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Consumption behavior of migrant households in Vietnam: Remittances, duration of stay, and the household registration system

Giang Nguyen^{a,b}^a ANU Crawford School of Public Policy, Stanner Building, 132 Lennox Crossing, The Australian National University, Canberra, ACT 2601, Australia^b Hue University, College of Economics, Vietnam

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ABSTRACT

This paper examines the determinants of the consumption gap between migrant and urban households in Vietnam, paying particular attention to the role of the household registration (*ho khau*) system in shaping consumption of migrant households. Our findings indicate that migrant households exhibit significantly lower consumption levels than comparable urban households. The observed gap is mainly driven by differences in non-food consumption. We also find that the restrictions imposed by the *ho khau* system contribute significantly to the gap. Moreover, remittances of migrant households to family members in rural regions are responsible for a considerable part of the gap. Finally, we observe that the consumption gap declines with the duration of residence of migrant households in their destination cities.

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1. Introduction

The household registration (*ho khau*) system was established in urban areas of the Democratic Republic of Vietnam in 1955 and extended to rural areas in 1960. Under this system, each household is given a registration booklet (*so ho khau*), which records the name, sex, date of birth, marital status, and occupation of each household member and the relationship to the household head. In principle, no one can have their name listed in more than one household registration booklet. The *ho khau* of individuals is firmly tied to their official place of residence and if their place of residence changes, their *ho khau* follows accordingly (Le, Tran, & Nguyen, 2011).

Over the last 20 years, the *ho khau* system has been reformed with two major amendments in 2007 and 2014. Prior to 2007, there were stringent requirements in order to apply for an urban *ho khau*. Migrants had to provide proof of three years of uninterrupted employment and residence at their destination city. In addition, home ownership in the destination city was required. The revised Law on Residence in 2007 simplified the *ho khau* system and relaxed the residential condition to apply for an urban *ho khau* from three years to one year. Applicants no longer had to prove that they had stable employment for the duration of their stay. However, the amended Law on Residence in 2014 placed severe restrictions on applying for permanent residency in first level cities.¹ Under the amendment, applicants for permanent residency in these five cities must

¹ There are five first level cities, which are municipalities at provincial level directly under the central government (*thanh pho truc thuoc trung uong*), specifically, Ha Noi, Hai Phong, Ho Chi Minh City, Da Nang, and Can Tho (Government Portal, 2014).

have lived there for at least two years without interruption (in contrast to the one-year requirement in the Law on Residence amended in 2007) (Ministry of Justice, 2013). Additionally, applicants for permanent residency in Hanoi must own a home or be renting one under a long-term contract and they must also have lived there continuously for at least three years. Those who are renting must have an approval certificate provided by the landlord to register for permanent residency at the rented house (Government of Vietnam, 2012). Aside from these legal requirements, migrants also need to meet the requirement of a minimum living area regulated by their current city of residence.

Rural-urban migration in Vietnam has become an increasingly important strategy for rural households to improve their living standards over the past three decades (De Brauw & Harigaya, 2007; Nguyen & Winters, 2011; Phan & Coxhead, 2010).² However, migrants experience many obstacles associated with restrictions of the household registration (*ho khau*) system. Although labour market discrimination against migrants is illegal, migrant workers may find it hard to obtain appropriate works (Le et al., 2011). Being classified as temporary residents without an urban *ho khau*, migrants often face severe obstacles in obtaining employment in the formal sector (Dinh & Pincus, 2011; Le et al., 2011). A report from the 2008 Migration Impact Survey (MIS) shows that nearly 70% of spontaneous migrants were rejected for a formal job application because they did not have an urban *ho khau* in the current city of residence. Enterprises in industrial zones usually give employment priority to the local labour force because of pressure by city authorities who want to address problems of labour redundancy (Le et al., 2011). As a result, most migrants work in the informal sector,³ where they are not protected by the Labour Code and often have short-term or no labour contracts (Le et al., 2011).

Migrants without a *ho khau* at the current place of residence have limited access to social services, including public education and health care services. Specifically, without an urban *ho khau*, migrant households are unable to register their children to public schools, which subsidize local urban residents. Similarly, they are not allowed to access public hospital using their health insurance program because health insurance, especially voluntary health insurance,⁴ is tied to the place where they registered their *ho khau*. Instead, migrants must pay for private schools and hospitals if they want to access these services in their city of residence. Due to high uncertainty about the costs associated with accessing social services and a high risk of unemployment, it is expected that migrants have strong incentives to save rather than to consume in the destination city.

Under the restrictions of the *ho khau* system, migrant households without an urban *ho khau* often leave their children behind in their hometown to avoid large expenses in the city. According to Locke, Hoa, and Tam (2012), family and spousal separation is increasingly becoming reality for many rural-urban migrants in Vietnam. Because of close family ties and job uncertainty in the city, remittances account for a substantial proportion of migrants' earnings (Niimi, Pham, & Reilly, 2009). The authors indicate that remittances are effective means of risk-coping and mutual support within the family in Vietnam. Hence, it appears likely that remittances play an important role in determining consumption levels of migrant households in the destination.

Aside from the obstacles associated with the *ho khau* system, migrants also face many other difficulties in the destination city. According to Pham, Do, Bui, and Nguyen (2018), young migrants often suffer from physical and mental health strains that decrease their overall well-being, caused by factors such as barriers to assimilation to new lifestyles, continued attachment to origin hometowns, financial pressures, and poor living conditions. However, migrants are observed to be better off after living in the city for a long period of time, especially after receiving an urban *ho khau* (Chen, Lu, & Zhong, 2012, 2015). Chiswick (1978) also emphasizes that income levels of migrants increase with the duration of residence. In Vietnam, Pham et al. (2018) indicate that young migrants' views on lifestyles and behaviours changed as migrants assimilate into city life.

Niimi et al. (2009) emphasize the link between the duration of stay in the city and remittances of migrant households in Vietnam. They find a strong positive relationship between the number of months in the destination city and remittances, particularly during the first year of the settlement period. However, after the third year in the city, remittances decay. The authors explain that over time migrants acquire a greater level of location-specific human capital in the destination, thereby reducing the risk of failure. Also, after such a long period of time, migrant household may be able to bring their family members from rural regions to the city, resulting in lower remittances. Therefore, it is expected that the duration of residence may be associated with higher consumption of migrant households in the destination city.

The objective of this paper is to examine the determinants of the consumption behaviour of migrant households in metropolitan areas. We also aim to generate evidence on the potential impact of the *ho khau* system on migrant households by studying differences in household consumption between urban and migrant households. The paper builds on earlier work of Nguyen (2018) on differences in consumption patterns between migrant and urban households in Vietnam. This work is extended in various directions. Most importantly, a nearest neighbour matching (NNM) approach is employed to correct for the part of the consumption gap that may be attributed to differences in observed characteristics between urban and migrant

² Since the market reforms in the late 1980s and the land reform in the 1990s, a large proportion of the population has migrated from rural to urban areas in search of jobs. Census data report that 6.5% of the population in 1999 had migrated, while this rate reached 7.7% in 2009 (Dang, Tacoli, & Hoang, 2003). The main destinations are Hanoi, Ho Chi Minh City, and the surrounding areas.

³ Data from the 2008 MIS show that 94% of migrants found precarious and temporary jobs in the informal sector, particularly the so-called 3D jobs (dirty, dangerous, and difficult), which are unstable, with poor working conditions, low pay, and no insurance.

⁴ Employees working in the informal sector without compulsory health insurance paid by their employers often buy voluntary health insurance for themselves.

households. We are particularly interested in answering the following questions. Is there a gap in local consumption spending between urban and migrant households? To what extent can the gap be attributed to differences in observed characteristics between the two groups? What are the main factors contributing to the gap? What is the role of the household registration system?

We make several contributions to the literature. First, we investigate the difference in consumption between migrant and urban households in metropolitan areas. To the best of our knowledge, most studies focus on the impact of migration on household welfare in the rural areas of origin (De Brauw & Harigaya, 2007; Nguyen, Nguyen, & Oostendorp, 2008; Nguyen & Pham, 2012; Nguyen, Van den Berg, & Lensink, 2011; Nguyen & Winters, 2011; Phan & Coxhead, 2010), except for Pham et al. (2018) and Gillen (2016), who focus on destination cities.⁵ Second, we provide evidence on the impact of the *ho khau* system on consumption levels of migrant households. Finally, we study the contribution of observed characteristics to gain a better understanding of the determinants of migrant household consumption, particularly the role of the duration of stay in the city.

Using data from the Vietnam Household Living Standard Survey 2012 (VHLSS2012) and the Vietnam Rural Urban Migration Survey 2013 (VRUM2013), our nearest neighbour matching (NNM) estimates show that migrant households consume 29.5% less than comparable urban households. This gap is mainly driven by a 66% gap in non-food consumption, whereas the gap in food consumption is rather small. The results indicate that differences in observed characteristics play a relatively minor role in determining these gaps. Instead, our findings indicate that a large part of the household consumption gap stems from remittances of migrant households to their families in rural areas, suggesting that the *ho khau* system, which constraints people to move between rural and urban areas, may have adverse effects on the economic well-being of migrant households. Moreover, we observe that household consumption of migrant households increases with the duration of residence in the city.

The paper is organized as follows. Section 2 describes the data and provides relevant summary statistics. Section 3 discusses the NNM approach. The results are presented in Section 4. Section 5 summarizes the findings of a sensitivity analysis. Section 6 concludes.

2. Data and descriptive analysis

2.1. Data

This paper employs data from the Vietnam Household Living Standard Survey 2012 (VHLSS2012) and the Vietnam Rural Urban Migration Survey 2013 (VRUM2013). The VHLSS is conducted by the Vietnam General Statistics Office (GSO) every two years. The survey covers 64 provinces and 8 regions, and is representative at national and regional levels in both rural and urban areas. The VHLSS2012 consists of 9399 households, 2703 of which live in urban areas. The survey provides detailed information on individual and household characteristics, including income, expenditure, and household registration status. However, using the VHLSS to study the impact of the *ho khau* on migrant households is inadequate because the definition of migrant households in the VHLSS2012 is less comprehensive than in the VRUM2013. Specifically, the VHLSS2012 does not include short-term and seasonal migrants, but only long-term migrants who have already settled down in the destination city and are more likely to obtain an urban *ho khau*. Therefore, we use the VRUMS2013, the most recent survey specifically designed for study of rural-urban migration, to capture migrant households. This survey addresses the shortcomings of the VHLSS2012 by encompassing short-term and seasonal migrants.

The VRUM2013 collects data of individuals who migrated from rural to urban areas for work purposes in the four major cities of Hanoi, Ho Chi Minh City, Binh Duong, and Dong Nai. Hanoi is the capital city located in the north, and Ho Chi Minh City the largest city and economic centre of Vietnam located in the south. According to the 2009 Population and Housing Census data, Ho Chi Minh City and Hanoi were the two most populous cities in the country. The cities of Binh Duong and Dong Nai are adjacent to Ho Chi Minh City, and have become highly industrialized through absorption of a heavy flow of rural-urban migrants. Data from the 2009 Population and Housing Census (Le et al., 2011) indicate that net migration rates are high in these cities at 116% for Ho Chi Minh City, 50% for Hanoi, 341.7% for Binh Duong, and 68.4% for Dong Nai. In recent years, 42% of all domestic migrants moved to the two largest cities, Ho Chi Minh City and Hanoi. It is important to note that the restrictions imposed by the household registration requirements differ across cities. They are most stringent in Hanoi, followed by the other first level cities (Ho Chi Minh City, Can Tho, Da Nang and Hai Phong).

⁵ These studies do not examine the consumption behaviour of migrant households. While the former explores the social transition of young Vietnamese migrants to city life, the latter examines the countryside's role as a set of everyday practices and imaginative discourses in the growth and transformation of Ho Chi Minh City.

Table 1
Summary statistics.

	Migrant households		Urban households		Mean difference	
	Mean	SD	Mean	SD	Gap	p-value
<i>Household characteristics</i>						
Per capita consumption	2536	78	4054	134	1518	0.000
Per capita food consumption	1164	29	1191	30	27	0.524
Per capita non-food consumption	1378	58	2863	114	1485	0.000
Per capita income	3908	4125	4824	7062	916	0.000
Household size	1.784	1.041	3.859	1.487	2.076	0.000
Children ratio	0.070	0.005	0.195	0.009	0.126	0.000
High education ratio	0.483	0.017	0.425	0.015	-0.058	0.014
<i>Household head characteristics</i>						
Age	29.709	0.315	53.257	0.634	23.547	0.000
Age squared	955.892	23.053	3047.306	71.817	2092.414	0.000
Gender (male = 1, female = 0)	0.684	0.017	0.584	0.022	-0.100	0.000
Years of education	10.748	0.142	10.395	0.215	-0.353	0.155
Marital status (married = 1, other = 0)	0.536	0.018	0.941	0.010	0.405	0.000
Duration of residence (dummy = 1 if duration > = 3 years)	0.666	0.017	1.000	0.000	0.3345	0.000
Duration of residence (year)	6.5	5.5	53.3	14.5	46.8	0.000
<i>Location variables</i>						
Hanoi	0.263	0.016	0.321	0.020	0.058	0.024
Ho Chi Minh City	0.590	0.018	0.454	0.021	-0.136	0.000
Binh Duong and Dong Nai	0.147	0.011	0.224	0.018	0.078	0.000
Number of observations	730		526			

In this paper, we define urban households as those from the VHLSS2012 currently living in the cities where their *ho khau* is registered, and migrant households as those from the VRUM13 without an urban *ho khau* at the current place of residence.⁶ Our main sample includes 1256 households, with the migrant share amounting to 58%.

Household consumption is our key variable of interest and is defined as total consumption spending in the destination city. For migrant households, this is the amount consumed in the current location of residence, excluding remittances. Due to the temporary nature of their stay in the city and close ties to family back home, migrants are expected to consume less in the city. Further, the difference in their consumption compared to urban households is expected to pertain mainly to non-food consumption. Therefore, we divide total consumption into food and non-food consumption.

The two surveys measure consumption using different categories of spending. The VHLSS2012 provides detailed information on expenditures for: food; housing; education; medical and health care; electricity/fuel and water; and communication and cultural activities. The VRUM2013 more simply divides household expenditures into three broad categories: food; non-food; and housing. The non-food expenditure measure in the VRUM2013 absorbs all expenditure on education, medical and health care, and communication and cultural activities. In addition, although housing expenditure is collected in both surveys, the measure consists of different components. Specifically, housing expenditure in the VHLSS2012 includes expenses on rent and home maintenance, while in the VRUM2013 it contains rent, home maintenance, and spending on water, electricity, and fuel for heating and cooking. To allow for comparison across the two surveys, all items other than food had to be treated as non-food consumption. In other words, we define household total consumption as the aggregation of food and non-food consumption, in which non-food consumption contains all expenditures on housing, education, medical and health care, electricity/fuel and water, and communication and cultural activities. The household income measure includes cash income from two broad sources: wages and salaries; net revenue from farm and non-farm economic activities. Both household income and consumption are measured in Vietnamese dong (VND) in real terms.

2.2. Descriptive analysis: differences between migrant and urban households

Table 1 presents summary statistics of per capita household consumption which we measure in three alternative forms as total, food, and non-food consumption. In addition, different characteristics of the household (such as household per capita

⁶ Following this definition, 123 migrant households from the VRUM2013 with an urban *ho khau* should be included in the urban household sample, having taken on the status of permanent migrant households. However, this inclusion may lead to a downward bias in the consumption gap between migrant and urban households. It is well-documented in the literature that although migrant households are relatively well-established after living in the city for an extended period and obtaining their urban *ho khau*, they still do not take on the behaviour of urban households (Chen et al., 2012). For this reason, we exclude these 123 permanent migrant households from the main empirical analysis, but incorporate them later to check for robustness of the results.

Table 2
Consumption gap using nearest neighbour matching.

	Gap without matching		Gap with matching	
	Gap	SE	Gap	SE
Log of per capita consumption	−0.621***	0.057	−0.295***	0.072
Log of per capita food consumption	−0.363***	0.074	−0.038	0.090
Log of per capita non-food consumption	−0.989***	0.066	−0.660***	0.089
Number of observations	1232		1255	

SE: Robust standard errors; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

income, household size,⁷ the share of children in household size,⁸ and the share of highly educated family members⁹); characteristics of the household head¹⁰ (including age, number of years of education, gender, and marital status); variables representing location of current residence as well as variables indicating duration of stay in the current city are also reported in Table 1.

It is well-documented that migrants are better off after living in the city for a long period of time (Chen et al., 2012, 2015) because income levels of migrants increase with the duration of residence (Chiswick, 1978). Therefore, we are interested in studying the potential impact of duration of stay on transforming migrant households' consumption behaviour. Due to the requirement that migrants in Vietnam have to live in the destination city for a certain period of time to be able to apply for an urban *ho khau*, we use both the number of years of residence in the current city and a dummy variable indicating whether a household has lived in the city for three years or more to measure the duration of residence. The reason for considering duration of stay as a dummy variable is that it captures the likelihood of a migrant household becoming eligible to obtain an urban *ho khau* by meeting the minimum stay requirement. In addition, a previous study by Niimi et al. (2009) proves that 3 years constitute an important period during which migrants typically acquire relevant location-specific human capital in the destination city.

The numbers in Table 1 reveal that migrant households exhibit significantly lower per capita consumption and income compared to urban households. While per capita income for migrants is about 80% (or VND918,000) that of their urban counterparts, their per capita consumption is only 60% (or VND1,518,000) as much. There is not much difference in food consumption between the two groups, while non-food consumption of migrant household is less than 50% that of urban households. Further, the household size of urban households is more than twice that of migrant households; urban households also have a higher share of children compared to their migrant counterparts (0.2 and 0.07 for urban and migrant households, respectively). According to Locke et al. (2012), family and spousal separation results in a smaller size of migrant households in the destination compared to urban households. Finally, urban households have a higher share of members with a high school degree or above.

Compared to urban household heads, migrant household heads are much younger, and are more likely to be male and single, while heads of urban households are more likely to be married. With respect to education, not much difference is found between the heads of migrant and urban households. As for the duration of residence in the current city, migrant households have lived in the current location of residence for 6.5 years on average, while this number is about 53 years for urban households. Considering a dummy variable as an alternative measure of duration of residence, the numbers in Table 1 show that 100% of urban households have lived in the current city for three years or more, while this proportion is 66.6% for migrant households. Finally, 59% of migrant households in our sample reside in Ho Chi Minh City, compared to 45% of urban households while 26% of migrant households reside in Hanoi versus 32% of urban households.

The difference in means for the selected variables is presented in the last two columns of Table 1. Most of the characteristics are significantly different between migrant and urban households, with the exception of per capita food expenditure and the number of years of education, suggesting that the two groups are quite disparate. It has been argued that the differences in the outcome variables may be solely due differences in the profiles of households if the comparison is made between two groups with different characteristics (Bouoiyour & Miftah, 2015; Clément, 2011; Zhang & Meng, 2007). Due to the large differences in characteristics, the use of a matching approach is called for to balance these differences and to ensure that the two groups are comparable.

⁷ The household size of migrant households is limited to the number of family members in the city.

⁸ The share of children is the number of children below 16 years of age in the household divided by household size. The more children in the household, the lower the proportion of income earners, and thus the lower per capita consumption is expected to be.

⁹ The education variable refers to household members who have a high school degree or above divided by household size. The variable is included because education is expected to have a positive impact on permanent income and thus current consumption.

¹⁰ The household head is regarded as the main decision maker in the household, and thus plays an important role in influencing household consumption choices. Various studies in Vietnam include the characteristics of the household head as determinants of household welfare (Nguyen et al., 2011; Nguyen & Pham, 2012; Nguyen & Winters, 2011).

3. Empirical strategy: matching migrant and urban households

We are interested in studying the household consumption gap between migrant and urban households with similar characteristics. In contrast to urban households, migrant households have to obtain an urban *ho khau* to live in urban areas permanently. The difficulty of obtaining an urban *ho khau* may affect the living arrangements and economic well-being of migrant households. We are unable to isolate the causal effect of the *ho khau* system because the *ho khau* is not randomly assigned to households in rural areas (Chen et al., 2015). Instead, migrant households constitute a selected group due to self-selection and the (presumably non-random) selection mechanism of the *ho khau* system. Migrant households are therefore neither representative of the urban nor the rural population.

We employ a matching strategy akin to Chen et al. (2015) to balance out differences in observed characteristics between migrant and urban households. We also compare our matching results to the results obtained from a linear regression model. The identifying assumptions of matching and OLS are the same but matching does not require a linearity assumption and therefore avoids a potential misspecification of the underlying conditional expectation.

Matching approaches are typically used to estimate treatment effects. Due to the selection issues mentioned above, we are unable to identify treatment effects but we can use matching to study differences in household consumption between migrant and urban households with similar observed characteristics. It appears likely that a large part of the gap between the two groups can be attributed to the *ho khau* system but we cannot obtain a precise estimate of the effect of the *ho khau* because parts of the gap may be attributed to other (observed and unobserved) factors. Therefore, our results can only be interpreted as the results of a descriptive analysis.

We use the notation of the potential outcomes framework typically found in the matching literature to motivate our analysis. Let D_i be equal to one if household i is a migrant household and zero otherwise. C_i is the consumption level of household i . $C_i(1)$ and $C_i(0)$ represent the outcome and the counterfactual values when $D_i = 1$ and $D_i = 0$, respectively. The population counterpart of the average consumption gap between urban and migrant households may be written as

$$\Delta = E(C_i(1) - C_i(0)) = E(C_i|D_i = 1) - E(C_i|D_i = 0), \quad (1)$$

where $C_i = D_i C_i(1) + (1 - D_i) C_i(0)$ because only one of the potential outcomes is observed for household i . Δ is usually referred to as average treatment effect in the matching literature. Another parameter that is commonly used is the average treatment effect on the treated, $\Delta_{D=1}$, which is given by

$$\begin{aligned} \Delta_{D=1} &= E(C_i(1) - C_i(0)|D_i = 1) \\ &= E(C_i(1)|D_i = 1) - E(C_i(0)|D_i = 1). \end{aligned} \quad (2)$$

It is useful to note that Δ may be written as

$$\begin{aligned} \Delta &= E(C_i|D_i = 1) - E(C_i|D_i = 0) = E(C_i(1)|D_i = 1) - E(C_i(0)|D_i = 0) \\ &= [E(C_i(1)|D_i = 1) - E(C_i(0)|D_i = 1)] + [E(C_i(0)|D_i = 1) - E(C_i(0)|D_i = 0)] \\ &= \Delta_{D=1} + [E(C_i(0)|D_i = 1) - E(C_i(0)|D_i = 0)], \end{aligned} \quad (3)$$

where $[E(C_i(0)|D_i = 1) - E(C_i(0)|D_i = 0)]$ may be interpreted as selection bias due to non-random selection (Bouoiyour & Miftah, 2015). In the case of random assignment of individuals to treatment and control group, there is no selection bias and therefore $E(C_i(0)|D_i = 1) - E(C_i(0)|D_i = 0) = 0$.

In the context of our analysis, identifying the average treatment effect on the treated associated with the *ho khau* system would require the assumption that treatment assignment is based on observed characteristics. It is unlikely that this assumption, which is often referred to as unconfoundedness, holds in our case. However, the use of a matching approach allows us to mitigate the selection problem. In the following, we study differences in household consumption between urban and migrant households with similar characteristics to isolate the part of the gap that is due to observed characteristics from the part that is due to unobservables.

Different types of matching methods include propensity score matching, stratification matching, and nearest neighbour matching. Although propensity score matching (PSM) (Rosenbaum & Rubin, 1983) is a popular method in the literature, it has been criticized for increasing imbalance, inefficiency, model dependence, and bias (King & Nielsen, 2016). Given the concerns over the use of PSM, our empirical analysis employs nearest neighbour matching (NNM) based on Abadie and Imbens' work (Abadie & Imbens, 2011). The approach determines the "nearest neighbour" by using a weighted function of the covariates for each observation based on the Mahalanobis distance metric, also referred to as Mahalanobis distance matching. King and Nielsen (2016) find that this approach does not suffer from the problems of PSM. Hence, we apply NNM to obtain the consumption gap between urban and migrant households with the same observed characteristics.

Abadie and Imbens (2011) show that NNM estimators are not consistent when matching on two or more continuous covariates. Since our list of covariates contains two continuous variables, including age of the household head and household per capita income, we employ the bias correction term proposed by Abadie and Imbens (2011), which involves the use of a

Table 3
Contribution of remittances to the consumption gap.

	Without matching		With matching	
	Original (1)	Adjusted for remittance (2)	Original (3)	Adjusted for remittance (4)
Migrant	−0.621*** (0.057)	−0.320*** (0.042)	−0.295*** (0.072)	−0.017 (0.062)
<i>N</i>	1232		1255	

SE: Robust standard errors; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

linear function of the covariates to correct for a large-sample bias that exists when matching on more than one continuous covariate (StataCorp LP, 2013).¹¹

4. Empirical results

4.1. Nearest neighbour matching estimation

NNM produces estimates of the conditional gap in household consumption after controlling for differences between migrant and urban households. We use the set of covariates presented in Table 1 employ a dummy variable to measure the duration of stay of migrant households in the city. The results are reported in Table 2.

For the sake of comparability, we present results of the unconditional gap without matching and the conditional gap resulting from NNM. As expected, the matched estimates show a lower gap in consumption between the two groups. Before matching, per capita consumption is 62% lower among migrant households compared to their urban counterparts, while this gap declines to 29.5% after matching. Notably, for food consumption the unmatched gap is large and significant at 36%. However, this gap virtually disappears when the two groups are matched. In contrast, the gap in non-food consumption remains large and significant even after matching. With matching, the gap declines from 99% to 66%. This result provides support for the proposition that migrant households may not spend much on non-food consumption in destination cities.

The lower consumption level of Vietnamese migrant households is in line with results obtained for China. Using the Chinese Household Income Project Survey 2002, Chen et al. (2015) find consumption levels of migrants to be 16.1% lower than those of urban residents when applying a matching method. Most of the gap in China is also found in non-food consumption, particularly in household equipment consumption (20.5%) and communication (20.1%). The difference in food consumption between the two groups in China is also insignificant.

As discussed earlier, we compare our results based on dummy variables capturing the duration of stay in the city to results based on a continuous measure of the duration of stay. Using the continuous measure yields a gap of 27% in total consumption between migrant and urban households, and 61% in non-food consumption (the results are reported in Appendix-Table A2). This result suggests that the duration of stay plays an important role in transforming consumption behaviour of migrant households in the city. The finding is consistent with Pham et al. (2018) and Niimi et al. (2009) who find positive effects of the duration of stay on transforming behaviours and controlling risks of migrants in metropolitan areas in Vietnam.

4.2. Comparative analysis

We compare our NNM results to estimates obtained from a linear regression model.¹² We estimate separate models for each of the three consumption measures on the set of explanatory variables presented in Table 1.¹³ As discussed above, the model may be misspecified if the linearity assumption is violated. However, if the linear model is correctly specified, then the OLS estimates are more efficient than the NNM estimates. The results are reported in Appendix-Table A1.

Our OLS estimates confirm the consumption gaps between urban and migrant households. The estimated coefficient of the *migrant* dummy is negative and statistically significant at a 1% level for total consumption and non-food consumption, but it is not significant for food consumption. For total consumption, the estimated coefficient indicates that per capita

¹¹ In Stata, we use the *teffects nnmatch* command in combination with the bias adjustment option (StataCorp LP, 2013).

¹² Building on the specification of Nguyen (2018), we estimate the following model:

$$\ln(C) = \beta_1 + \beta_2 \text{migrant} + \beta_3 \ln(Y) + \beta_4 X + \varepsilon. \quad (4)$$

Similar to Chen et al. (2015), Le and Booth (2014), and Hayashi et al., 2014, our outcome variable of interest, (C), is per capita household consumption, which we measure in three alternative forms as total, food, and non-food consumption. Migration status is captured by the dummy variable *migrant*, which takes on a value of one for migrant households and zero otherwise. The coefficient β_2 measures the difference in per capita consumption between migrant and urban households.

¹³ These variables are widely used in the literature on household consumption (Bouoiyour & Miftah, 2015; Charles, Hurst, & Roussanov, 2007; Chen et al., 2012, 2015; Clément, 2011; Le & Booth, 2014; Nguyen et al., 2011)

Table 4
Impact of *ho khau* on consumption gap.

Panel A: Destination city	Hanoi (1)	Ho Chi Minh City (2)	Binh Duong, Dong Nai (3)
Migrant	−0.947*** (0.174)	−0.104 (0.094)	−0.108 (0.116)
<i>N</i>	360	670	255
Panel B: Urban amenities	Health insurance (1)	Social insurance (2)	Home ownership ^a (3)
Migrant	−0.153* (0.083)	−0.252*** (0.074)	−0.372*** (0.117)
<i>N</i>	619	471	542
Panel C: Migration duration	Without vs with urban <i>ho khau</i> (1)	<6 months vs >6 months (2)	Sample including migrants with <i>ho khau</i> (3)
Migrant	−0.097 (0.17)	−0.659*** (0.205)	−0.289*** (0.069)
<i>N</i>	852	729	1378

Robust standard errors in parentheses; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

^a Non-food consumption used as dependent variable.

consumption of migrant households is 48% lower than that of their urban counterparts after controlling for observed characteristics. Most of this gap is attributable to non-food consumption, which is estimated to be 85% lower for migrant households, while the difference in food consumption between the two groups is almost negligible.

It is important to note that the gaps obtained from matching show a smaller effect from migration than the OLS estimates reported in Table A1. This suggests that imposing a linearity assumption does in fact produce results that are quite different from the NNM results, which do not require a linearity assumption. At the same time, both the OLS and NNM results reveal a substantial gap in total household consumption between urban and migrant households, which is driven by non-food consumption, even after controlling for observed characteristics. Interestingly, differences in observed characteristics appear to play a relatively minor role in explaining the gaps between the two groups. Possible reasons for the observed gaps include restrictions that prevent migrants from accessing public services under the *ho khau* system and the need to remit money to families in rural areas. The following sections investigate these possibilities further.

5. Factors behind the gap: does *Ho khau* matter?

An extensive body of literature provides theoretical and empirical evidence on general motives behind migrant saving behaviour and remittances and the impact of these factors on consumption levels in the destination cities. Amuedo-Dorantes and Pozo (2006) and Niimi et al. (2009) argue that migrants are risk-averse economic agents. They send remittances back to their families in the place of origin as insurance to protect themselves against economic uncertainty in the destination setting. Chen et al. (2012) find that the higher the remittances of rural-urban migrants in China, the lower their consumption levels. In the case of Vietnam, Nguyen (2018) finds that remittances and precautionary savings are channels through which the *ho khau* has an impact on the consumption behaviour of migrants in the current place of residence.

It appears likely that migrants would remit less if they were allowed to register more easily because they would bring their children to the city to take advantage of the entitlement of urban residents to subsidized education. Moreover, because remittances serve as a mechanism to insure migrants against income insecurity in their destination cities, they may remit less if they have access to the better jobs that go with urban *ho khau* status. In this section, we first analyse the impact of remittances. We then perform a sensitivity analysis to determine the impact of the *ho khau* on the consumption gap. It should be noted that our analysis for this section is based on NNM estimates because the previous analysis demonstrates that the OLS estimates are somehow biased.

5.1. Remittances

Remittances are defined as money sent by migrant households to their families in the hometown. They are considered as a part of migrants' saving in that they amount to income not spent on the consumption of the migrants themselves. To investigate the impact of remittances on the consumption of migrants in their place of residence, we perform a simulation experiment by positing that migrant households, rather than sending remittances home, spend the money instead on their

own consumption. For simulation purposes, the per capita consumption of the migrant households of our sample is re-calculated by adding the value of remittances to measured consumption.¹⁴ The simulated consumption measure is used as the dependent variable to re-estimate the conditional gap using NNM. The results are reported in Table 3 for both matched and unmatched estimation methods. Both sets of results show a significant decrease in the consumption gap between migrants and urban residents. Indeed, when matching is applied, the gap becomes minuscule and is no longer statistically significant. This implies that if migrant households in the city were to keep all remittances and use the money instead for their own consumption, the consumption gap between urban and migrant households would disappear (assuming no behavioural changes).

5.2. Sensitivity analysis

5.2.1. Heterogeneity across destination cities

The NNM results presented in Table 2 assume that migrant and urban households live in the same city. However, *ho khau* restrictions on migrants differ across cities, being particularly strong in Hanoi, the capital city (Government of Vietnam, 2012; Ministry of Justice, 2013; VnExpress, 2013). Therefore, we would expect that the consumption gap varies across cities. To test whether the consumption gap is sensitive to variations in the *ho khau* system, we estimate the gap separately for Hanoi, Ho Chi Minh City, and the Ho Chi Minh neighbour cities combined. If the degree of *ho khau* restrictiveness does not contribute to the gap, then the observed differences in consumption between migrant and urban households should be fairly constant across cities. In contrast, if *ho khau* restrictions matter, then the gap should be larger in Hanoi due to its stronger restrictions.

The results presented in Panel A of Table 4 reveal that the consumption gap in Hanoi is indeed the largest among the three regions with migrants there consuming 95% less than their urban counterparts. This is much higher than the matched gap in Table 3 (29.5%) for the pooled sample. For Ho Chi Minh City and surrounding areas (Binh Duong and Dong Nai), the gap is not statistically significant at conventional levels of significance. Hanoi's much stricter laws in addition to the general legal requirements for permanent residency (Government of Vietnam, 2012; VnExpress, 2013) appear to have an effect on consumption of migrant households.

5.2.2. Urban amenities

Under NNM, we are not able to control for many household characteristics because doing so would severely limit the sample size (Chen et al., 2015). In this section, we control for other characteristics that have not been taken into account for previous NNM estimates. We limit the sample to those households that share these characteristics, then compare the consumption gap between migrant and urban households within these restricted samples. The results are presented in Panel B of Table 4.

Medical insurance and social insurance are important indicators of social welfare, but migrants are less likely to have coverage in their destination cities. Having health insurance significantly affects the household's willingness to consume because it reduces the risk of incurring high medical expenses.¹⁵ Coverage under social insurance programs is available only in connection with more stable jobs held under permanent or long term contracts of the sort migrants have difficulty obtaining. We expect that the consumption gap will be narrowed if we compare only households for which the head has insurance. The results shown in Panel B of Table 4 confirm this, showing that the gap declines to 15.3% among households in which the head has health insurance as compared to the 29.5% gap obtained for the full sample (Table 3). The gap nevertheless remains at 25.2% among households in which the head has social insurance, indicating that this benefit does not boost consumption among migrants by as much as health insurance does.

Home ownership on the part of migrants indicates a long-term commitment to residing in the destination city and may correlate with a pattern of consumption more closely resembling that of urban residents. Among migrant households, home ownership is extremely rare, confined to just 5% of the sample. We include only these home owning migrant households when re-estimating the gap relative to urban residents for non-food consumption. As shown in the third column of Table 5, Panel B, the gap falls to 37.2% versus 66.0% for the full sample (Table 3). Thus a fairly large non-food consumption gap remains despite migrants having settled and owning their homes in the city.

5.2.3. Migration status and duration of residence

A good way to quantify the impact of the *ho khau* on migrant households would be to compare the consumption of given households before and after receiving an urban *ho khau*. However, our cross sectional data observed at one point in time do not allow us to perform such an analysis. Instead, we compare consumption levels between migrants who have obtained an urban *ho khau*, involving a sample of 123 households not included in our analysis thus far, and those who have not. The result

¹⁴ Data on remittances is available in the VRUM2013 survey for migrant households. Comparable data on remittances made by urban households are not available in the VHLSS2012 survey.

¹⁵ Migrants are allowed to freely access public hospitals in rural areas where they register their *ho khau*. However, without an urban *ho khau* they must pay for private health care services in the city at much higher cost, or they may be allowed to access public hospitals but must then pay full cost without any subsidy from an insurance provider.

reported in the first column of Table 4, Panel C shows that migrant households that lack an urban *ho khau* exhibit a lower consumption level than those that have obtained an urban *ho khau* but the gap is numerically small and statistically insignificant. This suggests that obtaining an urban *ho khau* in itself does not materially affect the consumption behaviour of migrants, contrary perhaps to expectations.

Further, we compare consumption levels of long-term migrant households who have resided in the destination city for more than six months and short-term migrants who have been there for less than this length of time. The result reported in the second column of Panel C shows that short-term migrant households consume 65.9% less than long-term migrant households. Duration of migration is thus seen to have a powerful effect on consumption. This result is consistent with analysis of the Chinese case which finds that rural-urban migrants are better off after living in the city for a long period of time, particularly after receiving an urban *ho khau* (Chen et al., 2012, 2015).

Finally, we estimate the consumption gap using an expanded sample in which migrant households who obtained an urban *ho khau* are added to the existing sample. The consumption gap is only slightly lower than for the full sample, at 28.9% versus 29.5% (Table 2). This is consistent with the result shown in column 1 of Panel C that gaining an urban *ho khau* does not have much effect per se on migrant consumption. Rather, it is the duration of time spent in the city that seems to transform migrant consumption behaviour.

6. Conclusion

This paper examines the consumption gap between migrant and urban households for four destination cities in Vietnam. The findings indicate that migrant households exhibit considerably lower per capita consumption than their urban counterparts. Applying nearest neighbour matching to adjust for heterogeneity in observed characteristics between the two groups, our results show that the gaps in total and non-food consumption are 29.5% and 66.0%, respectively.

While we are unable to detect a significant gap in consumption between migrants who have obtained an urban *ho khau* and those who have not, we nevertheless see indirect evidence that urban *ho khau* status may play a role. The gap between migrant and urban households appears to be accounted for largely by the remittances migrant workers send to family members back in the home town. These family members often wish to join their migrant kin in the city, but lack of access to *ho khau*-based entitlements, particularly education in the case of children, prevents them from doing so. Even for migrants who do not obtain an urban *ho khau*, consumption rises sharply with the duration of stay in the city. We are able to detect the change in consumption behaviour at a duration of stay of just six months. This suggests that migrants make a fairly quick adaptation to an urban lifestyle even as they remain constrained in their spending by the need to send remittances home.

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Appendix A

See Tables A1 and A2.

Table A1
Consumption gap – OLS analysis using duration of stay as a dummy variable.

	Log of per capita consumption (1)	Log of per capita food consumption (2)	Log of per capita non-food consumption (3)
Migrant	−0.476*** (0.073)	−0.074 (0.096)	−0.850*** (0.091)
<i>Household head's characteristics</i>			
Age	−0.003 (0.013)	0.015 (0.017)	−0.014 (0.014)
Age square	0.000 (0.000)	−0.000 (0.000)	0.000 (0.000)
Years of education	0.030*** (0.009)	0.007 (0.012)	0.041*** (0.011)

Table A1 (Continued)

	Log of per capita consumption (1)	Log of per capita food consumption (2)	Log of per capita non-food consumption (3)
Gender (male = 1)	0.034 (0.051)	0.011 (0.074)	0.002 (0.056)
Marital status	0.013 (0.081)	-0.122 (0.109)	-0.055 (0.102)
<i>Household characteristics</i>			
Log of per capita income	0.312*** (0.049)	0.344*** (0.068)	0.337*** (0.056)
Household size	-0.057*** (0.020)	-0.032 (0.026)	-0.052* (0.023)
Share of children	0.177 (0.142)	0.410** (0.172)	0.128 (0.188)
Share of highly educated members	0.283** (0.112)	0.414*** (0.155)	0.321*** (0.125)
Duration of residence	0.357*** (0.092)	0.368*** (0.126)	0.442*** (0.113)
<i>Location variables (Ref: Hanoi)</i>			
Ho Chi Minh City	0.092 (0.071)	0.012 (0.084)	0.159** (0.083)
Binh Duong and Dong Nai	-0.100 (0.081)	-0.068 (0.104)	-0.058 (0.093)
Constant	4.851*** (0.486)	3.065*** (0.707)	4.250*** (0.536)
R ²	0.329	0.170	0.363
N	1232	1232	1232

Robust standard errors in parentheses; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A2

NNM consumption gap based on different measures of duration of stay.

	Dummy variable		Continuous variable	
	Consumption gap	SE	Consumption gap	SE
Log of per capita expenditure	-0.295***	0.072	-0.269***	0.069
Log of per capita food expenditure	-0.038***	0.090	-0.060	0.083
Log of per capita non-food expenditure	-0.660***	0.089	-0.613***	0.088
Number of observations	1255		1255	

SE: Robust standard errors; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

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