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Seasonal Migration and Improving Living Standards in Vietnam

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Since the implementation of *Doi Moi*, the economic reform begun in 1986, Vietnam has been one of most remarkable economic success stories in the world. Economic growth has been rapid, the country has brought its international trade into balance, and it has eliminated budget deficits that caused rapid inflation throughout the 1980s and early 1990s. Vietnam's microeconomic performance has arguably been just as good as its macroeconomic performance. Living standards have increased in both urban and rural areas, and poverty has declined dramatically (Glewwe).

Although living standards have been increasing and poverty has been declining since *Doi Moi* began, it does not necessarily follow that Vietnam's people are uniformly better off. The increase in living standards has not been uniform across or within regions (Benjamin and Brandt). Although the poverty headcount rate declined from 58% to 37% between 1992 and 1997, some regions of Vietnam (the Northwest and the Central Highlands) still have poverty headcounts of over 70% (Minot and Baulch). As of 2002, 23% of the population still lacked access to clean water and 35% of children under five suffered from malnutrition.

Benjamin and Brandt find that rural-urban income inequality increased between 1992 and 1997, and find that by 1997, average income levels in rural areas are roughly half of those in urban areas. As the rural-urban income gap grows, one would expect to see increasing migration from rural to urban areas (Harris and Todaro). In Vietnam, however, land takes on an additional value, primarily due to a lack of well-functioning markets (Ray). In the similar setting of China, researchers have not observed many whole families migrating, as they continue to work the land partially due to fear of expropriation (Brandt et al.). One might expect to observe a similar pattern in Vietnam, where land rights are similarly tenuous. Moreover, households aware of higher wages and living standards in urban areas might decide to use migration as part of a household level development strategy (Stark). Seasonal migration may play an important role in such strategies for some households, yet it has received little attention in the literature on Vietnam.

In this paper, we plan to document the effects of seasonal migration on household well-being, as measured by annual household expenditures. Our paper is not the first to describe the determinants of household expenditures in Vietnam, though it is the first to study migration. Glewwe, Gragnolati, and Zaman described determinants of household expenditures, primarily in sequential cross-sections of households, but also in the panel we use. However, their analysis does not include variables that could be considered endogenous, such as migration or other variables. We extend their analysis to explore the effects of seasonal migration on household expenditures in rural Vietnam. To do so, we use instrumental variables and panel data techniques. We make two specific contributions to the literature. First, we are able to describe which parts of the initial expenditure distribution are more likely to participate in migration. Second, we document patterns of migration in Vietnam over the course of the 1990s, and extend the literature on Vietnam to understanding the effects of migration on its microeconomy. If households participating in migration are able to increase incomes, policy makers interested in targeting poorer areas may want to design policies that encourage seasonal migration.

Our study has three primary objectives. First, we document the rapid increase of seasonal migration in Vietnam over the course of the 1990s. Second, we will analyze the effects of seasonal migration on household consumption growth, using a model similar to a household level growth model (Islam). After determining a range of values for the effect of migration on household expenditures, we run a counterfactual experiment, like the one conducted by Barham and Boucher, to analyze how participation in seasonal migration has affected the poverty rate and inequality statistics between the two surveys.

The paper will meet these objectives as follows. The first section will describe the data set we will use in the analysis. The second section will further review the literature on Vietnam's economy and will describe changes in both household expenditures and migration over time. The third section will introduce our methods of analysis, and the fourth section will present our results. The paper concludes with policy recommendations.

Data

The data for this study was obtained from the Vietnam Living Standards Survey (VLSS), conducted in 1992-93 and in 1997-98 by the World Bank in collaboration with the Vietnam State Planning Committee and the General Statistical Office. The VLSS is a comprehensive nationwide survey consisting of two main parts: a household survey and a commune-level survey. The household survey collected information on various aspects of living conditions, including individual-level health, education, off-farm employment, on-farm labor, and migration, as well as household demographics, housing conditions, family expenditures, income sources, and credit access. We use a special module asked both in 1992 and 1997 about seasonal migration to investigate migration behavior by households. To measure household well-being, we follow Deaton and use per capita household expenditures. Total household expenditures are calculated by summing up the consumption expenditures on food, home-produced food, nondurable and nonfood goods, the estimated rental value of durable goods, the estimated rental value of the dwelling, and the value of in-kind transfers from off-farm employers.

The household survey was accompanied by a commune-level survey, which provides further information on local living conditions. In particular, we use information on the proportion of the village workforce that was migrating in 1992. The commune survey also provides information on various facilities and activities in the commune, such as health facilities, schools, agricultural practices, and market access.

The two surveys in 1992-3 and 1997-8 have significantly different sample sizes and geographic compositions.[1] The sample of 4799 households in the 1992 survey was chosen to be nationally representative, but the 6000 households in the 1997 survey include over fifteen hundred households that were added from the 1995 Multi-Purpose Household Survey to replace the households that were not tracked from the 1992 survey.

For this study, we construct a panel of the 3492 rural households included in both surveys. Since we are interested in behavior over the course of time, we must pay attention to the households dropped from the rural sample. 344 households, or almost 10% of

the rural sample in 1992 were not resurveyed in 1997, which raises the concern that the dropped households were systematically different than the panel households.[2] To assuage these concerns, we analyzed the geographic distribution of those households, the expenditure per capita levels, and the food share in expenditures. Although they were somewhat better off at the mean, at the median the per-capita expenditures in 1992 were nearly identical (1510 thousand dong for dropped households versus 1506 thousand dong for included households).[3] Still, we might assume that the missing households were slightly better off in 1992 as a group than panel households. Since migrant households tend to come from the lower part of the expenditure distribution, the missing households will not profoundly affect our main regression results. However, we may understate expenditure inequality in the later period and therefore the results of our poverty and inequality simulation may be affected slightly, as we may understate the upper end of the distribution.

Economic Reform in Vietnam in the 1990s

Vietnam's transition to a market economy accelerated in many ways during the 1990s. The collapse of the Soviet Union in 1989 may have been a catalyst for these reforms. Vietnam had been fiscally dependent on Soviet aid, but had been forced to invest in heavy industry and to sell products back to the Soviet Union (Dollar and Litvack). The immediate halt in Soviet aid may have spurred Vietnam to open its economy to foreigners and to make several new reforms, including liberalization in agriculture that included a change to an individual farming system.

In rural Vietnam, several reforms are known to have increased well-being. As markets became increasingly open during the early 1990s, agricultural growth accelerated, and Vietnam became the second largest rice exporter in the world. Output growth in rice and other agricultural products can be attributed to the liberalization of fertilizer markets, which reduced input costs; the liberalization of output markets, which increased prices and exports; and the expansion of the individual household farming system. While output increased across the country, the disparity between the North and the South continued to in-

crease in the 1990s. Although the price of fertilizer fell in both the North and the South, the producer price of rice increased more in the South, encouraging higher production there. Because rice farmers in the South were more efficient than the rice farmers in the North, production in the North shifted from rice to other agricultural products. The diversification of agricultural production became possible because internal trade barriers between the North and the South were completely removed by the early 1990s. Rice could flow from the South to the North, which had not occurred before. As a result, growing agricultural output benefited farmers in both regions (Benjamin and Brandt).

The enactment of the new Land Law of 1993 further improved the performance of the rural sector during the 1990s. Under this law, land tenure was extended to twenty years or more, and the government allowed transfers of land-use rights. Although the government continued to own the land, the longer lease period provided farmers land security and encouraged them to invest in their land productivity. In theory, the establishment of land-use rights would enable transfers from inefficient to efficient users and encourage inefficient farmers to work off-farm. Although Ravallion and Van der Walle estimate that only one third of the initial inefficiency has been eliminated through land-use right transfers between 1992 and 1997, Deininger and Jin suggest that smaller landowners have greater access to land, because relatively rich people are selling their land and moving off-farm to increase their earnings. One can conclude that the combination of recently improved land rights and more robust off-farm labor markets have contributed to improved household welfare.

Measuring the Increase in Household Expenditures

The household expenditure data indicate that economic growth in Vietnam translated to increased living standards for most rural households. Whereas the median per capita expenditure level was 1506 thousand dong in 1992, by 1997 median household per capita expenditures had increased to 2015 thousand dong, or by 33%. Although many transition countries have experienced increased inequality along with economic growth, descriptive statistics on relative inequality in Vietnam show little change. The Gini ratio for household

per capita expenditures was 26.9 in 1992, and only increased to 28.0 in 1997. When considering Vietnam's rural households, it seems that households in Vietnam have become better off without experiencing the expected increase in inequality for its level of development (Kuznets).

However, we cannot and should not assume that each household has maintained the same position in the income distribution between 1992 and 1997. Rather, some households will have benefited more than others. To assess how different households have fared over the sample period, we calculated an expenditure growth rate for each household, r_h:

$$r_h = \frac{\ln(pcexp_{h,1997}) - \ln(pcexp_{h,1992})}{t} \tag{1}$$

where $pcexp$ represents per-capita expenditures, and t is the time between surveys. We find that expenditures in some households have grown much faster than average, whereas others have grown slower (Figure 1). The kernel density of expenditure growth rates has a relatively smooth distribution.[4] The mean household's expenditures grow by 5.8% over the sample period, but roughly one-fifth of households experience consumption declines over the study period.

Since we are not only interested in ascertaining the effect of migration on living standards, but also how migration affects a household's position in the income distribution, we create categories for *performers* and *non-performers* over the study period. We consider the 873 households in the top quartile of the growth rate distribution to be performers, and we consider the 873 households with growth rates in the lowest quartile to be non-performers. The growth rates are somewhat negatively correlated with expenditures per capita in 1992 ($\rho = -0.41$), so faster growing households tend to come from the lower end of the 1992-3 expenditure distribution. Although our cutoffs are relatively arbitrary, they correspond well to households with extremely fast growth rates and households with stagnant or declining consumption. The 75th percentile of the distribution is 11.0%, and the 25th percentile is 0.4%, which implies that performers have seen their aggregate expenditures rise by 75% or more, and most of the households in the non-performers category have actually had

expenditures decrease.[5] Therefore, the non-performer category includes households that policy makers might be particularly interested in helping gain from improving national living standards.

Seasonal Migration in Vietnam

The VLSS show that from a very small base, seasonal migration has increased nearly six-fold between 1992 and 1997. We define seasonal migrants as any migrants who left the household for part of the year to work, but returned to the household.[6] Typically, these migrants indicated that they were away between busy seasons on the farm. The data indicate that the destination for a sizeable proportion of seasonal migrants is either Hanoi or Ho Chi Minh City; over $\frac{1}{3}$ of the migrants in 1997 migrate to one of the two big cities. We will use this fact in one of our identification strategies.

Seasonal migrants in Vietnam share characteristics with migrants from other countries (Table 1). Migrants are typically young, relatively well-educated men when compared with the rest of the rural population (rows 1 through 3). For example, the average migrant in the sample has 6.8 years of education, while non-migrants have an average of 5.9 years of schooling. These results are similar to early studies of migrants in China (e.g. Zhao). Migrants in 1997 are about twice as likely as others to have some sort of skill training as well. In general, migrants are often members of households with a relatively large endowment of human capital.

When we characterize households as either migrant households, which are households that have increased participation in migration between 1992 and 1997, or non-migrant households, we also find differences in descriptive statistics (Table 2).[7] Households with migrants living in them in both 1992 and 1997 in general have lower per-capita expenditure levels than the sample mean (1740 thousand dong in 1997). However, migrant households in general seem to have grown a bit faster than other households, as the growth rate was 6.3% for migrant households versus 5.7% in others. This difference is small, but might matter for poor households; more of the migrant households were below the World Bank's

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poverty line for Vietnam in 1992. Furthermore, these figures do not account for other differences between migrant and other households. For example, migrant households tend to be a bit larger than other households. The average migrant household has 5.4 members, versus 5 members for other households. In the results section, we will control for such household level differences.

Households may participate in seasonal migration, or desire to participate in seasonal migration, for a number of reasons. First, individuals within households may be able to earn higher wages in urban areas than rural areas, particularly if rural-urban inequality is increasing. Harris and Todaro showed that labor mobility is determined by employment rate and wage differentials between cities and villages. In theory, workers keep moving to high-wage and/or low-unemployment locations until a wage-unemployment equilibrium is reached. The equilibrum is economically efficient; thus, as transportation costs and information asymmetry diminish in developing countries, a large proportion of the rural population migrates to urban areas.

However, Harris and Todaro's model leave out many other important factors, and models migration as an individual rather than a household decision. Stark suggests that migration decisions are far more complex. Households in developing countries may send out migrants in order to alleviate economic constraints on households, such as the lack of good credit or insurance markets. Migrants can alleviate credit constraints by bringing home savings from their time away, allowing households either to invest in agricultural or other home production (Taylor and Martin). However, there is a possible cost to migration. If migrants are absent from the household at important points in the agricultural production cycle, there may also be a negative, lost labor effect on household income or consumption (Taylor, Rozelle, and de Brauw).

Migration may not just be costly in terms of production, but households may face other costs that hinder their migration behavior. For example, moving costs may be high for some households, particularly if information in the village about jobs in the city do not exist. Information about jobs often flows through migrant networks (e.g. Massey et al.).

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Munshi shows that network quality, meaning the quality of the information flowing through the network, is affected by the weather in Mexico. Mexico, though, is a mature migrant source; international migrants have gone from Mexico to the United States seasonally for years. Since weather information is largely unavailable for Vietnam, this instrument is unavailable.

Identifying Migration

Our identification strategy therefore is to measure two different types of networks that rural Vietnamese households may use to find employment away from the village. First, we consider the seasonal migration network that had occurred at the commune level in 1992 as a potential instrument. This instrument has been used in the literature before (e.g. Taylor et al., Taylor, Rozelle, and de Brauw), but may suffer from several drawbacks. Network quality could be affected by the weather in previous years. Since the networks in Vietnam are relatively new, it is unlikely that the weather has much of an effect on migration network quality. On the other hand, it could be that communities that were early to participate in migration were also likely to grow faster in general, and then our measure of the migration network would be more correlated with growth. To attempt to solve this potential problem, we will include a measure of commune level expenditures in 1992 (the average expenditures in 1992 in the commune, not including the household in question) and the log per-capita expenditures in 1992 in several of our regressions, as commonly done in the cross-country growth literature to test for convergence.[8]

 Second, we will use an approach unique to Vietnam to define a second set of migration network variables. In Vietnam, many people living in communes were not born there. In the 1997-8 VLSS, 23% of people were born outside of their home commune (Lucas). After the war ended, veterans were in some cases assigned to communes and other people were forcibly relocated to rural areas. People who served in the war or were forcibly relocated, prior to a period in which people did not move around (e.g. until *Doi Moi* began) have contacts elsewhere but cannot have used those contacts for well-being until reforms

began. We create two measures of the availability of such contacts to households. First, we count the number of people who were born or had lived in either Ho Chi Minh City or Hanoi in each household, prior to 1975. These people would be more likely than others to have contacts in either city, making them or members of their family particularly good candidates to move to one of those two cities. Second, we count the people who were either in the army or were forcibly relocated after the war in each household, as those people would potentially have contacts outside the commune that could potetially lead to jobs. We express both variables as a percentage of household members. Neither of these variables should be correlated with growth, though they could be correlated with migration behavior.

The aggregate number of households in the panel sending out seasonal migrants increases from 65 in 1992 to 369 in 1997 (Table 3). We find that migrant households are generally from communes with specific geographic characteristics. In 1997, over 20% of households in coastal areas and "hills/midlands" had at least one seasonal migrant in 1997 (rows 4 and 6). In contrast, few migrants left high mountainous areas; only 2.4% of rural households had a migrant in 1997. The lack of mobility in high mountainous areas is likely due to underdeveloped transportation networks and limited off-farm employment opportunities. Thus, the typical household with migrants can be characterized as a relatively poor household that reside in lower lying areas, and therefore may have more developed networks through which to migrate.

Empirical Strategy

We are interested in understanding the effect of migration on household per-capita expenditures. However, we are concerned that unobservable factors about the household that affect its expenditures may also be correlated with its propensity to migrate, which would bias an OLS coefficient estimate relating migration to household expenditures. Therefore, in our analysis we must be concerned about controlling for exogenous factors at the household level.

Using panel data allows us to difference out any time invariant effects at the house-

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hold level that might affect both migration behavior and expenditures. We use a differenced estimator in all of our regressions, which means that we estimate the effect of the difference in migration behavior on the expenditure growth rate, our dependent variable. The estimator can be written as:

$$r_{hc} = \delta_{1997} + \beta \Delta M_{hc} + \gamma \Delta Z_{hc} + \Delta \varepsilon_{hc} \tag{2}$$

where r represents the growth rate of household h in commune c, M represents migration, Z represents other factors that influence growth, and ε is an error term assumed mean zero and independently distributed across communes, though we allow correlation within communes through clustered standard errors. In all specifications, Z includes household demographic variables, including the number of elderly men and women, the number of working age men and women, and the number of school age children as regressors.

We are concerned that several of the other regressors we might add to equation (2) may be endogenous to the growth process, although their inclusion would not bias our estimate of β, the effect of migration on household expenditure growth. Therefore we experiment with including them in some specifications but not others. The two main sets of variables are we call a human capital set and a cross community growth set. The human capital set includes changes in the logarithm of the household size as well as changes in the average schooling level of the household workforce. The cross community growth variables include the household expenditure level in 1992 and the average community level expenditures in 1992 (leaving out the observed household). The latter set of variables are similar to those used by Dercon to study cross-community growth in Ethiopia.

The second specification including the cross community growth variables can be written:

$$r_{hc} = \delta_{1997} + \beta \Delta M_{hc} + \gamma_c \overline{X}_{92,c} + \gamma_x X_{92,hc} + \gamma \Delta Z_{hc} + \Delta \varepsilon_{hc} \tag{3}$$

Although the initial expenditure variables may not be exogenous, they can be used for two purposes. Although a negative γ_c will not imply convergence as we only have two periods, a rejection of the null hypothesis that $\gamma_x = \gamma_c$ would imply that convergence within

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and between communities is occurring at different speeds (Dercon). Second and more importantly, the inclusion of these variables helps control for differences in wealth levels across communities, strengthening our argument about the exogeneity of the commune network variable.

Finally, we are interested in knowing which part of the 1992 expenditure distribution was affected by later migration behavior, and how poverty and inequality has been affected as a result of increasing migration. We employ two procedures to understand these effects. First, we test whether or not migrant households are more likely to be categorized as performers or non-performers, based on the definitions above. We take a slightly different approach to these regressions. We use a probit model, so we cannot include household fixed effects (Wooldridge). Therefore we include a set of explanatory variables measured in 1992. We include several variables that help control for differences in wealth and capital levels across households and communities, including the age of the household head and its square, landholdings, and commune dummy variables for whether or not a factory existed in 1989, whether or not there was a crop failure in 1992, whether or not there was a secondary school, whether or not a road was built between surveys, and whether or not new communal agricultural investments had been made. In the probit regressions, we still have the problem of an endogenous migration variable, so we use an instrumental variable probit regression developed by Newey.

Second, after estimation we perform a counterfactual experiment to understand how poverty and inequality statistics have been affected by migration. We remove the estimated effect of migration from the household growth rates, and compute what 1997 expenditures would have been for those households particpating in migration in 1997. We then recompute some basic statistics that describe poverty and inequality, such as the headcount and the Gini ratio. Since relatively few households have sent out migrants by 1997, we do not expect to see large effects, but they should indicate at least the trend.

Estimation and Results

We estimated equation (2) using OLS and instrumental variables, using different sets of instruments in different specifications (Table 4).[9] Not surprisingly, when we use OLS to estimate the effect of migration on expenditure growth, we find no statistical relationship (column 1, row 1). Given that unobservables that likely affect expenditure growth also affect the propensity to migrate, the OLS regression is likely to be biased. Indeed, we reject the null hypothesis that migration is exogenous through a Durbin-Wu-Hausman test.[10]

Our first stage regression indicates that two of our three instruments are strongly correlated with the migration variable (Appendix Table 2). The commune network variable, the percent of the commune workforce that migrated in 1992, and one of the alternative network variables, the percent of the household that had lived in either Hanoi or Ho Chi Minh City, both have significant, positive effects on the number of household migrants, no matter the specification (rows 1 and 2). Though both estimated effects are positive, the effect of the commune network variable is larger in magnitude. The percent of the household relocated is positive but statistically insignificant in all specifications (row 3).

When we instrument for migration in the second stage, we find that migration always has a positive effect on expenditure growth. However, the statistical significance of the coefficient depends upon the set of instruments used and assumptions about growth across regions (Table 4). When regional dummy variables are not included (columns 2 through 4), the migration coefficient is only marginally significant when we include all three instruments (column 4). Otherwise, it is insignificant. Since we can interpret the constant as the baseline growth in this model, this model implies that baseline expenditure growth rates should be the same in all regions. If baseline growth is not constant across communities or regions, we are omitting important variables from the analysis. We relax this restriction by adding regional dummy variables to the analysis and find that the number of migrants variable becomes statistically significant in specifications (5) and (7). We find that an additional migrant leads to a 6.3% or 5.3% higher growth rate, respectively. Although the latent network variables seem to assist the community migration variable in identification,

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the effect is small and statistically insignificant when we use them alone (column 6). Since we argue below that the community network is not affected by community wealth, and the model is not overidentified when all instruments are included, we prefer the specification with the largest instrument set (5.3%; column 7).

Because we use the community network variable in our identification strategy, we are concerned that community wealth or well-being may affect our instruments. Therefore, we add both our set of human capital variables and the initial expenditure levels to the model (Table 5). When we add education and household size to the model, many of our coefficients take on expected signs and significance levels (column 1). They do not affect our estimate for migration behavior; we find that an additional migrant increases household per-capita expenditures by 4.8%, *ceteris paribus* (row 1). Additional adult members of the household are likely to participate in agriculture in rural Vietnam, which leads to higher household incomes and expenditures. The number of children between 6 and 17 also has a positive significant impact on household expenditure growth, but this effect is not due to additional work performed. Rather, it is likely that more children went to school by 1997 than in 1992, and the increase in expenditures partially reflects the increase in school enrollment rates. Using the same data set, Nguyen finds that the primary school enrollment rate has increased by 10 percentage points for the poorest expenditure quintile. Controlling for demographics, changes in household size has a negative effect on the per capita expenditure growth rate. This result may reflect economies of scale in food consumption, which is the largest share in the household budget (Deaton and Paxson).

When we add the 1992 expenditure level to the model (Table 5, column 2), we find a negative and signficiant coefficient on 1992 expenditures (-0.074) and a positive, significant coefficient on migrants (0.075). If we believe the former coefficient, it implies that household expenditures are exhbiting mean reversion in Vietnam, consistent with the correlation between initial expenditure levels and growth. Mean reversion implies at least static inequality, whereas at Vietnam's level of GDP, according to the Kuznets hypothesis we would expect to see increasing inequality. Regardless, the inclusion of initial expenditures

actually increases our migration coefficient, and it remains statistically significant.

When we include the initial commune level expenditure levels as well (Table 5, column 3), we still find a positive, significant coefficient on the number of migrants (0.069). So adding initial wealth levels does not affect the significance of the migration coefficient, strengthening our belief in the community level instrument. The coefficient on the average expenditures variable is positive and statistically significant, implying that wealthier communities have grown at faster rates, *ceteris paribus*. Because the household expenditures and the average community expenditures have statistically different coefficients, it seems that convergence is taking place at different rates across communes and households.

Across almost all of our models that use instrumental variables, we find that an additional seasonal migrant implies a growth rate that is between 4.8% and 7.5% faster than a household that does not participate in migration, and the effect is statistically significant in most of our regressions. The results imply that households able to participate in migration in rural Vietnam have grown much faster than households that have not, holding other variables and non-time varying effects constant. As discussed earlier, it could be that these households participate in migration because wages are higher outside the village, or because they are able to relax constraints on household production, which leads to higher incomes and therefore consumption. With this test, we cannot discern between these two explanations.

Our findings are broadly consistent with Stark's theory of migration, rather than Harris and Todaro. If the Harris-Todaro model completely characterized migration, it is unclear why there would be seasonal migration in the first place, particularly given the presence of moving costs. People might be responding to wage fluctuations, but then there is no reason that household expenditures would increase upon the migrant's return, according to Harris and Todaro; the migrant would add to household production potentially at the rural wage, but no more. So it is more likely that households are participating in migration as part of a larger household development strategy.

Migration, Performers, and Non-Performers

Although households may be participating in migration to help improve the living standards of all members, we have not yet determined how migration has affected the placement of households within the expenditure distribution. In this subsection, we estimate models that attempt to predict whether or not specific characteristics have led households to be performers or non-performers. Although these variables are not the same as the expenditure distribution *per se*, they speak to where households participating in migration ended up in the income distribution in 1997. Since we know that the migration variable is endogenous, we use an instrumental variable estimator developed by Newey. Finally, we run the regressions on both the entire sample and on the subsample of households that fell below the 1992 poverty line calculated by the World Bank, to understand whether or not poor households were affected differently.

We find that migration does not affect the probability of a household being a performer (Table 6). Although the coefficients are all positive, they are statistically no different from zero (row 1). This is true whether we look at the whole sample or the sample of poor households only. Therefore, it seems that the fastest growing households in the sample did not turn to migration to fuel their growth. Other characteristics that affect whether or not a household is a performer are sensible; for example, the more working age men live in a household, the higher the probability that the household grew faster than 11% per year. Larger households and households with more land were also less likely to grow their consumption quickly. Households with more working age men were able to grow faster because they have more access to off-farm work, making them better off, whereas households that have either specialized in grain production or have more of their labor allocated to grain production are less likely to have grown quickly, because returns to labor in other activities are often much higher.

Migration has a negative, statistically significant effect on the probability that a household is a non-performer (Table 7). The coefficient is somewhat difficult to interpret, because the distribution changes a great deal as an additional migrant is added to the

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household (row 1); however, if we use the standard definition, the slope of the distribution at the mean implies that an additional migrant would decrease the probability of a household being a non-performer by 39%, *ceteris paribus*. Households that have been able to send out seasonal migrants are far more likely to have growth rates that were above the 25th percentile of the distribution than households that were not. This finding holds for the subsample of poor households; conditional on a household having been poor in 1992, they were significantly less likely to have experienced stagnant growth if they have begun to send out migrants.

Combined, the results of this exercise show that households that have begun to participate in migration have experienced faster growth than other households, *ceteris paribus*. Although migrant households are not any more likely to have experienced extremely rapid growth during the study period than non-migrant households, we find that they are much less likely to have stagnated. The latter finding is true whether or not households were below the poverty line in 1992-3. Households may be taking advantage of migration to limit income and therefore consumption risk, as the covariance of migrant earnings and agricultural earnings should be weak. The second effect we are likely seeing is that migrants are able to take advantage of higher seasonal wages away from the farm, conditional on having information about these jobs through networks.

Poverty, Inequality, and Migration

To explore the effects of migration on household expenditures from an alternative perspective, we calculated counterfactual expenditure levels for 1997, by subtracting the effects of migration from household expenditure growth rates. We use our lowest estimated effect of migration on expenditure growth, or 4.8%, to be conservative. We tried subtracting the effect from both the actual growth rates as well as predicted growth rates, and found similar results, so here we report statistics calculated when we subtract the effect of migration from the predicted growth rate.

We find that although only 10% of households sent out migrants in 1997, the poverty

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rate would have been significantly higher had migration not occurred. Whereas the poverty headcount was 39.2% in 1997, we find that 42.3% of households would have fallen below the poverty line if migration had stagnated at 1992 levels. Combined with our above results, we can conclude that migration not only helped keep households from stagnating, but it also helped some households escape poverty.

Inequality measures did not change much due to migration, because relatively few households participated in migration. We find that although the actual expenditure Gini was 28.0, had migration not occurred it would have been 27.5. Other inequality measures give similar results, except for the 90-10 expenditure ratio, which only changed from 3.35 to 3.34.[11] Therefore migration contributed somewhat to inequality around the middle of the distribution, but not to the tails. If migration has increased dramatically since the 1997-8 survey, it would be useful to understand whether or not migration has continued to increase rural inequality.

Conclusion

Vietnam's rapid economic growth since the beginning of *Doi Moi* has led to strong, rapid economic growth. In this paper, we explore how that growth has spread microeconomically. Between 1992 and 1997, the mean growth rate of household per capita expenditures in rural Vietnam was 5.8%. However, some households benefited much more from economic growth than others, as many households saw their expenditures stagnate.

We show that households that have begun to send out seasonal migrants have benefited more from transition than those that have not, other things equal. Whereas migration participation was quite low in 1992, we find that at the household level it had increased 600% by 1997. Our regression results show that once we instrument the migration variable with a set of variables that measure different types of networks, we find that an additional migrant will increase expenditure growth by between 4.8% and 7.5%, depending upon the other regressors in the model. Furthermore, we find that migrant households were much less likely to have seen their expenditures stagnate over the period, as they were less likely

to be categorized as non-performers.

There are several reasons that households may be using migration as part of their development strategy, all of which fall out of Stark's theory of migration. It could be that households want to limit income or consumption risk, though in a growing environment, this motivation is somewhat less likely, since expectations of the next year's income should be higher than present income for most households. These households, conditional on knowing that jobs are available, may be taking advantage of higher returns to labor to help the family while their labor is not required on the farm. Unfortunately, we cannot discern between these motivations in this paper.

We do find that the households that have begun to participate in migration seem to had lower incomes than other households in 1992, which implies that encouraging migration would be a sensible government policy to help alleviate poverty. There are several ways that Vietnam's government could help encourage the creation of migrant networks. Since the proportion of the population living in rural areas always declines with economic growth (Taylor and Martin), Vietnam's government should assist rural residents in finding jobs outside of rural areas, particularly more remote areas. Better roads or transportation links with areas not currently sending out migrants would help. Two regions stand out in the data as lagging behind others in migration participation. The Northern Uplands and the Central Highlands, both minority regions, have much lower than average participation in migration, as well as lower growth rates. The government could also attempt to educate people in regions such as these about job possibilities and wages in other areas.

Notes

[1]One important question that affects analysis with the VLSS is exactly when the survey took place. Since the VLSS took place over the course of a calendar year, some households were surveyed about what happened to them in the first year, and some were surveyed more about the second year. Since we difference the data in much of the analysis in the paper, this difference is unimportant; however, it may cause labeling confusion. Therefore in the remainder of the paper we will use the years 1992 and 1997 to refer to the two surveys.

[2]Three further households were dropped from the sample because of incomplete records.

[3]All currency values in this paper are expressed in 1998 Vietnamese dong. In 1998, the exchange rate was approximately 13,900 Vietnamese dong to US$1.

[4]Although the distribution appears normally distributed, we computed a Kolmogorov-Smirnov test statistic for the null hypothesis that a transformed distribution was a standard normal, and rejected it at the 10% significance level. Therefore we cannot conclude the growth rate distribution is normal.

[5]We also used alternative definitions of performers and non-performers. For example, it is equally sensible to define non-performers as households that experienced declining expenditures, and performers as an equal sized group with high expenditure growth. The results are robust to this and other definitions.

[6]We choose to analyze seasonal rather than long-term migration for pragmatic reasons; the survey explicitly asked about seasonal migration whereas we would have to infer information about permanent migration.

[7]Of the 65 households participating in migration in 1992, 45 of them no longer send out a migrant in 1997. 353 households increase their migration propensity, so changes in migration behavior take place in more than 10% of the sample.

[8]Because we only have two time periods, we will not be able to claim anything about convergence.

[9]We include descriptive statistics for the included variables in 1992 and 1997 in Appendix Table 1.

[10]With our base regression, the test statistic distributed $\chi^2(1)$ is 12.13 when we just use the community network and 10.25 when we use all of the instruments. Therefore we reject the null hypothesis of exogeneity.

[11]The 90-10 expenditure ratio measures the ratio of the 90th percentile of a distribution to the 10th percentile. It increased from 3.20 to 3.35 between 1992 and 1997.

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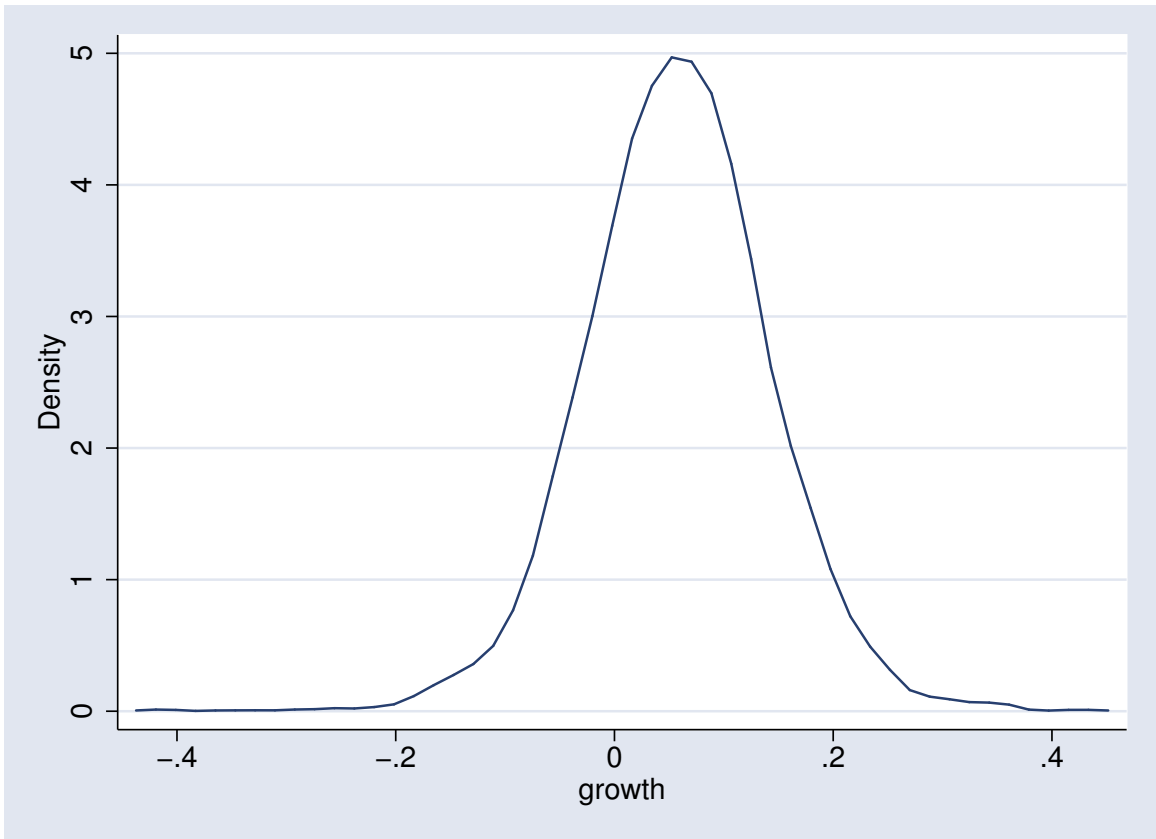
Figure 1: Household Per-Capita Expenditures

Table 1: Demographic Characteristics of Individuals in Rural Vietnam, by Migration Status, VLSS, 1997

	Migrants	Non-Migrants
Proportion Male	0.705	0.453
	(0.456)	(0.498)
Age	29.9	38.4
	(11.9)	(18.0)
Years of Education	6.81	5.87
	(3.21)	(3.65)
Skill Training? (1=yes)	0.103	0.050
	(0.304)	(0.218)
Married? (1=yes)	0.488	0.620
	(0.500)	(0.485)
Number of Observations	486	10,360

Notes: Standard deviations in parentheses.
Source: VLSS.

Table 2: Selected Differences Between Migrant and Non-Migrant Households, Vietnam

	Migrant HHs	Other HHs
Median Per-Capita Expenditures	1447	1514
Mean Per-Capita Expenditures	1693	1736
Below Poverty Line	63.1%	56.4%
Mean Expenditure Growth Rate	6.3%	5.7%
Age of Household Head	44.1	45.2
Years of Education, Household Head	6.39	5.50
Household Size	5.38	5.0

Notes: Households characterized as "migrant households" increased their participation in migration between 1992 and 1997. Therefore, any households either with the same level of participation or discontinuing participation in migration are categorized as "other" households, which explains the difference between this table and Table 3.
Source: VLSS.

Table 3: Selected characteristics of Migrant Households, VLSS, 1992 and 1997

	1992	1997
Number of Migrant Households	65	369
Median Expenditures	1264	1437
Median Growth Rates	7.3	5.9
Commune Geography (Proportion of Households with Migrants)		
Coastal	5.3%	21.3%
Inland Delta	2.1%	11.2%
Hills/Midlands	0.5%	24.2%
Low Mountains	1.3%	5.6%
High mountains	0.2%	2.4%

Notes: "Median Expenditures" refers to the median household per-capita expenditures. All descriptive statistics are conditional on migration occurring.

Source: VLSS.

Table 4: Effects of Migration on Household Expenditure Growth, Vietnam

				Specification			
Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Change in	0.003	0.051	0.055	0.052	0.063	0.011	0.053
Migrants	(0.56)	(1.56)	(1.16)	(1.81)*	(2.31)**	(0.33)	(2.30)**
Household Demographics							
Women,	-0.017	-0.017	-0.018	-0.017	-0.019	-0.018	-0.019
aged over 55	(3.92)	(3.99)	(3.88)	(3.98)	(4.29)	(4.25)	(4.31)
Men,	-0.006	-0.007	-0.007	-0.007	-0.011	-0.009	-0.01
aged over 60	(1.18)	(1.44)	(1.50)	(1.46)	(2.37)	(2.12)	(2.36)
Women,	-0.018	-0.019	-0.019	-0.019	-0.019	-0.018	-0.019
aged 18-55	(7.58)	(7.52)	(7.37)	(7.58)	(7.55)	(7.49)	(7.67)
Men,	-0.003	-0.006	-0.006	-0.006	-0.007	-0.004	-0.006
aged 18-60	(1.14)	(1.78)	(1.69)	(1.88)	(2.30)	(1.29)	(2.18)
Children,	-0.006	-0.005	-0.005	-0.005	-0.006	-0.007	-0.006
aged 6-17	(4.20)	(3.46)	(3.20)	(3.49)	(4.19)	(4.59)	(4.36)
Regional Dummies?	no	no	no	no	yes	yes	yes
Equation Statistics							
N	3492	3492	3492	3492	3492	3492	3492
Hansen p-value			0.17	0.38		0.83	0.51

Notes: t-ratios in parentheses; standard errors clustered at the commune level. * denotes significance at the 10% level; ** denotes significance at the 5% level. All included variables are differenced. The Hansen p-value reports the p-value for the J statistic that the equation is overidentified, which is distributed χ^2 with $K - 1$ degrees of freedom, where K is the number of instruments.
Source: VLSS.

Table 5: Effects of Migration on Household Expenditure Growth, Vietnam, controlling for initial expenditures

	Specification		
Variable	(1)	(2)	(3)
Change in	0.048	0.075	0.069
Migrants	(2.00)**	(2.47)**	(2.50)**
Women,	0.004	0.001	0.001
aged over 55	(0.85)	(0.17)	(0.28)
Men,	0.009	0.007	0.007
aged over 60	(1.88)*	(1.59)	(1.53)
Women,	0.005	0.002	0.002
aged18-55	(1.84)*	(0.79)	(0.78)
Men,	0.014	0.008	0.008
aged 18-60	(4.46)**	(2.66)**	(2.57)**
Children,	0.008	0.003	0.003
aged 6-17	(4.60)**	(2.01)**	(1.71)*
Change in	-0.001	-0.001	-0.001
Av. Ed. Level	(0.70)	(1.48)	(1.52)
Change in Log	-0.103	-0.084	-0.082
Household Size	(14.81)**	(12.22)**	(11.85)**
Log Expenditures,		-0.074	-0.084
1992		(14.69)**	(16.96)**
Commune Avg.			0.041
Log Expenditures, 1992			(2.83)**
Regional Dummies?	yes	yes	yes
Equation Statistics			
N	3492	3492	3492
Hansen p-value	0.41	0.91	0.94

Notes: t-ratios in parentheses; standard errors clustered at the commune level. * denotes significance at the 10% level; ** denotes significance at the 5% level. All demographic and education variables are differenced. See Table 4 for notes on the Hansen p-value.
Source: VLSS.

Table 6: Effects of Migration on Performer Categorization, Vietnam

Explanatory	All HHs		Poor HHs	
Variable	(1)	(2)	(3)	(4)
Migration	0.394	0.069	0.256	−0.097
	(1.51)	(0.25)	(0.75)	(0.28)
Household Demographics				
Women, aged over 55	0.031	0.001	0.001	0.001
	(0.85)	(0.17)	(0.28)	(0.27)
Men, aged over 60	0.094	0.113	0.016	0.102
	(1.18)	(1.35)	(0.15)	(0.93)
Women, aged 18-55	−0.016	−0.014	−0.034	−0.007
	(0.38)	(0.32)	(0.62)	(0.13)
Men, aged 18-60	0.160	0.176	0.144	0.183
	(3.86)**	(4.12)**	(2.59)**	(3.21)**
Children, aged 6-17	0.045	0.024	0.024	0.012
	(1.94)*	(0.94)	(0.85)	(0.40)
Logarithm, Household Size	−1.065	−1.171	−1.072	−1.292
	(9.82)**	(10.30)**	(7.40)**	(8.26)**
Average Schooling	−0.004	−0.004	−0.011	−0.012
	(0.45)	(0.38)	(0.84)	(0.91)
Household Head Characteristics				
Years of Schooling		0.002		0.019
		(0.24)		(1.73)*
Age of Head		−0.017		−0.032
		(1.29)		(2.01)**
Age Squared		0.0001		0.00034
		(0.80)		(1.87)*
Household Endowments, 1992				
Logarithm, Land in Annuals		−0.034		−0.050
		(3.48)**		(3.55)**
Own Bicycle? (1=yes)		0.062		0.017
		(1.14)		(0.32)
Own Motorbike? (1=yes)		0.035		0.614**
		(0.27)		(2.10)**
Equation Statistics				
N	3492	3492	1993	1993

Notes: Standard errors in parentheses. * denotes significance at the 10% level; ** denotes signficiance at the 5% level. All variables that appear in columns 1 and 3 are changes in the variables; variables that appear in only columns 2 and 4 are levels in the 1992-3 survey. Regional dummies and some commune characteristics included in columns 2 and 4, but not reported. Columns (3) and (4) only include households designated "poor" by the World Bank poverty line in 1992.
Source: VLSS.

Table 7: Effects of Migration on Non-Performer Categorization, Vietnam

Explanatory	All HHs		Poor HHs	
Variable	(1)	(2)	(3)	(4)
Migration	−1.213	−1.060	−0873	−0.681
	(3.68)**	(3.16)**	(1.76)*	(1.42)
Household Demographics				
Women, aged over 55	−0.014	−0.037	−0.065	−0.090
	(0.17)	(0.47)	(0.55)	(0.74)
Men, aged over 60	−0.130	−0.136	−0.141	−0.182
	(1.50)	(1.53)	(1.05)	(1.33)
Women, aged 18-55	−0.074	−0.066	−0.108	−0.119
	(1.63)	(1.44)	(1.57)	(1.72)*
Men, aged 18-60	−0.229	−0.230	−0.218	−0.236
	(4.99)**	(4.96)**	(3.04)**	(3.28)**
Children, aged 6-17	−0.135**	−0.127**	−0.118	−0.126
	(5.38)**	(4.77)**	(3.47)**	(3.47)**
Logarithm, Household Size	1.613	1.612	1.467	1.505
	(13.99)**	(13.54)**	(8.50)**	(8.10)**
Avg. Schooling	0.000	−0.003	0.000	−0.003
	(0.01)	(0.27)	(0.18)	(0.19)
Household Head Characteristics				
Years of Schooling		0.000		−0.021
		(0.05)		(1.60)
Age of Head		0.012		0.010
		(0.88)		(0.54)
Age Squared		−0.0001		−0.0002
		(0.70)		(0.79)
Household Endowments, 1992				
Logarithm, Land in Annuals		0.003		0.016
		(0.27)		(0.84)
Own Bicycle? (1=yes)		−0.102		−0.096
		(1.80)*		(1.17)
Own Motorbike? (1=yes)		−0.124		
		(0.82)		
Equation Statistics				
N	3492	3492	1993	1993

Notes: Standard errors in parentheses. * denotes significance at the 10% level; ** denotes signficiance at the 5% level. All variables that appear in columns 1 and 3 are changes in the variables; variables that appear in only columns 2 and 4 are levels in the 1992-3 survey. Regional dummies and some commune characteristics included in columns 2 and 4, but not reported. Columns (3) and (4) only include households designated "poor" by the World Bank poverty line in 1992.
Source: VLSS.

Appendix Table 1: Descriptive Statistics for Selected Variables, VLSS, 1992-3 and 1997-8

Variable	1992-3	1997-8
Per Capita Expenditures	1732	2360
	(995)	(1452)
Number of Migrants	0.025	0.140
	(0.214)	(0.461)
Women, aged over 55	0.299	0.343
	(0.473)	(0.490)
Men, aged over 60	0.169	0.184
	(0.375)	(0.389)
Women, aged 18-55	1.156	1.140
	0.689	0.719
Men, aged 18-60	1.103	1.130
	(0.771)	(0.724)
Children aged 6-17	1.59	1.56
	(1.48)	(1.37)
Average Years of	5.58	5.80
Schooling	(3.40)	(3.13)
Household Size	5.04	4.83
	(2.12)	(1.94)
Percent born in	0.039	–
Hanoi or HCM City	(0.144)	
Percent forcibly	0.129	–
relocated	(0.207)	
Percent commune,	0.033	–
migrating	(0.052)	

Notes: Standard deviations in parentheses. Sample size if 3492.
Source: VLSS.

Appendix Table 2: Determinants of Change in Migration Behavior, Rural Vietnam, 1992 and 1997

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)
			Specification				
Percent Workforce,	1.655		1.623	1.622	1.656	1.633	1.540
Migrants, 1992	(3.38)**		(3.30)**	(3.30)**	(3.41)**	(3.34)**	(3.06)**
Percent of HH from		0.260	0.228	0.228	0.242	0.239	0.270
Hanoi/HCM City		(3.71)**	(2.91)**	(2.89)**	(3.09)**	(3.09)**	(3.66)**
Percent of HH		0.026	0.031	0.030	0.025	0.029	0.014
Relocated		(0.66)	(0.85)	(0.84)	(0.71)	(0.85)	(0.45)
Household Demographics							
Women,	0.014	0.013	0.014	0.018	0.016	0.017	0.018
aged over 55	(0.56)	(0.55)	(0.57)	(0.65)	(0.60)	(0.61)	(0.66)
Men,	0.027	0.03	0.027	0.03	0.03	0.029	0.033
aged over 60	(1.07)	(1.20)	(1.10)	(1.13)	(1.11)	(1.10)	(1.23)
Women,	0.025	0.02	0.026	0.03	0.029	0.029	0.029
aged 18-55	(1.91)*	1.45	(1.99)**	(1.72)*	(1.67)*	(1.65)*	(1.64)
Men,	0.047	0.051	0.047	0.051	0.048	0.047	0.049
aged 18-60	(3.27)**	(3.36)**	(3.31)**	(2.99)**	(2.87)**	(2.85)**	(2.97)**
Children,	-0.015	-0.016	-0.016	-0.014	-0.017	-0.017	-0.016
aged 6-17	(2.35)**	(2.53)**	(2.49)**	(1.76)*	(2.15)**	(2.20)**	(2.10)**
Logarithm,				-0.018	-0.007	-0.004	-0.002
Household Size				(0.55)	(0.20)	(0.12)	(0.08)
Other Variables							
Change in				0	0	0	0
Avg. Ed. Level				(0.04)	(0.01)	(0.03)	(0.09)
Log Expenditures,					-0.046	-0.058	-0.058
1992					(2.37)**	(2.72)**	(2.70)**
Commune Avg. Log						0.042	0.054
Expenditures, 1992						(0.87)	(1.26)
Regional dummies?	no	no	no	no	no	no	yes
Statistics:							
N	3492	3492	3492	3492	3492	3492	3492
p-value, instruments	0.001	0.0009	0.0001	0.0001	0.0001	0.0001	0.0000

Notes: t-ratios in parentheses; standard errors are corrected for clustering at the commune level. *-indicates significance at the 10 percent level; **- indicates significance at the 5 percent level. The p-value is for the F-test that all included instruments are jointly insignificant.
Source: VLSS.