Total	601	100	601	100	601	100

In the model, we included indicators as to whether the living standard of the household has increased (LIVEUP) or decreased (LIVEDOWN) during the last three years.[23] The estimated coefficient of the variable LIVEUP is not statistically significant, which implies that increased household living standards do not affect choices relating to children's engagement in work activities. However, the coefficient of the LIVEDOWN variable was statistically significant for alternatives 1 and 3. This result indicates that if household living standards decrease, children are 6.9 percentage points less likely to be not working or involved in chores, but at the same time the probability of children combining chores and extra-household work increases by 6.4 percentage points.

Finally, we turn our discussion to community-level variables. We hypothesised that the accessibility of school measured by physical distance to school (SCHDIS3) and financial expenses (PRIMACOST) would increase the probability of a child working. However, the estimated coefficient of this variable was not statistically significant. This may be largely attributed to the fact that only 1.2 per cent of the sample children had never attended school and just 3.3 per cent did not attend school the previous year. The proportion of poor households per community had a statistically significant effect on the probability of a child doing domestic chores but decreased the probability of a child working outside

the household. The reason may be that children in poorer communes may have fewer employment opportunities, and thus the only way they can contribute to the household livelihood is through involvement in domestic chores.

We also hypothesised that the presence of a factory close to the commune may induce children into work (either in the factory or in related supporting units), but this variable emerged as statistically insignificant.

4. 2 Children's schooling and academic attainment

In this section we focus on educational achievement among the Young Lives eight-year-old cohort as there is negligible variance in enrolment rates in our sample.[24] We look at two dimensions of achievement. First, we examine the determinants of children's scholastic achievement as measured by simple reading, writing and numeracy skills tests. Second, we look at an important and idiosyncratic feature of the Vietnamese schooling system – private tuition. Investing in private tuition is increasingly common even among poor households, as indicated in Table 4.2.1. We believe that this is a useful indicator of households' willingness to invest in the human capital development of their children.

We also assume that the impacts of trade liberalisation on child welfare will be channelled through household- and/or community-level variables. If trade liberalisation leads to income growth and increased fiscal spending on educational facilities, then we expect positive impacts on child well-being. In addition, we also address the question raised in the previous section as to whether child labour has adverse consequences on other dimensions of children well-being, namely educational attainment and school attendance.

Economic literature that models educational achievement is embedded in human capital theory and the household production model first introduced by Becker (1962) and later developed further by Leibowitz (1974), Becker and Tomes (1979, 1986) and Hanushek (1979, 1986). The educational production function has become the main construct of the empirical literature to identify the relative importance of measurable educational inputs. Analogous to factory production, this framework relates contemporaneous child cognitive attainment with educational inputs from within the family and school. Family background is considered important because parents with more resources are more able to invest in their children.[25]

Table 4.2.1 School attendance and private tuition

Ever attend school		**Attend school last year**		**Receive private tuition**	
Frequency	Per cent	Frequency	Per cent	Frequency	Per cent
12	1.2	33	3.31	525	52.5
988	98.8	964	96.69	475	47.5

Source: Young Lives Vietnam 2002

In terms of scholastic achievement, Table 4.2.2 provides descriptive statistics on children's numeracy, literacy and writing skills. Numeracy is measured as a binary

variable indicating whether the child can complete a simple numerical task, with 66 per cent of the respondent children getting the answer right. Reading and writing skills are measured on an ordinal scale. Writing skills are measured on a three-level scale: (1) cannot write anything – 8.6 per cent; (2) can write with some mistakes – 17.12 per cent; and (3) can write well – 74.62 per cent. Reading skills are measured on four-level scale: (1) cannot read anything – 4.33 per cent; (2) can read letters – 3.42 per cent; (3) can read words – 4.53 per cent and (4) can read a sentence 87.73 per cent. Accordingly for private tuition and numeracy skills we use a simple binomial model.[26]

For the writing and reading skills, as they are measured on an ordinal scale, we do not observe the actual skills, rather what we observe is

$$
\begin{aligned}
y = 0 \quad & if \quad y^* \le 0 \\
= 1 \quad & if \quad 0 \prec y^* \le \mu_1 \\
= 2 \quad & if \quad \mu_1 \prec y^* \le \mu_2 \\
& .... \\
= J \quad & if \quad \mu_{J-1} \le y^*
\end{aligned}
$$

In this case, our modelling approach is also based on the latent variable model and we estimate an ordered logit model for these two educational attainment measures.

Table 4.2.2
Educational achievement as measured by writing, reading & numeracy skills tests

Writing skills (ordinal 1–3)			Reading skills (ordinal 1–4)			Numeracy skills (Binary)		
	Freq.	Per cent		Freq.	Per cent		Freq.	Per cent
Can not write	82	8.26	Can not read anything	43	4.33	Wrong	337	33.7
Write with mistake	170	17.12	Can read letter	34	3.42	Right	663	66.3
Write well	741	74.62	Can read words	45	4.53			
			Can read sentence	872	87.73			
Total	993	100		994	100		1,000	100

The choice of independent variables included in our models is shaped by the availability of data, economic theories and previous studies. Table 4.2.3 in Appendix D provides summary statistics of variables used in our regression. As before, we broadly group these variables into three groups: (a) child characteristics (gender, ethnicity, birth order); (b) household characteristics (wealth index, parental schooling, household composition,

experience of household shocks); and (c) community-level variables (costs of schooling, proportion of poor families in the commune, distance to school, provincial dummy variables).

Extra tuition

Table 4.2.4 in Appendix D presents the estimation results for the model of receiving extra tuition. We estimated two specifications, one with the inclusion of indicators for a child's involvement in labour and domestic chores and one without. We do not find any significant differences between boys and girls nor among children from different ethnic groups. This latter finding is very interesting as the raw data indicates a marked difference between the two groups. It points to the importance of controlling for family background variables when considering differences among ethnic groups.

Turning to the household level variables, the results are striking. The most significant variables are related to economic status. The variable WEALTHINDEX is statistically significant with a large magnitude. This indicates that household prosperity is an important determinant of parents investing in children's educational development. This finding is consistent with findings reported by Behrman and Knowles (1999) using the Vietnam Household Living Standard Survey 1992/93.

The variables indicating economic shocks (NEGATIVEEVENT and HHJOB), however, were not statistically significant. Nor were they with the two variables indicating changes in the living standards of the family over the previous three years (LIVEUP and LIVEDOWN). Consistent with the findings on child labour, this result suggests that families seek to shield children from the negative effects of economic shocks.

At the community level, the proportion of poor households per commune was statistically significant. This implies that in poor communes, the trend of investing in private tuition is weaker. Other variables (distance to school and the cost of primary education) were not significant statistically.

Finally, we turn to variables reflecting children's labour status (CHORESONLY, WORKCHORE). The variable CHORESONLY is negative and statistically significant, indicating that the more a child is involved in domestic chores, the less likely she/he would attend private tuition classes. However, the variable WORKCHORE is not statistically significant, although it has the expected negative sign. In short, this suggests that if trade liberalisation results in an increase in child labour (both outside employment and domestic work) it may lower children's longer-term scholastic performance by lowering their chance of attending extra classes.[27]

Educational attainment

Appendix D presents the estimation results for children's achievement in basic academic skills tests. We estimated three specifications which differ with respect to the inclusion of three variables, EXTRACLASS, WORKCHORE and CHORESONLY. We first discuss the results of specification 1. With respect to children's characteristics, there are no gender or ethnic differences on the numeracy skills test (see Table 4.2.5).

Turning to household variables, the gender of the household head and birth order were not statistically significant. Parental schooling, however, was found to have a positive impact on children's numeracy skills, although maternal education alone was not statistically significant. In terms of family structure, the number of siblings (NUMSIB) was

negative but statistically insignificant, thus not supporting the quality–quantity trade-off hypothesis. The variables indicating a decreased living standard was statistically significant although the variable indicating increased living standard was not. Perhaps the single most important determinant of child's numerical skill attainment was the WEALTHINDEX variable, reaffirming the importance of economic background in shaping children's educational achievement. Nevertheless, economic shocks did not have an impact on numeracy test scores.

At the community level, distance to school, the proportion of poor households and the average cost of education in the community were all statistically insignificant.

We now turn to specification 2, which includes an indicator for attending extra classes. However, perhaps surprisingly, additional tuition did not have any beneficial effect on numeracy skill acquisition.

Specification 3 includes two indicators for children's involvement in domestic and extra-household work activities. However, surprisingly the involvement of children in labour and chores was correlated with superior numeracy skills. An explanation for this counter-intuitive finding might be that a more able child may be more likely to be asked by his/her parents to help with work activities and/or be more likely to find a job. The argument here would be that a self-selection process is in operation, with more able children juggling both work and education. Ideally, we should model this self-selection process through a bivariate model or instrumentation. However, owing to data limitations we were unable to find an appropriate instrument for the CHORESONLY and WORKCHORES variables. Although the results should be interpreted with caution, the conclusion here is that we do not find strong evidence that child labour and domestic chores have a negative impact on the development of children's numeracy skills.

Tables 4.2.6 and 4.2.7 in Appendix D report estimated results from ordinal logit models for children's writing and reading skills, respectively. In table 4.2.6 we report our estimation results for three writing skills specifications. The first specification does not include indicators for children's involvement in private tuition classes, work and chores. According to the estimated results, there were no significant gender differences in writing skills, but Kinh children performed better than ethnic minority children. Later birth order was also correlated with superior writing skills, perhaps because these children are being helped by their older brothers or sisters. Parental schooling – both paternal and maternal – was also found to be an important determinant of children's writing abilities. There was no evidence, however, of a trade-off between quantity and quality – that is, the number of children per family was statistically insignificant. Nevertheless, the estimated effects of the number of boys and girls born within the household are negative and statistically significant. In terms of household economics, the single most important was again the WEALTHINDEX variable. However, changes in household living standards, although negative, were statistically insignificant.

At the community level, proximity to school was positively correlated with better writing skills. Higher average costs of schooling also improved performance but we believe this is likely to be capturing the broader economic well-being of the community which may be correlated with greater parental investment in their children's educational development.

In specification 2, we included a variable for children's involvement in private tuition classes. As expected, this variable was positive and statistically significant, indicating the

beneficial effects of attending extra classes on children's writing skills. In specification 3, we include two indicators for children's extra-household work and chores status. As with the numeracy skills results, the work–chore variable was statistically significant, suggesting that able children are able to cope with work and school at this age.

The estimated results for reading skills are presented in Table 4.2.7. Boys and girls performed equally well but Kinh children outperformed their ethnic minority counterparts. Maternal education was found to be important in positively influencing children's reading skills. The wealth index was again significant, but the variable indicating perceived changes in household wealth were not.[28] Negative events counter-intuitively emerged as positive and significant and we are unable to offer an explanation for this, but economic shocks leading to loss of income has the expected negative sign and were statistically significant. This result suggests that economic shocks may have a negative spillover impact on children's education.

Turning to specification 2, once again, private tuition improved children's reading skills. But in specification 3 no statistically significant correlation with child work was found, suggesting that at this age there is no negative impact on their basic reading abilities.

4.3. Children's heath status

Various measures of children's health status have been used in the literature including children's survival rate (Wagstaff and Nguyen, 2002) or anthropometry (height for age and weight for age). The Young Lives survey has a measure of acute illness (ie, incidence of illness in the last two weeks). To model the health of a child, which is unobserved, we adopt a latent variable framework,[29] which can be considered as consistent with the literature on health production function. A child's health can be seen as a stock of human capital, which at any point in time can be determined by initial genetic endowment and subsequent investment. A change in a child's health status is determined through a production function which converts inputs into health.

The variables that may influence a child's health status include: (a) children's individual characteristics (gender, ethnicity and birth order); (b) household-level variables (family income[30], family structure, parental education[31], occupations, employment status and experience of household shocks); and (c) community-level characteristics (the proportion of poor families per commune, access to health facilities[32], provincial dummy variables).

We also include children's work status variables and assess their interaction effect as in the previous section on education.[33] Descriptive statistics of these variables are provided in Table 4.3.1 in Appendix E.

Table 4.3.2 in Appendix E presents the estimation results for these three specifications. Specification 1 serves as the base model, which does not include indicators for access to health facilities and children's involvement in labour and domestic chores. The results from these three models are quite similar. Kinh children are found to be more likely to be ill.[34] Birth order and the number of siblings are found to be statistically insignificant, ie, having no influence on the probability of children falling ill. At the family level, parental education – especially maternal education – is found to be important for a child's health, suggesting that the caring practices of better-educated parents may be superior.

The economic status of the household was proxied by the number of rooms in the household, whether the family was in debt or had been exposed to a negative event. However, only the number of rooms was found to be a statistically significant determinant of a child's health. The two variables capturing changes in household living standards over time were not statistically significant and nor was the wealth index.

The estimation results indicate that a child's involvement in labour and domestic chores does not increase the probability of falling ill. Our finding is consistent with that of O'Donnell *et al.* (2003) who found little evidence of a contemporaneous impact of child work on health.

In the model we include a number of variables indicating the accessibility to a range to health facilities as discussed above. As shown in Table 7.2, distance to a public health centre emerged as statistically significant, suggesting that access to public healthcare plays an important role in children's health. This is also consistent with findings by Wagstaff and Nguyen (2002) on the importance of health service coverage on a child's survival. The implication of this finding is that if trade liberalisation leads to decreased coverage of commune health centres, owing to declining tariff revenues and increased reliance on private health services, then poor children's health is likely to be negatively affected.

5. Macro-micro linkages: export commodities and childhood poverty

As the proceeding section demonstrated, shifts in household livelihood patterns, experience of economic shocks and in turn households' ability to afford basic social services may have diverse impacts on child well-being outcomes depending on a variety of child, household and community characteristics. In order to better understand the underlying intra-household and community dynamics which the quantitative findings identified, we undertook in-depth qualitative analysis of two agricultural commodities that already involve significant poor populations and which are likely to be affected by the WTO accession: shrimp aquaculture and sugarcane.[35] Our case studies analyse the micro-level impacts of changing trade dynamics over time in these sectors in two provinces in order to provide insights into the possible implications of greater market integration going forward. The aim is highlight the potential changes the government will need to consider as it debates and develops pro-poor and child-sensitive policy responses to the country's accelerating trade liberalisation. This approach is also in line with Fujii and Roland-Holst (2007)'s recent spatial poverty analysis which argued that social impact analyses of trade in Vietnam need to better account for microeconomic heterogeneity due to high expected divergences in provincial-level poverty reduction after full liberalisation.[36]

5.1 Case selection

Shrimp aquaculture is an export sector which the Vietnamese government has heavily promoted since the 1990s. Output from aquaculture doubled between 1998 and 2001, with seafood farms covering over a million hectares in 2001, of which 446,000 hectares were for shrimp. Vietnam is now the world's fifth largest producer, with rapidly expanding market shares in both the lucrative Japanese and US markets. Seafood farms have been identified as a key part of the government's poverty reduction strategy[37], and the government has actively encouraged poor farmers in the Mekong Delta region to diversify into shrimp farming and processing. The sector has however experienced considerable volatility–due to anti-dumping suits by the US (give endnote)[38], the challenges of meeting stringent quality standards and fluctuating world prices. Moreover, a growing number of analysts are warning that although sustainable growth of seafood production may aid poverty reduction by providing a new growth area for especially poor farmers to diversify into, the current massive growth, particularly if at the expense of food security, may pose considerable risks, especially due to its deleterious environmental impacts (e.g. Kirkbride, 2005).

Our research site (two poor communes from Binh Dai district in Ben Tre province where shrimp farming is one of the dominant livelihood sources) was selected from the Young Lives study sentinel sites in order to allow for the possibility of subsequent longitudinal analysis.[39] Please see Table 5 for further details.

Sugarcane is another agricultural commodity that has expanded rapidly in Vietnam, especially since the 'One Million Tonnes of Sugar' programme was launched in 1995 in order to reduce the country's dependence on sugar imports. There are approximately 300,000 hectares of sugarcane in the country, and the sector employs more than a million farmers and tens of thousands of workers. However, due to the subsidisation of sugar industries in many sugar producing countries, high local unit costs and low productivity (due to the small scale of production), the Vietnamese industry faces formidable competition.[40] A number of sugar cane processing factories are facing

bankruptcy and closure[41], and this trend is expected to be exacerbated by commitments under the ASEAN Free Trade Agreement and the WTO whereby by 2012 Vietnam will have to cut tariffs from 85% to 6% (the highest rate).

Our research site (two poor communes from Son Hua district in Phu Yen province where shrimp farming is one of the dominant livelihood sources) was similarly selected from the Young Lives study sentinel sites and also because of its ethnic diversity in order to better understand the intersection between poverty and social exclusion. The government has sought to encourage involvement in sugarcane growing and production among ethnic minority groups whose traditional slash and burn agricultural methods were banned in 1993 in the interests of environmental protection. Please see Table 5 for further details.

5.2 Key findings

The qualitative findings highlighted the differential impacts of shifting livelihood patterns brought about by the promotion of export-oriented agriculture and aquaculture on different household members (men, women, children and grandparents); the emergence of new individual and community-level risks (as well as opportunities); the importance of social capital in accessing new trade-related opportunities; and some of the reasons behind growing economic inequalities among ethnic minority and Kinh communities.

In both Ben Tre and Phu Yen the government's promotion of livelihood diversification into shrimp aquaculture and sugarcane had brought about considerable changes in the study communities. In Ben Tre, a traditional rice growing area, shrimp farming and shrimp processing both represented opportunities for significantly more lucrative income-generating opportunities. As a result, it is estimated that more than half of all available land in both research communes was now occupied by shrimp ponds and that as many as 75% of the households are involved in the sector in some way. However, while successful farmers and especially middle-men had augmented their incomes considerably, an estimated 30% of households who had diversified into the sector had failed and suffered from high rates of indebtedness. In Phu Yen, the Kinh population had historically been involved in rice growing and animal husbandry, while ethnic minority groups (especially Cham and Bana) had used traditional slash and burn agricultural methods. The designation of the district as a sugarcane production zone and the establishment of a sugarcane processing factory in Suoi Bac commune in the late 1990s had encouraged many households to shift to sugarcane cultivation and related services. However, significant price fluctuations and dependence on rain-fed agriculture had led to unsustainable losses and compelled many families to change crops – either to sesame or back to rice.

a) Intra-household dynamics

Our qualitative findings underscored the complex intra-household effects of these boom-bust cycles of export commodities. Overall, men were taking the lead in diversifying into these new sectors and when successful were able to take the credit for having significantly augmented household incomes. Women were also becoming increasingly active in income-generating activities, but in lower paid and less-risk prone areas.[42] Whereas many had previously been involved in traditional agricultural, especially rice, they were increasingly taking on daily wage labour work in fruit picking, agro-food processing and restaurants because rice cultivation areas were shrinking as paddy fields were converted to other crops or shrimp ponds. (In the latter case, this trend was accelerating due to salination of traditional agricultural land and the inability to revert back to rice plantations as a result). Women were widely perceived as fulfilling an

auxiliary role in terms of household livelihoods, although a number of women pointed out that their contribution became critical in the event of household economic shocks. As one respondent noted whatever income she earns has to be split between covering basic food staple costs and repairing the machinery necessary for her husband's shrimp breeding farm: "*When his vehicle and his machinery don't give him trouble, he boasts that he is the family breadwinner. But when his vehicle and machines breakdown or when he can't sell all his shrimp, I have to pay for the repairs and the oil. Sometimes I even have to take out a loan to juggle these expenses*" (Ben Tre, 2005).

Parents' shifting time use in turn had a spill-over impact on their children. Most typically, children—especially older daughters—were expected to shoulder more of their mothers' caring and domestic tasks. Daughters (and some sons) of working mothers often took care of their younger siblings and meal preparation after school. Although this did not lead to school dropouts, many children complained that they did not have enough time for homework and to study, which in turn was taking a toll on their educational performance and enthusiasm. The following examples are illustrative:

> "*I have to work in the rice paddy fields and tend cows – in the morning I go to school but in the afternoon I'm busy with the cows. I have very little time to study*" (Phu Yen, 12-yr old boy, 2005).
>
> "*After school I have to cook for my siblings as my mother comes home late from work. I have been able to cook since I am in grade 4*" (Ben Tre, 11-year old girl, 2005).

A number of families also expected teenage children to contribute to income-generating activities. This was especially common in the case of less scholastically successful children who were commonly taken out of school (either temporarily or permanently) to help out with labour-intensive shrimp feeding and sugarcane cultivation activities. For example, as one 15-year old boy from Ben Tre explained: "*I was born in 1989. I finished school at grade 9 and now I stay home and raise shrimps with my father*". In several cases, families had not anticipated the costs of regular inputs into these new livelihood enterprises and had encouraged teenagers to take up seasonal work in factories or restaurants to help buy high-cost inputs (such as fertilisers or chemical pesticides). Finally, parents stressed that relying on children's labour as a coping strategy during times of household economic downturn tended to be a last resort, and that parents (especially women) were more likely to take on additional work first. However, the involvement of teenage boys in particular in farming activities was not uncommon in both community districts. Peer pressure and demonstration effects of greater consumption power provided children with additional impetus to take up work activities at the expense of schooling, especially in the Ben Tre site.

In addition to impacts on children's time use, care-givers' increasing productive work burden was found to impact the quantity and quality of caring time they could offer their children. Greater absence from the home meant that parents were less able to supervise their children's school attendance and after-school activities. Although this role was sometimes taken on by co-habiting grandparents, several families had suffered serious or even fatal accidents among unsupervised children. The perceived risks were sufficiently concerning that several mothers mentioned that they had decided against taking on paid work activities as they did not want to leave their children without adult supervision and care. More subjective but equally troubling impacts of new work pressures was a sense of growing family disunity. This was being exacerbated by

increasing numbers of male family members leaving these rural villages to take advantage of income-generating opportunities in new economic zones and large urban cities (especially Ho Chi Minh City). Children themselves complained that they had too little time with their parents, including a lack of help with their homework.

b) Risks

Although study participants recognised the significant potential benefits of diversifying into export commodities, there was an overwhelming sense that the risks were very high and could impact the entire household due to a dearth of fallback options. This was particularly the case in shrimp aquaculture. In order to start a shrimp breeding farm, many families struggled to secure a sufficiently large loan with reasonable payback times and rates. In cases of failure, the differential in returns to other agricultural crops or daily wage work were stark and families thus often became mired in indebtedness. "*Living standards have improved here after shrimp breeding started and some people are now building houses with mortar walls. When successful a shrimp harvest can bring in 10-100 million dong, compared to just 3-5 million for agricultural crops. But if one fails, the losses are equally dramatic! It can make the poor rich, or just as easily ruin you* " (Ben Tre, key informant, 2005). Moreover, returning to more traditional crops, especially rice, was often impossible as land salination and environmental pollution had rendered land infertile.[43] Similarly, in the case of sugarcane few families in the study communes were able to ride out slumps in sugar prices and a sizeable number of households had thus destroyed their sugarcane plantations in order to plant new crops such as sesame. "*Some people had to borrow to plant sugarcane. When the factories didn't buy their crops, they had to hire labour to destroy it all. When sugar prices rose again, they had no sugarcane to sell. So it is very difficult for people who lack price information, capital, news about the market and whether or not the factories will buy their products. Many people are suffering*" (Phu Yen, key informant, 2005). Due to small land plots there was little option to experiment, meaning that many families tended to put all their eggs in a single basket. Some respondents also recognised that because of the emphasis on export crops rather than food staples, in times of crisis family nutrition suffers – either poor families are able to borrow rice from neighbours or relatives or have to feed their children on nutritiously poor foodstuffs such as manioc.

Vulnerability to risk was in turn exacerbated by a lack of information on market conditions and crop information (e.g. disease control methodologies, guidelines to comply with hygiene and quality control standards, environmental pollution etc.). A number of respondents complained that they did not receive adequate information from local government officials, suffered the consequences of the government's weak enforcement of environmental protection standards (especially spread of livestock disease) and were often at the mercy of exploitative middle agents due to limited market linkages and transport infrastructure.

c) Importance of social capital

Social capital emerged as a key mediating variable between new economic opportunities and household impacts. In Phu Yen province, although factory jobs at the sugar processing plant provided more lucrative income-generating opportunities, interviewees complained that this was generally only possible for households with good contacts and/or relatives working in management roles. There was also a perception that receiving a fair price for one's sugarcane crops was also shaped by one's social contacts as petty corruption tended to be widespread. In Ben Tre, the importance of social capital was most closely linked to access to loans. Households with good connections to local

government or the women's association leaders were more likely to be able to borrow the money needed to cover the start-up costs of a new aquaculture enterprise. Overall this suggests that poverty and social exclusion tend to be mutually reinforcing and mediate whether or not the poor are able to access new economic opportunities provided by market liberalisation.

d) Ethnicity, social exclusion and livelihood patterns

Our quantitative findings identified complex linkages between ethnicity and child well-being impacts in the context of shifting livelihood patterns. Only our Phu Yen site involved ethnically diverse communities and clearly it is not possible to generalise these findings to other provinces or ethnic groups. However, our qualitative results suggest that understanding historical livelihood patterns of different ethnic groups may help to design more effective social protection mechanisms. Although both Kinh and non-Kinh groups were involved in the sugarcane sector in the study district, non-Kinh groups—unlike their Kinh counterparts—had not diversified into processing or service aspects of the sector. Ethnic minority respondents emphasised that they preferred to have their whole family working together on farming activities and were reluctant to allow their children to leave the village for fear of the risk of 'social evils' (drug use, HIV/AIDS infection etc.). Moreover, whereas some Kinh households had established small stores near the sugarcane factory and several were engaged in middle-men activities, non-Kinh groups preferred to remain closely connected to the land, perhaps due to their cultural traditions of semi-nomadic agriculture.

e) Access to social services

Although access to basic social services was not a primary focus of this qualitative research, our qualitative findings did confirm the fact that rising costs of education and health services risk jeopardising the educational and health outcomes of poor children whose households face sustained downturns in their economic situation. Although families often seek to weather a single shock, the cumulative effects of falling incomes and erosion of their asset base can include the inability of families to afford their children's schooling costs and/or healthcare costs.

6. Conclusions and policy challenges

Although Vietnam's extensive economic reforms – including trade liberalisation – over the last two decades have resulted in a significant reduction in national poverty rates, understanding of the differentiated social impacts of these reforms is still in a fledgling state. This paper has sought to contribute to an important dimension of this debate by tracing the potential effects of trade liberalisation on childhood poverty through a mixed methods approach.

Overall our econometric analysis suggested that girls as well as children from ethnic minority group households, female-headed households, households with low levels of maternal education, impoverished households that are susceptible to economic shocks, as well as communes with a high concentration of poverty are likely to be the most vulnerable in the context of greater economic liberalisation, assuming that trade liberalisation typically generates both winners and losers. As our quantitative results were unable to shed light on the underlying household and community dynamics underpinning these findings, however, their policy relevance was relatively limited in terms of identifying possible policy interventions. We therefore undertook two in-depth qualitative case studies of export commodities where study communities had experienced the opportunities and threats of market integration, and were able to reflect on their intra-household and community impacts. Our key findings can be summarised as follows:

Ethnicity and gender differences: Significant gender differences among children emerged only in terms of girls' greater work burden. Daughters are more likely to shoulder part of their mothers' care work burden as women take on increasing productive work roles. Although this did not translate into lower school enrolment among young girls, it will be important to follow up to see whether this has a cumulative impact on their human capital development over time.

Ethnicity emerged as an important variable, except in the case of access to private tuition (where wealth was the main defining variable). There were significant differences in terms of educational achievement, with Kinh children performing better in terms of reading and writing than their ethnic minority counterparts. This suggests that concerted attention is needed to address the educational needs of children from minority ethnic groups especially as differences are emerging even after just one or two years in school (among the sample eight-year-old cohort). However, in terms of involvement in child work (domestic chores) and health status, Kinh (ethnic majority) children fared worse. Our qualitative research was unable to further explain these differences, but instead pointed to a tendency for ethnic minority households to resist diversification opportunities if it entailed family separation and/or non-agricultural based activities.

Children's time use: Involvement in work (both chores and extra-household activities) was negatively correlated with children's access to private tuition, which suggests that children are unlikely to benefit from the positive impact of extra classes on children's reading and writing (but not numeracy) skills. The qualitative findings further emphasised the trade offs between time spent on work activities versus homework and extra-study rather than school enrolment per se. Children's involvement in work activities proved insignificant, however, in terms of children's health status, which was more likely to be

affected by aggregate household income, nutritional food-basket and proximity to health services.

Effects of shifting caregiver productive-care work balance: Whereas the quantitative findings highlighted the spill-over impact of caregivers' integration into the labour market on children's domestic and care work burden, the qualitative findings drew attention to the effects of diminished quantity and quality of care. Without accessible and affordable childcare, children were likely to suffer from less parental supervision and care in terms of their physical safety and assistance with homework, as well as more subjective deprivations including a lack of basic affection and sense of family unity.

Familial coping strategies during economic downturn: The household wealth index emerged as a highly significant variable in terms of children's access to private tuition and educational achievement. Clearly, then, improving household incomes is important for investments in children's educational human capital. However, household wealth was not linked to children's involvement in work activities (indicating a possible threshold effect), nor to their health status. Interestingly, specific economic shocks did not have a negative impact on children's well-being, but an overall decline in living standards was positively correlated with an increase in children's involvement in work activities as well as weaker numeracy skills. Our qualitative findings confirmed the importance of understanding the cumulative impact of negative events on household livelihoods, as well as the importance of relative rather than absolute economic downturns. That is, households frequently seek to protect their children from worst effects of negative household shocks, by shifting greater economic responsibilities onto (largely) women who tend to be positioned in less lucrative but more stable income-generating sectors. However, over time, children often share part of this burden, especially children who perform less well in school and/or are susceptible to peer pressure and the allure of greater consumption powers.

Access to public services: Access to public services did not affect children's involvement in work activities, but the variable emerged as important in terms of children's educational achievement and health status. This finding was reinforced by the qualitative data where poor families emphasised the difficulties they faced in covering the growing costs of education and health services for their offspring. This suggests that if trade liberalisation results in decreased government revenue, and pro-poor spending is not adequately safeguarded, then child well-being could be negatively affected.

Policy challenges

While we acknowledge the complexities of tracing the impacts of macro-economic policy shifts down to the micro-household and intra-household levels, and the limitations of our sample, we nevertheless believe that this exercise serves to highlight some important policy challenges. These include designing and implementing complementary social and social protection policy measures that take into account:

- the multi-dimensionality and heterogeneity of childhood poverty
- the effects of children's involvement in extra-household work as well as domestic chores,
- the importance of facilitating women's productive-care work balance so as to ensure adequate quantity and quality of care for especially young children,
- the linkages between social exclusion (both geographic and due to ethnic minority status) and poverty, and

- the cumulative impacts of economic downturn and vulnerability on children's access to basic services, especially if poor households and communities are already starting from a low base-line.

It is critical that these issues are put on the policy agenda and debated as part of the complementary social policy agenda in the government's new post-WTO accession Action Plan announced in a February 2007 government resolution.[44] Although the current Action Plan pays scant attention to intra-household dynamics and resource allocations and makes no mention of the distinctiveness off childhood poverty, it can be hoped that the combination of econometric analysis on the one hand and in-depth qualitative case studies on the other will go some way in persuading decision-makers from not only trade and economic ministries but also those responsible for social development of the need to take concerted action to ensure the potentially positive impacts of trade-related growth are harnessed for children and youth and the negative impacts minimised.

Appendix A

Changes in Vietnam's Trade Policy Regime

(a) Lifting restrictions on trading rights

Removing restrictions on trading rights (the right to import and export) represents one of the key breakthroughs in trade reforms in Vietnam. Before 1986 state-owned enterprises (SOEs) had a monopoly over international trade. In 1986 restrictions on international trade were relaxed to a degree but non-state-owned enterprises still found the trade regime severely restrictive. Even in the early 1990s only licensed trading companies were allowed to export and import, these restrictions were gradually relaxed with the removal of regulations on foreign trade contracts and shipment permits in 1996. The year 1998 saw a significant further reduction in the entry barriers to international trade with the removal of the licensing requirements for exporting and importing thanks to the issuance of the Commercial Law in 1997 and Decree No. 57/1998/ND-CP which allowed all enterprises with business licences to engage in foreign trade in the goods specified in their business licence without having to request an import/export licence.[45]. Another significant step was made in 2001 with the Decree 44/2001/ND-CP allowing all legal entities (companies and individuals) to export most goods without a licence.

b) Non-tariff measures

Vietnam introduced non-tariff measures (NTBs) when it moved from a centrally planed economy to a more market-based economy, but since the mid-1990s has significantly reduced the use of NTBs in its attempt to integrate into the world economy. In July 1995 Vietnam became a member of the Association of South East Asian Nations (ASEAN) and subsequently a member of the ASEAN Free Trade Area (AFTA), whereby the government committed itself to eliminating many of its NTBs. Another significant step towards international economic integration was in 2000 when Vietnam signed a bilateral trade agreement (BTA) with the USA. Under the terms of the BTA, Vietnam agreed to phase out all non-tariff barriers, including import and export restrictions,[46] quotas and control over a period of three to seven years.

Although quantitative restrictions or import quotas historically served as a major instrument to shield state-owned enterprises from import competition, by 1998 only nine major products were still subject to import quotas and by 2005 just two products remained on this list: sugar and petroleum.[47]

Finally, special authority regulations exist which before 2001 required importers to get approval from relevant ministries and agencies. Since 2001, there have been only seven relevant ministries and agencies responsible for overseeing the minimum quality/standard for imported goods. As in many countries, they are used generally for health and security reasons, and goods that meet the minimum standards can be imported without any further restrictions.

c) Tariffs

An important aspect of trade barriers is the tariffs imposed on imported goods. Vietnam's tariff schedule was first introduced in 1988 and was then rationalised in 1992. Tariffs were further simplified in 1999, following Vietnam's accession to AFTA and in preparation for WTO accession. On 1 September 2003, Vietnam implemented the ASEAN Harmonised Tariff Nomenclature, which is based upon the international

Harmonised Tariff System of 2002.[48] In implementing the new tariff system, the government of Vietnam raised tariff rates on 195 items and reduced them on 106. Currently, there are three sets of tariff rates: most-favoured nation (MFN) rates, which apply to about 75 per cent of total imports from countries that have normal trade relations with Vietnam; common effective preferential tariff (CEPT) rates, which apply to imports from ASEAN countries; and general tariff rates, applicable to all other countries. Since the beginning of trade liberalisation, tariff protection has fallen significantly. According to a study by Nguyen (2004), the unweighted average tariff rate was about 16 per cent in 2002 and comparable to that in neighbouring countries such as Thailand, China or Indonesia. The number of tariff lines and the maximum tariff rates have also decreased.[49] Under its WTO obligation, Vietnam is committed to reducing its average tariff rate to 13.4 per cent over a period of five to seven years following accession.

	Summary of Vietnam's trade reform
Date	**Trade policy changes**
1986	• The beginning of the economic reforms, moving from a centrally planning system to a socialist-oriented market-based system.
1987	• A new law on foreign investment introduced a remarkably liberal regime for foreign direct investment (FDI) in Vietnam.
1988	• The Law on Export and Import Duties on Commercial Goods introducing import duties, with rates initially ranging from 5 to 50 per cent became operational. • Central government's monopoly of foreign trade was relaxed, allowing licensed foreign trading corporations and some other firms to engage in foreign trade.
1990	• A major domestic tax reform was introduced: a special sales tax, a turnover tax and a profit tax. • Export-import companies required to register • Export of certain commodities limited to relevant exporter associations
1991	• A regulation on setting up export processing zones (EPZs) was promulgated. • Private companies were allowed to directly engage in foreign trade. • An import duty rebate scheme for export producers was introduced.
1992	• A trade agreement signed with the EU granted Vietnam most-favoured nation (MFN) treatment in EU markets, established quotas for exports of textiles and clothing to EU and granted tariff preferences on selected imports to Vietnam from the EU. • The harmonised system (HS) of tariff nomenclature was introduced.
1993	• Export shipment licensing was relaxed, with six-month licences (in place of shipment-by-shipment licences) introduced for 22 export commodities. • Custom declaration form improved • Duty rebate system improved
1994	• Import permits were abolished for all but 15 products. Export shipment licensing was abolished for all products except rice, timber and petroleum. • GATT observer status granted
1995	• Export quotas were eliminated on all products except rice. • Shipment-by-shipment licensing requirement was lifted from a wide range of consumer and producer goods. • The number of products subject to import quotas was reduced to seven.

	• Vietnam became a member of ASEAN and acceded to protocols of membership of the ASEAN Free Trade Area (AFTA). • Vietnam applied for WTO membership. • Export tariff raised for 11 products
1996	• A new law on foreign investment reduced the coverage of import duty exemptions for foreign investment projects. • The tax on inward foreign exchange remittances was abolished. • The number of goods under import quotas was reduced to six. • The list of goods under the common effective preferential tariff (CEPT) of AFTA was promulgated.
1997	• The number of goods subject to import quotas was increased for balance-of -payments reasons. • Imports of sugar were restricted by licence. • Temporary prohibitions were imposed on a wide range of consumer goods and then lifted. • Rice quota allocated to provincial government • WTO accession process started
1998	• A new tariff structure with three different rates: MFN tariff, non-MFN tariff and preferential tariff • Licensed exporters were allowed to export any non-regulated product. • Producers of all non-regulated export products were allowed to export directly, without going through trading companies. • Restrictions imposed on imports of alcohol • A partial (80 per cent) foreign exchange surrender requirement was imposed on enterprises holding foreign exchange accounts. • Export duties eliminated on all goods except those on crude oil and scrap metal. • An informal road map for CEPT tariff reductions to 2006 was announced. • Vietnam was granted (by the US government) a waiver of the Jackson–Vanik amendments, enabling Vietnam to access US government-supported export credits and investment guarantees.
1999	• A value-added tax (VAT) was introduced in January 1999, along with a special sales tax. • The number of commodities under quantitative restrictions was increased (from 9 to 17) as a temporary measure to avert balance-of-payments pressure in the wake of the East Asian crisis. • The suspension periods for duty payments on imported inputs under the duty rebate scheme was extended to 275 days. Foreign exchange surrender requirement was reduced from 80 per cent to 50 per cent.
2000	• The bilateral trade agreement with the USA was signed in July, paving the way for MFN accession of Vietnamese exports to the US market and the gradual opening-up of the Vietnamese economy to imports of US goods and services and US foreign direct investment.
2001	• The US bilateral trade agreement came into effect on 10 December. • A five-year import–export regime that significantly advanced the removal of quantitative restrictions (QRs) was announced. • A total of 713 items transferred from the Temporary Exclusion List (TEL) to the Inclusion List, leaving 1,200 items still in the TEL • The foreign exchange surrender requirement for exporters was reduced

	from 50 per cent to 40 per cent. • A new customs law was announced in October with the aim of improving customs operation and customs clearance. • All legal entities (individuals and companies) were permitted to export most goods without licence (under the Decree 44/2001/ND-CP, August 2001).
2002	• Foreign Invested Enterprises (FIEs) -were granted the right to export commodities other than those they themselves produce. • Under the AFTA commitments, an additional 498 items were transferred from the TEL to the Inclusion List. • Quotas on motorcycles and certain parts thereof, and passenger vehicles with up to nine seats were abolished (December).
2003	• The last tranche of tariff lines in the TEL under CEPT was transferred to the Inclusion List. • A list of seven agricultural commodities subject to tariff rate quotas • Tariff schedule under the ASEAN CEPT programme issued for the period 2003 to 2006 • WTO working parties held (May and December) • MFN tariff schedule based on 8-digit ASEAN Harmonised Tariff Nomenclature issued
2004	• Concluded WTO negotiation with EU
2005	• Concluded WTO accession negotiation with almost all interested parties except USA, Australia and New Zealand • Failed to meet the target of joining the WTO by the end of 2005 • New Common Investment Law adopted • New Unified Enterprise Law adopted
2006	• Decree No. 88/2006/ND-CP on business registration. All individuals are required to register to import and export. • Concluding all negotiations with all WTO partners • Acceded to WTO as full member on 7 November 2006
2007	• Decree No. 16/ 2007/NQ-CP on an Action Plan to implement major policies and strategies to ensure fast and sustainable economic development in the post-WTO period.

Source: Athukorala, 2005; CIE, 1998; Nguyen, 2004.

Appendix B. Construction of the wealth index

The wealth index is constructed as follows:

Components of index and score	Contributing variables
H = Housing quality (/4)	Rooms/person, wall, roof, floor durability.
CD = Consumer Durables (/10)	Radio, fridge, bicycle, TV, motorbike/scooter, car, pump, mobile phone, landline phone, sewing machine
S = Services (/4)	Electricity, water, sanitation, cooking fuel.
Wealth Index = (H+CD+S)/3	Range = 0.0 – 1.0

Appendix C

The Household Utility Model

Suppose that a household can choose among *J* mutually exclusive alternatives for their children, indexed *j=0,...*, *J*. The household would obtain some 'utility' from each alternative if the household were to choose it. Denote the utility from choosing alternative *j* in the choice set as U_{ij} for household *i*. Utility depends on various factors, including the characteristics of the alternatives and the characteristics of the household and the individual children. We can write the utility function as $U_{ij} = U(.)$. The individual household *i* is assumed to have a utility function of the form

$$U_{ij} = V_{ij} + \varepsilon_{ij} = \mathbf{x}_i'\boldsymbol{\beta}_j + \varepsilon_{ij}$$

where U_{ij} is the utility individual household *i* derives from choosing alternative *j* which comprises two components, V_{ij} and ε_{ij} . V_{ij} is a deterministic component, which is often assumed to depend linearly on vector $\mathbf{x}_i$. ε_{ij} is a random component, which represents unobservable factors.

The basic principle here is the notion that rational mother or father will choose the alternative that maximises the aggregated utility of the household gained from that choice. That is, alternative *k* in the choice set would be chosen if and only if $U_{ik} > U_{ij}$ for $k \neq j$. The alternative that yields the highest utility is chosen. When there are *J* choices, the probability that an alternative *k* is chosen is

$$\begin{aligned}\Pr(y = k) &= \Pr(U_k > U_j \ \ for\ all\ j \neq k) \\ &= \Pr(\varepsilon_{ik} - \varepsilon_{ij} < V_{ij} - V_{ik})\end{aligned}$$

where $\Pr(y_i = k)$ is now referred to as selection probabilities. McFadden (1973) shows that the multinomial logit model results if we assume all the ε_{ij} of the *J* choices are independent and identically distributed with the extreme value distribution of the form $F(\varepsilon) = \exp[-\exp(-\varepsilon)]$. The probability of alternative *k* being chosen can then be written as $\Pr(y_i = k) = \dfrac{\exp(\mathbf{x}_i'\boldsymbol{\beta}_k)}{\sum_{j=0}^{J}\exp(\mathbf{x}_i'\boldsymbol{\beta}_j)}$. As it stands in equation the parameters are not identified since more than one set of parameters generate the same probabilities of the observed outcomes. This stems from the fundamental property of the logit model. In the multinomial logit model, only the difference between the utility, represented by $V_{ij} - V_{ik}$, affects the choice probability, not their absolute values, V_{ij} or V_{ik} , (Train 1993). Owing to this indeterminacy in the model we have to normalise the coefficients. The usual

normalisation is to assume that $\boldsymbol{\beta}_0 = \mathbf{0}$ (Train, 1993; Long, 1997; Greene, 1997). After normalisation we obtain the following probabilities:

$$\Pr(y = 0) = \frac{1}{1 + \sum_{j=1}^{J} \exp(\mathbf{x}_i' \boldsymbol{\beta}_j)} \tag{1}$$

$$\Pr(y_i = k) = \frac{\exp(\mathbf{x}_i' \boldsymbol{\beta}_k)}{1 + \sum_{j=1}^{J} \exp(\mathbf{x}_i' \boldsymbol{\beta}_j)} \quad \text{for } j=1, 2...J. \tag{2}$$

As usual the likelihood of the multinomial logit is given by $L(\boldsymbol{\beta}_1,...\boldsymbol{\beta}_J \mid \mathbf{x}) = \prod_{i=1}^{n} P_i$, with P_i is the probability of observing the *i*th observation. With the probabilities given in (1) and (2) we can write the likelihood equation for the multinomial logit model as

$$L(\beta_1....\beta_J \mid \mathbf{x}) = \prod_{k=1}^{J} \prod_{y_i=k} \frac{\exp(\mathbf{x}_i' \boldsymbol{\beta}_k)}{\sum_{j=1}^{J} \exp(\mathbf{x}_i' \boldsymbol{\beta}_j)}$$

where the product symbol, $\prod_{y_i=k}$, is over all cases for which $y_i = k$.

Table 4.2: Descriptive statistics for variable used in multinomial logit regression

Variable	Number of observations	Mean	Std. Dev.	Min	Max
Male	988	0.499	0.500	0	1
kidethnic	988	0.864	0.343	0	1
Order	988	1.309	1.554	0	15
femalehead	988	0.117	0.322	0	1
mumedu	970	2.279	1.210	1	9
Dadedu	946	2.664	1.487	1	9
Numsib	988	1.727	1.357	0	9
boyborn	988	1.411	1.094	0	8
Grlborn	988	1.463	1.219	0	9
wealthindex	988	0.437	0.208	0	1
Debt	988	0.639	0.481	0	1
negativeevent	988	0.602	0.490	0	1
ownhouse	988	1.144	0.351	1	2
numroom	988	1.848	0.997	1	12
ownland	988	1.259	0.438	1	2
Liveup	988	0.414	0.493	0	1
livedown	988	0.223	0.416	0	1
livesame	988	0.363	0.481	0	1
Hhjob	988	0.088	0.284	0	1
schdis3	988	0.857	0.350	0	1
Poorfam	988	10.168	7.335	1	32
primacost	988	132.539	148.608	0	750
Phuyen	988	0.201	0.401	0	1
Bentre	988	0.198	0.399	0	1
Laocai	988	0.200	0.401	0	1
hungyen	988	0.200	0.401	0	1
Danang	988	0.199	0.400	0	1
Factory	988	0.111	0.315	0	1

Table 4.3: Marginal effects multinomial logit model for child work–chore combination

	Alternative = 1 (Neither work nor chores)			Alternative = 2 (Chores only)			Alternative = 3 (Work and chores)		
	Coeff	Standard Error	P-value	Coeff	Standard Error	P-value	Coeff	Standard Error	P-value
Male	**0.115**	0.023	0.000	**-0.12**6	0.035	0.000	0.011	0.029	0.720
kidethnic	**-0.093**	0.043	0.030	**0.157**	0.061	0.010	-0.064	0.049	0.195
order	**0.034**	0.015	0.028	**-0.045**	0.022	0.041	0.012	0.018	0.516
femalehead	0.002	0.032	0.957	**-0.095**	0.048	0.046	**0.093**	0.039	0.016
mumedu	0.012	0.010	0.229	-0.012	0.016	0.442	0.001	0.014	0.958
dadedu	**-0.021**	0.009	0.017	**0.024**	0.013	0.064	-0.003	0.011	0.770
numsib	0.005	0.021	0.828	-0.019	0.034	0.584	0.014	0.029	0.622
boyborn	**-0.044**	0.025	0.079	**0.075**	0.039	0.053	-0.031	0.032	0.341
grlborn	-0.018	0.025	0.477	0.038	0.038	0.322	-0.020	0.032	0.523
wealthindex	-0.022	0.080	0.785	0.140	0.127	0.272	-0.118	0.108	0.274
debt	-0.011	0.020	0.579	-0.011	0.032	0.740	0.022	0.028	0.434
negativeevent	-0.032	0.021	0.122	0.036	0.033	0.272	-0.004	0.028	0.888
ownhouse	-0.021	0.027	0.435	0.009	0.043	0.844	0.013	0.037	0.730
numroom	0.000	0.010	0.961	-0.006	0.016	0.711	0.005	0.014	0.689
ownland	0.018	0.025	0.478	-0.012	0.044	0.792	-0.006	0.039	0.877
liveup	-0.014	0.020	0.481	-0.028	0.034	0.413	0.042	0.030	0.157
livedown	**-0.069**	0.027	0.012	0.005	0.041	0.896	**0.064**	0.034	0.062
hhjob	0.031	0.032	0.320	-0.017	0.052	0.745	-0.015	0.044	0.740
schdis3	-0.005	0.034	0.881	0.089	0.046	0.055	**-0.084**	0.036	0.020
poorfam	-0.001	0.002	0.568	**0.007**	0.002	0.007	**-0.006**	0.002	0.005
primacost	0.000	0.000	0.475	0.000	0.000	0.394	0.000	0.000	0.286
phuyen	-0.043	0.039	0.275	-0.102	0.068	0.134	**0.145**	0.061	0.017
bentre	-0.021	0.042	0.614	**-0.168**	0.072	0.020	**0.189**	0.063	0.003
laocai	**-0.204**	0.052	0.000	0.079	0.083	0.342	**0.125**	0.072	0.084
hungyen	**-0.086**	0.040	0.032	-0.047	0.069	0.498	**0.133**	0.062	0.033
factoty	0.000	0.031	0.997	-0.038	0.053	0.479	0.038	0.047	0.419
Constant	0.068	0.100	0.499	0.000	0.163	0.999	-0.068	0.140	0.629

Number of obs	936
chi2(52)	152
Prob > chi2	0.000
Pseudo R2	0.096
Log Likelihood	-700.923

Appendix D
Quantitative Results: Education

Table 4.2.3: Descriptive statistics of variables used

Variable	Number of obs.	Mean	Std. Dev.	Min	Max
extraclass	999	0.48	0.50	0	1
numeracy	999	0.66	0.47	0	1
write	992	2.67	0.62	1	3
levlread	993	3.76	0.72	1	4
male	999	0.50	0.50	0	1
kidethnic	999	0.86	0.34	0	1
order	999	1.31	1.56	0	15
femalehead	999	0.12	0.32	0	1
mumedu	981	2.27	1.21	1	9
dadedu	956	2.66	1.48	1	9
numsib	999	1.72	1.35	0	9
boyborn	999	1.41	1.09	0	8
grlborn	999	1.46	1.22	0	9
wealthindex	999	0.44	0.21	0	1
debt	999	0.64	0.48	0	1
negativeevent	999	0.60	0.49	0	1
ownhouse	999	1.14	0.35	1	2
numroom	999	1.84	0.99	1	12
ownland	999	1.26	0.44	1	2
liveup	999	0.41	0.49	0	1
livedown	999	0.22	0.42	0	1
livesame	999	0.36	0.48	0	1
hhjob	999	0.09	0.28	0	1
schdis3	999	0.86	0.35	0	1
poorfam	999	10.15	7.32	1	32
primacost	999	132.90	149.16	0	750
phuyen	999	0.20	0.40	0	1
bentre	999	0.20	0.40	0	1
laocai	999	0.20	0.40	0	1
hungyen	999	0.20	0.40	0	1
danang	999	0.20	0.40	0	1
workchore	999	0.17	0.38	0	1
choresonly	999	0.69	0.46	0	1

Table 4.2.4: Private tuition class attendance, marginal effect

	Specification 1			Specification 2		
	Coef.	**Std. Err.**	**P>z**	**Coef.**	**Std. Err.**	**P>z**
male	-0.017	0.048	0.729	-0.043	0.050	0.384
kidethnic	0.073	0.088	0.405	0.091	0.089	0.310
order	0.006	0.031	0.852	0.000	0.031	0.989
femalehead	0.082	0.068	0.226	0.075	0.069	0.277
mumedu	0.008	0.021	0.681	0.008	0.021	0.700
dadedu	0.009	0.016	0.587	0.012	0.016	0.449
numsib	-0.010	0.059	0.860	-0.008	0.060	0.891
boyborn	-0.065	0.063	0.303	-0.057	0.063	0.367
grlborn	-0.029	0.062	0.647	-0.030	0.062	0.636
wealthindex	**0.592**	0.174	0.001	**0.608**	0.176	0.001
debt	0.023	0.043	0.595	0.025	0.043	0.565
negativeevent	0.048	0.044	0.281	0.053	0.045	0.232
ownhouse	**0.176**	0.058	0.003	**0.182**	0.059	0.002
numroom	**-0.038**	0.023	0.091	**-0.039**	0.023	0.087
ownland	-0.089	0.056	0.110	**-0.093**	0.056	0.096
liveup	-0.014	0.045	0.763	-0.015	0.045	0.747
livedown	-0.003	0.054	0.952	0.002	0.055	0.967
hhjob	0.086	0.068	0.203	0.088	0.068	0.198
schdis3	0.090	0.064	0.161	0.095	0.065	0.143
poorfam	**-0.014**	0.004	0.000	**-0.013**	0.004	0.000
primacost	0.000	0.000	0.591	0.000	0.000	0.634
phuyen	-0.064	0.082	0.432	-0.066	0.083	0.424
bentre	-0.027	0.089	0.764	-0.034	0.089	0.704
laocai	0.002	0.099	0.980	0.023	0.100	0.820
hungyen	**0.394**	0.085	0.000	**0.403**	0.086	0.000
choresonly				**-0.151**	0.059	0.010
workchore				-0.087	0.071	0.222
Constant	-0.322	0.220	0.143	-0.246	0.224	0.273
Number of obs	946			946		
chi2(25)	198.71			202.29		
Log Likelihood	-505.01			-501.42		
Pseudo R2	0.2280			0.2335		

Table 4.2.5: Educational achievement – Numeracy skills (Marginal effects)

	Specification 1			Specification 2			Specification 3		
numeracy	**Coef.**	**Std. Err.**	**P>z**	**Coef.**	**Std. Err.**	**P>z**	**Coef.**	**Std. Err.**	**P>z**
male	0.010	0.039	0.790	0.011	0.039	0.775	0.023	0.040	0.563
kidethnic	0.103	0.065	0.114	0.104	0.065	0.113	0.105	0.066	0.110
order	0.015	0.024	0.536	0.015	0.024	0.539	0.018	0.024	0.471
femalehead	-0.051	0.056	0.368	-0.053	0.057	0.353	-0.059	0.057	0.303
mumedu	0.019	0.019	0.331	0.018	0.019	0.351	0.018	0.019	0.338
dadedu	**0.025**	0.015	0.095	0.024	0.015	0.103	0.023	0.015	0.126
numsib	-0.021	0.041	0.606	-0.020	0.041	0.626	-0.025	0.040	0.533
boyborn	-0.042	0.044	0.344	-0.041	0.044	0.352	-0.040	0.044	0.360
grlborn	-0.030	0.044	0.491	-0.030	0.044	0.488	-0.026	0.043	0.544
wealthindex	**0.673**	0.147	0.000	**0.655**	0.148	0.000	**0.661**	0.148	0.000
debt	0.027	0.036	0.454	0.026	0.036	0.477	0.023	0.036	0.522
negativeevent	0.035	0.037	0.333	0.034	0.037	0.351	0.032	0.037	0.387
ownhouse	0.024	0.049	0.631	0.018	0.050	0.709	0.013	0.050	0.798
numroom	-0.015	0.019	0.421	-0.014	0.019	0.467	-0.014	0.019	0.463
ownland	**-0.117**	0.050	0.019	**-0.115**	0.050	0.022	**-0.108**	0.050	0.032
liveup	0.015	0.038	0.681	0.016	0.038	0.678	0.011	0.038	0.763
livedown	**0.082**	0.046	0.078	**0.082**	0.046	0.076	0.071	0.047	0.128
hhjob	0.028	0.060	0.640	0.024	0.061	0.694	0.026	0.061	0.674
schdis3	0.058	0.049	0.235	0.056	0.049	0.250	0.059	0.049	0.226
poorfam	-0.001	0.003	0.653	-0.001	0.003	0.762	0.000	0.003	0.875
primacost	0.000	0.000	0.760	0.000	0.000	0.801	0.000	0.000	0.729
phuyen	-0.053	0.080	0.509	-0.048	0.080	0.548	-0.058	0.080	0.468
bentre	-0.105	0.083	0.206	-0.103	0.083	0.216	-0.111	0.084	0.185
laocai	-0.046	0.092	0.618	-0.043	0.092	0.640	-0.061	0.092	0.508
hungyen	**-0.356**	0.075	0.000	**-0.369**	0.076	0.000	**-0.382**	0.076	0.000
extraclass				0.044	0.038	0.257	0.047	0.039	0.226
workchore							**0.140**	0.060	0.019
choresonly							**0.087**	0.050	0.082
Constant	-0.047	0.183	0.797	-0.058	0.183	0.753	-0.145	0.188	0.439
Number of obs			946			946			946
chi2			130.840			131.810			134.290
Pseudo R2			0.133			0.134			0.138
Log Likelihood			-524.39			-523.75			-520.97

Table 4.2.6: Educational achievement – Writing skills (Marginal effects)

	Specification 1			Specification 2			Specification 3		
write	Coef.	Std. Err.	P>z	Coef.	Std. Err.	P>z	Coef.	Std. Err.	P>z
male	-0.244	0.205	0.233	-0.231	0.205	0.260	-0.173	0.208	0.405
kidethnic	**0.608**	0.324	0.061	**0.625**	0.325	0.054	**0.641**	0.325	0.049
order	**0.270**	0.119	0.023	**0.267**	0.120	0.025	**0.285**	0.121	0.018
femalehead	-0.203	0.299	0.496	-0.229	0.300	0.445	-0.246	0.301	0.414
mumedu	**0.339**	0.117	0.004	**0.328**	0.116	0.005	**0.324**	0.116	0.005
dadedu	**0.232**	0.091	0.011	**0.222**	0.090	0.013	**0.214**	0.090	0.017
numsib	0.264	0.207	0.202	0.280	0.208	0.179	0.248	0.207	0.231
boyborn	**-0.866**	0.227	0.000	**-0.866**	0.228	0.000	**-0.860**	0.227	0.000
grlborn	**-0.673**	0.221	0.002	**-0.675**	0.222	0.002	**-0.654**	0.221	0.003
wealthindex	**2.525**	0.775	0.001	**2.371**	0.780	0.002	**2.399**	0.780	0.002
debt	0.271	0.192	0.158	0.259	0.192	0.178	0.255	0.193	0.187
negativeevent	**0.358**	0.193	0.063	**0.348**	0.193	0.072	**0.327**	0.195	0.093
ownhouse	**0.510**	0.279	0.067	0.460	0.281	0.102	0.441	0.282	0.118
numroom	0.117	0.101	0.245	0.124	0.100	0.219	0.120	0.101	0.235
ownland	-0.177	0.263	0.500	-0.144	0.264	0.586	-0.128	0.264	0.629
liveup	0.098	0.203	0.629	0.096	0.203	0.638	0.071	0.204	0.727
livedown	-0.349	0.230	0.128	-0.351	0.230	0.128	**-0.414**	0.233	0.075
hhjob	-0.006	0.323	0.986	-0.038	0.324	0.906	-0.043	0.323	0.893
schdis3	**-0.544**	0.255	0.033	**-0.562**	0.256	0.028	**-0.546**	0.256	0.033
poorfam	0.000	0.013	0.981	0.003	0.013	0.800	0.004	0.013	0.741
primacost	**0.004**	0.002	0.031	**0.004**	0.002	0.047	**0.004**	0.002	0.042
phuyen	0.181	0.384	0.637	0.250	0.386	0.517	0.209	0.387	0.590
bentre	**0.801**	0.436	0.066	**0.865**	0.438	0.048	**0.833**	0.438	0.057
laocai	0.414	0.452	0.359	0.439	0.452	0.332	0.353	0.454	0.438
hungyen	-0.448	0.382	0.241	-0.569	0.385	0.140	-0.630	0.386	0.102
extraclass				**0.473**	0.206	0.021	**0.482**	0.207	0.020
workchore							**0.578**	0.308	0.060
choresonly							0.394	0.253	0.120
cut-off point 1	-0.596	0.969		-0.514	0.967		-0.183	0.984	
cut-off point 2	1.255	0.968		1.348	0.966		1.691	0.983	
Number of obs	939			939			939		
Chi2	292.40			297.73			301.34		
Pseudo R2	0.21			0.22			0.22		
Log likelihood	-534.44			-531.77			-529.97		

Table 4.2.7: Educational achievement – Reading skills (Marginal effects)

	Specification 1			Specification 2			Specification 3		
Levlread	**Coef.**	**Std. Err.**	**P>z**	**Coef.**	**Std. Err.**	**P>z**	**Coef.**	**Std. Err.**	**P>z**
Male	-0.138	0.283	0.626	-0.101	0.284	0.723	-0.044	0.287	0.879
Kidethnic	**1.231**	0.429	0.004	**1.294**	0.432	0.003	**1.317**	0.433	0.002
Order	0.245	0.150	0.102	0.229	0.151	0.129	0.240	0.152	0.115
Femalehead	-0.122	0.436	0.780	-0.142	0.442	0.748	-0.152	0.441	0.730
Mumedu	**0.432**	0.195	0.027	**0.399**	0.194	0.040	**0.393**	0.194	0.043
Dadedu	0.154	0.136	0.257	0.129	0.132	0.328	0.122	0.133	0.360
Numsib	0.234	0.241	0.331	0.260	0.245	0.289	0.240	0.244	0.324
Boyborn	**-0.877**	0.272	0.001	**-0.873**	0.276	0.002	**-0.867**	0.274	0.002
Grlborn	**-0.612**	0.264	0.020	**-0.599**	0.267	0.025	**-0.580**	0.267	0.030
wealthindex	**4.359**	1.088	0.000	**4.174**	1.093	0.000	**4.127**	1.096	0.000
Debt	0.369	0.279	0.186	0.364	0.281	0.195	0.361	0.283	0.203
negativeevent	**0.765**	0.280	0.006	**0.738**	0.283	0.009	**0.708**	0.285	0.013
Ownhouse	**1.360**	0.581	0.019	**1.366**	0.593	0.021	**1.352**	0.599	0.024
Numroom	0.017	0.114	0.883	0.026	0.114	0.820	0.019	0.114	0.868
Ownland	-0.499	0.388	0.199	-0.513	0.390	0.188	-0.500	0.392	0.203
Liveup	0.113	0.293	0.700	0.084	0.297	0.776	0.041	0.300	0.890
Livedown	-0.363	0.329	0.269	-0.411	0.331	0.214	-0.513	0.341	0.132
hhjob	**-0.814**	0.449	0.070	**-0.894**	0.450	0.047	**-0.906**	0.450	0.044
schdis3	-0.433	0.340	0.203	-0.477	0.343	0.164	-0.472	0.346	0.173
poorfam	**0.032**	0.017	0.067	**0.038**	0.017	0.028	**0.040**	0.017	0.023
primacost	0.002	0.002	0.415	0.001	0.002	0.660	0.001	0.002	0.583
phuyen	-0.364	0.568	0.522	-0.307	0.573	0.592	-0.315	0.573	0.583
bentre	0.886	0.662	0.181	0.958	0.667	0.151	0.965	0.669	0.149
laocai	-0.146	0.642	0.820	-0.164	0.648	0.800	-0.243	0.650	0.709
hungyen	-0.408	0.673	0.545	-0.698	0.684	0.308	-0.737	0.683	0.280
extraclass				**0.902**	0.335	0.007	**0.906**	0.337	0.007
workchore							0.561	0.429	0.190
choresonly							0.448	0.367	0.223
cut point 1	-0.250	1.444		-0.154	1.442		0.203	1.472	
cut point 2	0.843	1.443		0.945	1.440		1.306	1.471	
cut point 3	1.702	1.446		1.812	1.443		2.177	1.474	
Number of obs		940			940			940	
LR chi2(25)		308.17			315.92			317.75	
Pseudo R2		0.32			0.33			0.33	
Log likelihood		-326.66			-322.79			-321.87	

Appendix E
Quantitative Results: Health

Table 4.3.1: Descriptive statistics of variables used in child health regression

	Child not ill the last two weeks				Child ill the last two weeks			
Variable	**Mean**	**Std. Dev.**	**Min**	**Max**	**Mean**	**Std. Dev.**	**Min**	**Max**
male	0.505	0.500	0	1	0.495	0.501	0	1
order	1.306	1.596	0	15	1.309	1.471	0	8
numsib	1.744	1.407	0	9	1.682	1.240	0	7
kidethnic	0.856	0.351	0	1	0.881	0.325	0	1
femalehead	0.108	0.311	0	1	0.135	0.342	0	1
mumedu	2.367	1.273	1	9	2.084	1.047	1	6
dadedu	2.703	1.480	1	9	2.568	1.490	1	9
debt	0.597	0.491	0	1	0.719	0.450	0	1
wealthindex	0.447	0.210	0.008	0.933	0.415	0.203	0.007	0.883
negativeevent	0.554	0.497	0	1	0.697	0.460	0	1
hhjob	0.080	0.272	0	1	0.101	0.302	0	1
ownhouse	1.128	0.334	1	2	1.174	0.380	1	2
numroom	1.917	1.047	1	12	1.694	0.857	1	6
liveup	0.438	0.497	0	1	0.367	0.483	0	1
livedown	0.198	0.399	0	1	0.278	0.449	0	1
livesame	0.364	0.482	0	1	0.355	0.479	0	1
numphar	5.270	6.534	0	25	5.110	6.136	0	25
poorfam	9.643	7.181	1	32	11.171	7.502	1	32
danang	0.201	0.401	0	1	0.199	0.400	0	1
phuyen	0.198	0.399	0	1	0.205	0.404	0	1
bentre	0.187	0.390	0	1	0.226	0.419	0	1
laocai	0.202	0.402	0	1	0.196	0.397	0	1
hungyen	0.212	0.409	0	1	0.174	0.380	0	1
workchore	0.180	0.384	0	1	0.159	0.366	0	1
choresonly	0.679	0.467	0	1	0.706	0.456	0	1
heldis1	0.111	0.315	0	1	0.101	0.302	0	1
heldis2	0.055	0.228	0	1	0.040	0.196	0	1
heldis3	0.878	0.327	0	1	0.798	0.402	0	1
heldis5	0.178	0.383	0	1	0.187	0.390	0	1
heldis6	0.296	0.457	0	1	0.346	0.476	0	1
heldis8	0.722	0.448	0	1	0.749	0.434	0	1
No of observation	673				327			

Table 4.3.2: Determinants of child health status: Ill the last two weeks

	Specification 1			Specification 2			Specification 3		
	Coef.	Std. Err.	P>z	Coef.	Std. Err.	P>z	Coef.	Std. Err.	P>z
male	0.023	0.038	0.541	0.023	0.038	0.550	0.029	0.039	0.453
kidethnic	**0.138**	0.064	0.031	**0.135**	0.064	0.036	**0.135**	0.067	0.044
order	0.011	0.024	0.635	0.012	0.024	0.627	0.008	0.024	0.737
femalehead	0.076	0.052	0.142	0.082	0.052	0.117	0.085	0.053	0.104
mumedu	**-0.050**	0.018	0.005	**-0.050**	0.018	0.005	**-0.049**	0.018	0.006
dadedu	0.014	0.013	0.276	0.014	0.013	0.281	0.017	0.013	0.207
numsib	-0.059	0.037	0.113	-0.058	0.037	0.121	-0.063	0.038	0.098
boyborn	0.023	0.041	0.580	0.021	0.041	0.602	0.027	0.042	0.515
grlborn	0.053	0.041	0.196	0.052	0.041	0.207	0.062	0.041	0.138
wealthindex	0.045	0.141	0.751	0.038	0.141	0.785	0.067	0.144	0.643
debt	**0.073**	0.035	0.038	**0.074**	0.035	0.035	**0.066**	0.036	0.066
negativeevent	**0.118**	0.036	0.001	**0.118**	0.036	0.001	**0.115**	0.036	0.002
ownhouse	0.065	0.046	0.151	0.066	0.046	0.149	**0.077**	0.046	0.096
numroom	**-0.049**	0.020	0.016	**-0.049**	0.020	0.015	**-0.053**	0.021	0.010
ownland	-0.024	0.047	0.610	-0.024	0.047	0.601	-0.020	0.048	0.681
liveup	-0.017	0.037	0.644	-0.016	0.037	0.672	-0.023	0.037	0.534
livedown	0.038	0.043	0.374	0.041	0.043	0.337	0.029	0.043	0.499
hhjob	-0.013	0.055	0.816	-0.013	0.055	0.809	-0.008	0.055	0.884
poorfam	**0.007**	0.003	0.006	**0.007**	0.003	0.008	**0.008**	0.003	0.011
numphar	0.001	0.004	0.790	0.001	0.004	0.762	-0.011	0.007	0.133
phuyen	**-0.127**	0.076	0.095	-0.118	0.076	0.121	-0.130	0.095	0.172
bentre	-0.078	0.083	0.346	-0.069	0.083	0.403	**-0.161**	0.093	0.082
laocai	-0.015	0.080	0.847	-0.008	0.081	0.926	-0.068	0.108	0.526
hungyen	-0.077	0.077	0.322	-0.070	0.078	0.370	-0.070	0.092	0.449
workchore				-0.050	0.059	0.396	-0.044	0.059	0.460
choresonly				-0.002	0.048	0.969	-0.004	0.048	0.934
heldis1							0.006	0.107	0.951
heldis2							0.014	0.121	0.911
heldis3							**-0.090**	0.055	0.100
heldis5							0.125	0.093	0.179
heldis6							0.094	0.070	0.177
heldis8							0.018	0.046	0.697
Constant	-0.367	0.167	0.028	-0.356	0.170	0.036	-0.288	0.202	0.154
Number of obs		946			946			946	
chi2		64			65			73	
Prob > chi2		0.000			0.000			0.000	
Pseudo R2		0.058			0.059			0.067	
Log Likelihood		-561.653			-560.991			-556.092	

Note: Marginal effects reported

Appendix F.

Table 5: Qualitative research site characteristics

Province	District	Population of commune	Dominant livelihood source	Community economic history
Phu Yen South central coastal province with very high percentage of population is living under poverty line	Son Hua District	Son Phuoc commune: 3200 people Kinh (41.1% Ethnic minority hhs (58.9%)	Animal husbandry and crops (sugar cane w/ 838.3ha – dominant crop in commune)	Previously burn and slash agriculture but since 1993 this has been banned. This has meant a major upheaval in lifestyle and livelihood patterns for ethnic minority groups. In 2000 KCB sugarcane factory was constructed in the District and commune designated as a sugarcane region Loans available from women's association, people's council and agricultural bank But for historical cultural reasons lack entrepreneurial tradition – so buy services and goods from Kinh people and not diversifying and developing economically Even youths unlikely to take jobs in economic zones away from homes - less educational ambitions, agriculture labour work is okay
		Suoi bac commune 5203 people Kinh (66%) and ethnic minority groups (34%)	Sugar cane and forestry, also services, including collecting and selling sugarcane	Some households work in industrial zones in HCMC In 2004, reduction in sugar cane plantation due to poor sales, and weather dependent, lack of irrigation services KCB sugarcane factory in this commune
Ben Tre Typical Mekong River Delta province with low educational	Binh Dai District	Binh Thoi commune 8116 people Kinh only	Shrimp aquaculture, Animal husbandry Rice Work in	Especially since early 2000s, Ben Tre Province promoted shrimp processing and 500 ha converted Improved living standards but also high increase in indebtedness due to loans taken out to breed shrimps High level of school dropouts, not discussed openly by district

levels and high % of population living beneath the poverty line			aquaculture processing and animal hide factories (about 500 people) Some families sent men to Dac Lac economic area	
		Daihoaloc commune 8077 people Kinh only	Shrimp aquaculture – 1280 of 2350 ha used to breed shrimps Also some involvement in shrimp processing industries, related equipment services and middle men	Prior to 2000 main occupations were rice, subsistence crops and hired labour 85% of hhs in shrimp breeding business but estimated 30% lost capital. Moreover, significant entry barriers for the poorest. Problem of lack of planning, environmental pollution, can't go back to paddy due to salination of land Middle men are more successful than breeders

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[1] The authors would like to thank Dr E. Anderson (ODI, UK), Pham Thi Lan (Save the Children UK), Dr Getinet Haile (Policy Studies Institute, UK), Prof. Jim Taylor (Lancaster University, UK), Dinh Bich Diep (Ministry of Finance, Vietnam), Nguyen Dinh Chuc (CIEM, Vietnam) and Nguyen Duc Nhat (DEPOCEN, Vietnam) for helpful comments and suggestions. The authors bear all responsibility for the remaining shortcomings, errors and omissions.

[2] Households are likely to be differentially impacted depending on whether they are employed in the formal or informal sector, agricultural or non-agricultural sectors, are skilled or unskilled labourers.

[3] Poverty rates among some rural populations, especially ethnic minorities, are four to five times higher than average (Vietnam MDG Report, 2005).

[4] The field research for this project was undertaken as part of Save the Children UK Vietnam's involvement in the Young Lives Project. Permission to use this data was provided by the Child Poverty Manager, Pham Thi Lan, which is gratefully acknowledged. The quantitative analysis in the paper is based on a longer paper by A. Nguyen and N. Jones (2006).

[5] Changes in prices of goods and services brought about by trade liberalisation affect both nominal and real household incomes. According to trade theory, a central feature of trade liberalisation is that prices tend to move together as a result of competition: prices of imported goods fall and those of exported goods rise, at least relative to each other. According to Winters (2000 a and b), the direction and strength of these effects will depend on whether the household is a net buyer or seller of the goods and services concerned. In the case of Vietnam, for example, when the government decided in the early 1990s to lift its export restrictions (export quotas) on rice exports, the volume of rice trade nearly tripled, while domestic rice prices increased by over 40 per cent (Edmonds and Pavcnik, 2004 a). However, for the net buyers of rice, the higher price of rice has had an adverse impact, especially in the case of the urban poor.

[6] It should be noted that cuts in social spending constitute a risk but are not a given. In the Ethiopian case, Ferede (2005) found that social spending increased following trade liberalisation reforms in the mid-1990s and that at least part of this can be explained by political will – i.e. governmental and/or donor commitment to poverty reduction.

[7] Table XX in Appendix XX provides an overview of the key trade policy regime changes over the last 20 years.

[8] Hong (2000: 22) reports that 'The proportion of graduates from primary school who entered the four-year lower secondary education system declined from 92 per cent in 1986-7 to 72 per cent in 1989-90. A total of nearly three quarters of a million children were pushed out of the secondary school system during the first three years of the reforms.'

[9] Trade liberalisation might also affect children's health by affecting environmental quality. For example, increased industrialisation may lead to increased air and water pollution which directly affect children's health. However, owing to data limitations we do not consider these dimensions in this paper.

[10] Research by Edmonds and Turk (2004) suggests that once a country reaches an average gross domestic product (GDP) per capita of US$5,000, child work falls rapidly.

[11] Note this section borrows from Jones and Sumner, 2007.

[12] See www.younglives.org.uk for further information.

[13] In order to evaluate the impact of trade liberalisation on child well-being, ideally we would have two datasets collected in the pre- and post-reform periods. Unfortunately, such a dataset is not available[13] and this paper is therefore conceptualised as the first part of a longer-term research endeavour which will examine the impacts on child well-being of trade liberalisation to date and then post-WTO accession.
Faced with this limitation, we have to resort to information about respondents' perceptions of changes in household livelihoods. The Young Lives dataset contains questions about whether respondents' living standards have increased or decreased or stayed the same during the last three years; and whether the household has suffered any negative event. We employed these indicators in our analysis. Another data limitation is the lack of variables in the first round of the Young Lives survey on household income, expenditure or consumption. To overcome this difficulty, we constructed a wealth index for each family using information about durable goods available in the family. Details of the construction of this index are outlined in Appendix B. Finally, as discussed in Tran *et al.* (2003), the sampling method adopted in the Young Lives Vietnam project is a variant of a stratified sampling approach, and poor communes are over-represented in the sample. However, there is no information as to the relative weighting assigned to respondents in the data. Therefore, the estimates reported in later chapters are unweighted estimates, and should be interpreted with due caution.

[14] Educational attainment rather than enrolment was used as there was very little variation in school enrolment rates among the 8-year old children surveyed.

[15] In the Young Lives dataset, as indicated in Table 5.1 above, there are four alternatives for the parents to choose from: J=1: Neither work nor chores; J=2: Chores only, ie, domestic work only; J=3: Work and chores; J=4: Work but not chores. Ideally we should estimate a 4-state multinomial logit model. However, owing to

the small number of children observed in the alternative J=4, causing a numerical problem in estimating such a 4-state multinomial logit model, we instead estimate a 3-way multinomial logit model (see Appendix C).

[16] By International Labour Organisation (ILO) standards of child labour, the eight-year-old children in the Young Lives Vietnam data are quite 'young'. Although we have data on older children's work activities, we have no data on their involvement in household chores, so we have not included them in the analysis. Interestingly, however, we found that there was not a significant difference in the hours worked in extra-household activities between older children and the eight-year-old cohort.

[17] Originally we intended to analyse the work–school combination of these children. However, the data shows that a very small and insignificant proportion of children does not go to school (98.5 per cent go to school, 0.3 per cent do not go to school and 1.2 per cent do not answer this question). Therefore it is not worthwhile to explore the work–school combination. Rather we look at the work–chore combination.

[18] Family income is obviously an important determinant of whether a child would become involved in employment. In the Young Lives Vietnam dataset, there is no information regarding income. We instead constructed a wealth index (WEALTHINDEX) to proxy for family income. We expect the variable WEALTHINDEX to be negatively related to child labour. We also include a number of covariates in the model to capture the economic background of the household. They include whether the family owns the house they are living in (OWNHOUSE), whether the family owns land (OWNLAND), whether the family is in debt (DEBT) and the number of rooms in the house (NUMROOM). We expect these variables to be negatively related to child labour and chores.

[19] In our empirical analysis we control not only for the number of siblings (NUMSIB) but also for the number of boys born (BOYBORN) and girls born (GRLBORN).

[20] As negative events (which may or may not be a result of trade liberalisation) could affect the work–chore decision of the household, we include in our model indicators related to a family's experience of any negative events (NEGATIVE EVENT). The dataset also contains a number of indicators for different types of negative events that result in a decrease in food availability, loss of income, or migration. We are unable to use indicators for individual negative events such as a decrease in the availability of food (99.5 per cent of respondents reporting no decrease in food availability) or migration status (98.4 per cent respondents reporting non-migration status) because of insufficient variation in the data. We do, however, include an indicator for negative events leading to loss of income (HHJOB) and expect that this will increase the probability of child labour. We also include in our model variables indicating whether the economic living standards of the household have increased (LIVEUP) or decreased (LIVEDOWN) during the last three years. Although the increased or decreased living standard cannot be attributed directly to trade liberalisation, trade liberalisation may affect the probability of child labour if it leads to changes in household living standards.

[21] We also include a series of dummy variables for different provinces (PHUYEN, BENTRE, LAOCAI and HUNGYEN). In an attempt to link the changes in the trade-induced macro-level variables which we think might have some impact on child welfare, we have included in the model the GDP growth rate for the period 1999–2002 for five provinces. If trade liberalisation leads to an increase in outputs and income, and the GDP variable at the province level affects child labour, then we may say that there is a link between trade liberalisation and child welfare. However, when we included this variable in the model, it always dropped out automatically by STATA (STATA8 SE). We therefore suspect that this variable is highly correlated with the dummy variables for provinces and resulted in a multicolinearity problem.

[22] Given that Young Lives specifically targets poorer households/districts, this may add to the threshold effects. Edmonds (2005b) reports that improved household income during 1992–98 explained up to 80 per cent of the decline in child labour during the same period.

[23] The comparison category is living standards which have remained the same.

[24] In Vietnam school attendance is compulsory in primary school, as is reflected by the 98.9 per cent of children enrolled in our sample, despite Young Live's over-sampling of the poor.

[25] Although investment in human capital models advanced by Becker (1962)) and Becker and Tomes (1986) yield testable hypotheses with respect to the effects of family factors on the decision to invest in children and their scholastic achievement, these models offer little empirical guidance. In this vein, Leibowitz's model (1974) of human capital production (see Figure 6.1) provides an operational way to investigate educational achievement. In this model, parents' genetic endowments are passed on to their children, and in turn partly determine children's abilities. Parental education and ability influences family income levels and the quality and quantity of both time and goods invested in their offspring. This is termed 'home investment'. This model is silent, however, on the role played by school-related factors in producing human capital and thus we employ a modified version to compensate for this shortcoming. The process of augmenting human capital in students also takes place at school. Resources and teachers' knowledge and skills are expected to be important in determining the process of augmenting human capital in students. Most empirical studies to

date have estimated the education production model either by using ordinary least squares (OLS) or ordinal logit/probit models, depending on the nature of data available, regressing a measure of educational attainment on a range of explanatory variables guided by Leibowitz's model. The value-added model suggested by Hanusheck (1979) is frequently estimated, in which a measure of educational attainment is regressed on previous attainment in addition to various explanatory variables.

[26] Such a model is built around a latent variable model that assumes some underlying and unobserved latent propensity variable y^* where $y^* \in (-\infty, \infty)$. While we do not observe the latent variable y^*, we do observe a binary outcome y such that $y = 1$ if $y^* > 0$ and $y = 0$ otherwise. Defining the latent variable equation in linear form, we have

$$y^* = \mathbf{x}_i'\boldsymbol{\beta} + \varepsilon .$$

[27] However, as Tran *et al.* (2006) found, involvement in private tuition was linked to superior educational skills development only in terms of reading and not for mathematics or writing.

[28] This, however, could be due to the fact that there was insufficient variation in the data.

[29] We adopt a latent variable model whereby:

$$y^* = \mathbf{x}_i'\boldsymbol{\beta} + \varepsilon$$

where y* is the unobserved health status of child *i*, x is a vector of covariates which we believe to influence y*. Instead of observing the latent variable, we observe in the data

$Y_i = 1$ if child *i* was ill during the last two weeks.

$Y_0 = 0$ otherwise

As before, we estimate a binary logit model and report the marginal effects for ease of interpretation.

[30] In our analysis, we expect family income to have a strong influence on children's health (Deaton, 2006). Better-off families (proxied by the Young Lives wealth index) would have more resources to invest in their children, in terms of food, nutrition intake and better access to health facilities.

[31] Parental education is also included in the model, as we hypothesise that better-educated parents may be able to transform a given bundle of resources into higher levels of health for their children.

[32] This may have serious consequences for local inhabitants and children. In order to capture the effects of access to health facilities we create a series of dummy variables: access to public hospitals (HELDIS1), access to private hospitals (HELDIS2), access to local community health centres (HELDIS3), access to government dispensary (HELDIS5), access to private dispensary (HELDIS6), and distance to drug stores (HELDIS8).

[33] Child labour causes widespread concern because of the potential damaging effects on health. However, there is a paucity of empirical literature on the effects of child labour on health (O'Donnell *et al.*, 2003). As Edmonds (2005a) and O'Donnell *et al.* (2003) argue, the majority of child labour takes the form of farm work or domestic chores, rather than involvement in hazardous work. However, the effect of child labour on health is not unambiguous. On the one hand, involvement in any type of labour implies some toll on young bodies, e.g., contact with harmful fertilisers and pesticides in agricultural labour, which may have a negative impact on health. On the other hand, child work may ensure physical fitness and mitigate against a sedentary lifestyle. To explore the potential impact of child labour on health, we include two variables, WORKCHORES and CHORESONLY, in the model.

[34] This result may seem counter-intuitive but it could be partly due to greater awareness of and willingness to report ill health among Kinh rather than families from minority ethnic groups.

[35] Although rice involves a greater number of poor households, analytical work on shifting world prices and their impact on child labour in Vietnam has already been undertaken (e.g. Edmonds and Turk, 2004).

[36] This study combines an integrated microsimulation-CGE model with the small area estimation to evaluate the spatial incidence of Vietnam's accession to the WTO.
Provincial-level poverty reduction after full liberalization was heterogeneous, ranging from 2.2 per cent to 14.3 per cent.

[37] The World Bank has advocated such a strategy, claiming "Vietnam has significant potential for expansion of aquaculture, through both *intensification of production* in existing areas and bringing additional areas under production. It is estimated that *only half of the area suitable for aquaculture is being used*."
Vietnam has long developed fish ponds as part of its pre-Doi Moi food strategy called VAC (Garden-Pond-Pigsty). However, the massive development of export aquaculture is a product of the expansion of global trade in the 1990's.

[38] It is expected that WTO accession will also provide Vietnam with access to international arbitrators to deal with trade disputes (e.g. the recent US anti-dumping lawsuits).
[39] All poor communes as reported by Data for the year 2001 reported by the Provincial Committee for Population, Family, and Children (PCPFC) of each province. Ethical approval was obtained from the provincial and district level officials affiliated with the project in advance.
[40] Since January 1999, smuggled sugar whose price is 15 per cent – 20 per cent lower than domestic sugar has flooded the domestic market, further challenging domestic sugarcane production enterprises.

[41] Two out of 43 local sugar factories have had to go bankrupt, four others have begun bankruptcy proceedings for their losses during several consecutive years, and five more are closing to wait for authorities' decisions.

[42] See Fontana 2003.
[43] Lebel et al., 2002.
[44] The Vietnamese government passed Resolution 16/2007/NQ-CP committing itself to the development of an Action Plan to ensure pro-poor, and socially and environmentally-sensitive economic growth in the post-WTO accession period. However, although the plan underscores the importance of complementary social protection policies, it makes no specific mention of children and the ways in which they may be differentially impacted by shifting household livelihood patterns brought about by new macro-economic policies.
[45] Four groups of special goods were excepted from this reform: goods traded by quotas, prohibited goods, goods under government management and goods under line ministry's management.
[46] However, not surprisingly, like many other countries Vietnam maintains import prohibitions on items such as arms and ammunition, explosive materials, military equipment, narcotics and toxic chemicals. The import prohibitions are based on health, national defence and social security concerns.
[47] In early 2006 the government lifted its import quota for sugar, leading to a sharp decrease (30 per cent) in the price of retail sugar on the market (http://www.vnn.vn).
[48] There are now 15 tariff rate bands (down from 20) and the simple average tariff rate increased from 16.8 per cent to 18.2 per cent.
[49] See http://www.ustr.gov.us ; http://www.heritage.org/research/features/index/country.cfm?id=Vietnam ; http://www.aseansec.org/7665.htm for further information.