The Effect of Inflation on Domestic Migrant Worker Households in China

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Abstract: Domestic migration workers and inflation are two phenomena attracting attention from worldwide scholars. The article endeavors to accomplish the following three tasks: a) describe the characteristics of inflation and immigration situations in China; b) study the effect of inflation on domestic immigrants' the expenditures; c) understand the effect of inflation on immigrants' happiness and satisfaction. The paper found out that in all the eight expenditure categories, only three categories (food, clothing and housing) are negatively affected by inflation. Other five expenditure categories (health and medical, house equipment, facilities and services, entertainment, educational and cultural activities, transportation and communication, tuition, and miscellaneous) are positively affected by inflation. The biggest reduction of expenditure is in transportation and communication with a coefficient of -0.025. The paper also found out that the lower income group's expenditure is more affected by inflation then higher income group. The paper showed that inflation didn't have a significant effect on people's feeling of happiness and their satisfaction.

Keywords: Domestic immigration workers, inflation, expenditure, happiness, satisfaction.

1. BACKGROUND AND LITERATURE REVIEW

1.1. Immigration Workers in China

The China's Hukou is a record in the system of household registration required by law in the People's Republic of China system. The Hukou system divides the Chinese citizens into urban and rural residents. It was first set up in cities in 1951 and extended to rural areas in 1955. In the early years of the system, it served largely as a monitoring, not a control mechanism of population migration and movements. The disastrous Great Leap Forward and the famine helped the government set the full Hukou system as it is now understood. Despite significant modifications, especially since the early 1980s, the system remains to this day. After Chinese government started its economic reform in 1978, it caused the unexpected change rate of "floating population". From 1988 to 2003, the number of rural-urban migrants was quickly increased from 70 million to 140 million. Whether one has local urban Hukou—is at the center of migration processes and labor market segmentation in China. Since the rural migration is essential for the economics development, the authorities seem to be walking a fine line between social control and construction of the urban economy, much as has the United States in its various phases of loosening and tightening immigration policy regarding foreign labor.

There are different kinds of immigration workers as pointed out by C. Cindy Fan (2002): the "permanent migrants" are sponsored by the state and are selective and privileged. The "temporary migrants" or "floating population" refers to those who had stayed in the city for at least three months but whose Hukou were not in the city. Compared with "permanent migrants", the "floating population" are "outside of the state plan," are on their own and inferior. The vast majority of migrants in China today are classified as members of the "floating population", persons away from the place where their Hukou is permanently registered. The classification is comprehensive; encompassing skilled and unskilled workers, business people, foreign nationals, students, tourists and people in transit. The floating population is officially estimated to be about 100 million (Chang and Brada, 2002). The floating populations of Shanghai and Beijing were estimated to be one-fourth and one-third respectively of those cities' registered population in the mid-1990s (Chen and Ravalllion, 2008; Brandt and Zhu, 2000). The survey of our study has a questionnaire asking about the "Type of 'Hukou' " and the research uses this question to identify where workers come from. The paper doesn't discuss the "permanent migrants" but instead focus on the "floating population" who works in the city and has a rural "Hu Kou".

Many studies have examined China's rural–urban migration and urbanization, including Chang (2003), Chang and Brada (2002), Hare (1999), Knight and Song (1999), Seeborg, Jin, and Zhu (2000), Song (2001), Song and Zhang (2002), Wu (1994), and Zhao (1999). Chang and Brada (2002) pointed out that the

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Chinese rural-to-urban migration has been a dominant source (75%) of the growth of its urbanization in 1978–1999. The downward time trend of the overall migration in 1978–1999 may imply rising costs of urbanization that limits the increase of migrants. Song and Zhang (2003) found that like many developing countries, the problems of unemployment and poverty has begun to emerge in China as a result of rapid urbanization in the last two decades, along with other problems such as overloading of housing and social services, increased crime, pollution, and congestion. Song and Zhang (2003) pointed out that China's experience since 1978 contrasted sharply with its slow and even stagnated urban growth in the 1960s and the 1970s.

Song and Zhang (2002) stated that State enterprises are laying off workers and hiring younger migrants, who are willing to do harder work for less pay. In the paper, they point out that the most typical patterns of labor migration involve young unmarried men and women who work in construction and factories, and married men who leave their wives at home. There is evidence that a significant proportion of rural labor migrants are now coming as couples.

Migrants' inferior social status makes them more venerable for economics problems such as high rate of inflation. The following part discusses the inflation problem in China.

1.2. Inflation in China

The Gross Domestic Product (GDP) in China was quickly increased from the low of 46.5 USD Billion in December of 1962 to the high of 7298.1 USD Billion in December of 2011. Meanwhile, the inflation rate also grows with the GDP.

The inflation is partly due to the increase of foreign exchange rates since liquidity surplus is severe and the domestic currency faces more appreciating pressure. After 1997, due to the Asian financial crisis, the inflation rate was lowered to 6%. According to the National Bureau of Statistics, the China Consumer Price Index (CPI) averaged 105.89 and reached 6.5% increase in 2011 compared to a year earlier, the highest level since June 2008 when it reached 7.1% (Chung, 2010). Inflation in China is of great concern because it affects people's expenditure behaviors and people's satisfaction and feeling of happiness.

In the economics literature, there are multiple papers mentioning inflation and its effect on welfare. Romer (1993) estimated that the gain from reducing the annual inflation rate from 10% to zero is equivalent to an increase in real income of slightly less than one percent. Shilier (1996) collected a survey of 677 people in the United States, Germany, and Brazil. Shiiler's paper shows that people believed inflation reduce their standard of living and impact their real income. The rich and the poor are affected different by inflation. Easter and Fischer (2001) used a polling data for 31,869 households in thirty-eight countries and allows for country effects. Their paper shows that the poor are more likely than the rich to mention inflation as a top national concern. They further argue that the rich are better able to protect themselves against inflation than the poor during inflation.

Wang and Zhang (2009) pointed out that fixed income consumers are squeezed between the slowing growth of disposable income and the rising expenditures required to maintain their patterns of consumption. According to Wang and Zhang (2009), the Chinese government should pay attention to avoid inflation and its effect on low-income people's basic consumption ability.

In consequences, the literatures on inflation studies generally contemplate that inflation to be bad because it impairs the pursuing power of the fixed income group. However, there is a lack of quantitative analysis studying the impact of inflation on migration workers' consumption behavior and their psychological feelings in China. The paper focuses on the following three research questions:

1. What are the current inflation and immigration situations in China?

2. What is the effect of inflation on domestic immigrants' the expenditures?

3. What is the effect of inflation on domestic immigrants' happiness and satisfaction?

The paper is important and makes unique contribution to the literature because it is the first paper to analyze the problem of inflation and its effect on domestic migration workers in China, which may facilitate the process of deriving policies under various circumstances.

2. DATASET AND VARIABLES

2.1. Dataset

The major dataset used in the paper is the CHIP 2002 (Chinese Household Income Project 2002), which

has comprehensive information of people's income, feeling of happiness, education background, and their expenditures, etc. There are ten separate datasets for CHIP 2002, of which the ninth data contains information about rural-urban migrant household and the tenth data contains information about rural-urban migrant individual. The paper focused on the urban-rural migrant part by merging the ninth and tenth data through a unique ID Code of Household (CODE).

Another major dataset used in the paper is the China Statistical Yearbook (CSY). We obtained the inflation (CPI) information from China Statistical Yearbook (CSY), and added the CPI for each province to the micro dataset Chinese Household Income Project (CHIP). From the CSY dataset, we compared the inflation rate of urban and rural areas of China from year 1985 to 2010. The comparison is shown on Figure **1**. As shown on Figure **1**, from 1985 to 1990, the CPI gradually grows from 100 to around 190; from 1991 to 1992, the inflation rate remains the same; then from 1993 to 1997, CPI grows fast from around 200 to nearly 400. From 1998 to 2003, there is not a big change of CPI. Then from 2004 until 2010, the inflation rate gradually grew to be around 500. Before 1997, there was a continuing growth of inflation, after 1997, there were mixed stages of CPI growth and stages when CPI didn't change much or even decreases a little bit. Comparing cities with the countryside, the city's CPI was close the countryside's CPI before 1997, the CPI of the cities was about 50 higher than the CPI in the countryside after 1997. Figure **1** demonstrated that the overall price level in 2010 was about five times the overall price in 1985.

In order to control for the possible endogenous problem between inflation and expenditure, we added two instrumental variables to the merged dataset: the variable of deposits and loans of financial institutions in each province from China Compendium of Statistics (CCS) and the variable of per-capita budgetary revenue and expenditure in every province from Finance Years-Book of China (FYBC).

The three independent variables of interest are expenditures, happiness, and satisfaction. There are nine questionnaires related with expenditure which include: "total expenditures on food", "total expenditure on clothes", "total expenditure on house equipment, facilities and services" "health and medical total expenditure" "total expenditure on transportation and communication" "total expenditure on entertainment, educational and cultural activities", " total expenditure on tuition and miscellaneous" and "total expenditure on housing". For the purpose of the analysis, the expenditures are converted to the percentage level.

As for happiness, we used the variable derived from the following survey question: "Generally speaking, do you feel happy?" As for satisfaction, we used the variable derived from the following survey question "How satisfied are you with your present job?" The marginal effects were calculated for each of the analysis.

The other important task is to identify the migrants who moved from rural cities to urban cities. There were several important questionnaires about "Hukou" which include "Type of 'Hukou", "If you have a rural Hukou, where is it?" "Which province is your Hukou in?" "How

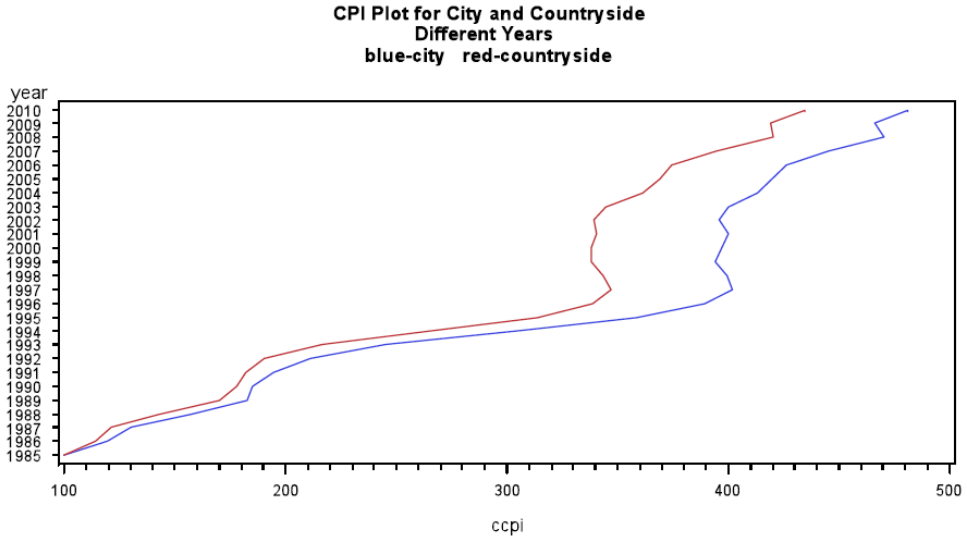

Figure 1: Inflation Rates over Time.

Table 1A: Descriptive Statistics for Categorical Variable

Variable Name	No. of obs.	Percentage
Gender	1615	
=1 male	1342	83.1
=2 female	273	16.9
Marriage	1615	
=1 with spouse	1591	98.5
=2 never married	9	.6
=3 divorced	4	.2
=4 widow or widower	9	.6
=5 other	2	.1
Educational level	1615	
=1 Finished college and above	12	.7
=2 Finished professional school	18	1.1
=3 Entered in professional school, but not finished	2	.1
=4 Finished middle level professional school	42	2.6
=5 Entered middle level professional school, but not finished	6	.4
=6 Finished upper middle school	252	15.6
=7 Entered in upper middle school, but not finished	26	1.6
=8 Finished lower middle school	787	48.7
=9 Entered in lower middle school, but not finished	111	6.9
=10 Finished elementary school	228	14.1
=11Entered in elementary school or below	131	8.1
Health condition	1615	
=1 Very good	563	34.9
=2 Good	908	56.2
=3 Just so-so	110	6.8
=4 Worse	30	1.9
=5 Worst	4	.2
Generally speaking, do you feel happy?	1615	
=1 very happy	111	6.9
=2 happy	599	37.1
=3 so-so	725	44.9
=4 not very happy	146	9.0
=5 not happy at all	27	1.7
=6 don't know	7	.4

Table 1B: Descriptive Statistics for Categorical Variable

Variable Name	No. of obs.	Percentage
How satisfied are you with your present job?	1615	
=1 Not satisfied at all	56	3.5
=2 Somewhat unsatisfied	342	21.2
=3 So-so	788	48.8
=4 Relatively satisfied	407	25.2
=5 Very satisfied	22	1.4
Do rural workers enjoy same treatment as urban workers: Equal pay for equal work	1615	
=1 Yes	476	29.5
=2 No	1139	70.5
Do rural workers enjoy same treatment as urban workers: Type of work	1615	
=1 Yes	450	27.9
=2 No	1165	72.1
Do rural workers enjoy same treatment as urban workers: Promotion	1615	
=1 Yes	280	17.3
=2 No	1335	82.7
Do rural workers enjoy same treatment as urban workers: Housing provision	1615	
=1 Yes	272	16.8
=2 No	1343	83.2
Do rural workers enjoy same treatment as urban workers: Social securities	1615	
=1 Yes	220	13.6
=2 No	1395	86.4
Do rural workers enjoy same treatment as urban workers: Other benefits and income in-kind	1615	
=1 Yes	287	17.8
=2 No	1328	82.2

Table 1C: Descriptive Statistics for Continuous Variable

Variable Name	Average	S.D.
Age	36.68	8.66
Total household income in 2002	16946.68	16449.24
Household population	2.82	0.906
Total expenditures on food consumption in 2002	4688.70	2925.28
expenditure on clothes in 2002	641.63	826.62
expenditure on house equipment, facilities and services	304.88	683.83
health and medical expenditure in 2002	709.57	2588.17
Expenditure on transportation and communication in 2002	698.35	1297.47
Expenditure on entertainment, educational and cultural activities in this city in 2002	929.68	1848.87
Expenditure on tuition and miscellaneous in 2002	465.65	926.49
Expenditure on admission support costs in 2002	274.65	1286.60
expenditure on textbooks and references in 2002	86.86	206.81

(Table 1C). Continued.

Variable Name	Average	S.D.
expenditure on adult education in 2002	35.11	361.16
education expenditure for supporting children to study in other cities in 2002	408.10	1593.40
expenditure on housing	3036.71	3114.43
Expenditure on house rent in 2002	2163.03	2668.79
Expenditure on water, electricity, fuel in 2002	843.21	915.63
miscellaneous expenditures in 2002	277.95	586.42
household total consumption expenditure (2002)	11905.75	8259.60
Inflation_2002 (CPI)	99.39	.50
Deposits and Loans of Financial Institution	32728110.29	29838532.74
Government Expenditure by Region (2002)	6059342.09	3286809.81

many years have you been working for your current employer?" "When did you move out of where your Hukou is?" "In which year did you start living and working in a town or city?" "How many years have you lived in an urban area by the end of 2002?" According to these questionnaires, the paper included samples whose Hukou was in rural areas but at that time were working and living in the city. After deleting missing variables, there were1615 observations left in the dataset to perform meaningful analysis. The descriptive statistics of the variables were shown on Table **1**.

2.2. Variables

Categorical Variables

The first part of Table **1** described the categorical variables used for the analysis. Table **1** indicated that around 82 % of total population is male. 99% of the sample is married with a spouse. More than 90% of people have the middle school degree diploma, but only .7% of the sample has a College Degree. One control variable included in the study is the health condition of the person. The majority of the sample reported "good" or "very good" health condition (90%), only around 2% of the sample reported "worse" or "worst" health condition. The categorical variable we were interested was the variable of happiness, there were six different categories of happiness: 7% percent of the population answered "very happy", 37% of the sample replied that they are "happy", 44% answered "so-so", only 9% stated that they were "not very happy" and 2% stated that they were "not happy at all". As for the variable of satisfaction, the descriptive data showed that around 50% of the sample feels "so-so". Another 21% of the sample was "somewhat unsatisfied" and 25% of the sample was "relatively satisfied". Very few people from the sample were in the category of "very satisfied" or "not satisfied at all". The survey also included a question asking whether people thought that the rural workers enjoy same treatment as urban workers for equal pay, type of work, promotion, housing provision, social securities, and other benefits and income in-kind. The majority (70%-86%) of the sample answers no to this question.

Continuous Variables

There were eight expenditure variables included in the analysis. The normality test for the expenditure variables rejected the normality assumption. As a result, the authors took a natural log transforming of expenditure variables so that the normality assumption is satisfied to perform further analysis. The largest expenditure was on food averaging at 4688.70 Yuan in 2002. The second largest expenditure was on housing averaging at 3036.71 Yuan in 2002.

Besides the expenditure variables, the other continuous variables included age, total income, inflation (CPI), educational level, marriage, gender, household population, and two instrumental variables: deposits and loans of financial institution and government expenditure by region. The average age of the sample was 37 years old. The average total income for the household in 2002 was 16946.68Yuan. The average household population was 3. The average number of deposits and loans of financial institution was 32728110.29 for each province and the average government expenditure by region was 6059342.09 in 2002.

3. EMPIRICAL ANALYSIS AND RESULTS

3.1. Inflation and Expenditure Behavior for the whole Sample

The first research question is to evaluate the relationship between the different expenditure variables

and inflation. We employed the two-stage regression approach when we estimated the impact of inflation on the expenditure variables. The goal of Two-Stage Least-Squares Regression (2SLS) is to analysis the two-way causality problem: on one hand, inflation could affect people's expenditure; on the other hand, people's expenditure could also influence the CPI. In order to apply a two-stage regression, we used two instruments: deposits and loans of financial institution in 2002 and government expenditures by region of 2002. Both of the variables proved to be valid instrument variables: they were correlated with inflation but they are not correlated with people's expenditure. We used both instruments in the analysis and found the results to be robust. After we applied our analysis for the whole sample, we divided our sample into different groups according to their income level and the same empirical model is used in each subsample income group. As mentioned in the variable section, the expenditure variables were logged in order to satisfy the normality assumption. The following empirical model was used to test the effect of inflation on people's expenditures on different categories.

$$\log(\exp)_t = \beta_0 + \beta_1 CPI_t + \beta_2 health_t + \beta_3 income_t + \beta_4 education_t + \beta_{it} x_{it} + \varepsilon_{it} \quad (1)$$

X includes a set of control variables: age, gender, marriage status, location of the residence, number of the population in the household, the occupation of the parents of the households' head and his or her spouse.

The independent variable in our model was different categories of consumptions in 2002 (Ct). According to the data, there were eight major categories of consumption: food (FoodE1), clothes (ClothesF2), home equipment facilities and services (HomeF3), health and medical expenditure (HealthF4), transportation and communication (TransF5), expenditure on entertainment, education, and culture services (EducF6), expenditure on housing and the related (HouseF7), and expenditure on miscellaneous goods and services (MisF8). The expenditure variables were changed to percentage levels.

The major dependent variable of interest was the inflation variable (CPIt), which was a categorical variable merged from the CSY dataset. The control variables were standard ones used in the literature. The first set of controls was household background variables (Ht), which would serve as a control for individual characteristics and family background. We added income age, gender, marriage status, education level, and health condition to control for individual characteristics. The consumption patterns and behaviors were different for people growing in different family background (Aiyagari, Braun, and Eckstein, 1998). Therefore, we added the occupations of the household heads' mothers and fathers, the education levels and the occupations of the spouses' mothers and fathers to control for different family background.

The second set of the control variables included demographic variable for the locations of the families (Lt). People living in different parts of the cities had different consumption levels. For example, if the families locate in the center of the city, they generally had higher expenses than families living near suburbs or outer suburbs. Similarly, people living in modern, more developed cities often incur larger living expenses. For example, people living in Shanghai generally spend more than people living in Chengdu. The variable (POP) was added to control for the location of the family. We also included the variable "the estimated minimum living expenses in each city" to control for the differences in living costs for people located in different cities.

The results of IV model using different expenditure as dependent variables were summarized in Table **2** through Table **4**.

Table **2** summarized the results of the IV models applied to the expenditure on the food and clothes. For the expenditure on food, the coefficient for inflation was -0.086 with a p-value of 0.351, which was not statistically significant. The coefficient for clothing was -0.067 and the result was significant, which means that for each one-unit increase in CPI, the expected log count of clothes consumption decreased by 0.067. The educational level had a positive and significant effect on consumption of both food and clothes, which meant that people with higher educational level tended to consume more food and clothes. Age had a positive effect on food but negative effect on clothes, which meant that food consumption increases with age but clothes expenditure decreased with age. If the person's health condition became poorer, he or she consumed less food and clothes.

Table **3** describes the effect of inflation on health and medical expenditure and on home equipment, facilities, and services expenditure. One unit increase of inflation reduced the expected log value of health expenditure by 0.013; also, one unit increase of inflation reduced the expected log value of home

Table 2: The Effect of Inflation on Expenditures on Food and Clothes

Expenditures on food			
Food	**Marginal effects**	**Std. Err**	**P>|z|**
Inflation	-0.086	0.092	0.351
Gender	0.003	0.028	0.916
Age	0.003	0.001	0.037*
Marriage	-0.057	0.034	0.098
Education Level	0.014	0.006	0.020
Health Condition	-0.017	0.015	0.264
Total Income	0.027	0.012	0.026*
Household population	-0.086	0.011	0.000*
Occupation (father of household head)	-0.011	0.017	0.526
Occupation (mother of household head)	0.006	0.019	0.764
Occupation (father of spouse)	0.020	0.023	0.374
Occupation (mother of spouse)	-0.031	0.024	0.186
Instrumented: Inflation Prob>chi2 = 0.000 R-squared = 0.037	Number of obs = 1749 Wald chi2(12) = 84.04 Root MSE = .419		
Expenditure on clothes			
Clothes	**Marginal effects**	**Std. Err**	**P>|z|**
Inflation	-0.067	0.187	0.000*
Gender	-0.091	0.023	0.000*
Age	-0.041	0.054	0.446
Marriage	-0.008	0.002	0.001*
Education Level	0.000	0.066	0.996
Health Condition	-0.062	0.011	0.000*
Household population	-0.038	0.030	0.199
Total Income	-0.030	0.022	0.174
Occupation (father of household head)	-0.024	0.032	0.448
Occupation (mother of household head)	0.060	0.036	0.096
Occupation (father of spouse)	0.054	0.044	0.216
Occupation (mother of spouse)	0.003	0.045	0.952
Instrumented: Inflation Prob>chi2 = 0.000 R-squared = 0.044	Number of obs = 1749 Wald chi2(12) = 133.83 Root MSE = 0.777		

Expenditures are in percentage value.
*Statistically significant at 0.05.

equipment, facilities, services and expenditure by 0.010, however, the effects were not significant. The older the people, they spent more on health and medical expenditure. Married couples tended to spend more on health and home equipment.

Table **4** described the effect of inflation on transportation, communication expenditure (ETC) and the effect of inflation on entertainment, education, and culture services expenditure (EEC). From Table **4**, we can see that inflation had a positive effect on both ETC and EEC: one unit increase of inflation increased the expected log value of ETC by 0.025. One unit increase of inflation increased the expected log value of EEC by 0.007. Females spent more on ETC and EEC than males. The older people spent more on ETC and EEC than the younger people. The less educated people spent more on ETC and EEC.

Table 3: The Effect of Inflation on House Equipment, Health and Medical Expenditure

Expenditure on house equipment, facilities and services			
HFS	**Marginal effects**	**Std. Err**	**P>|z|**
Inflation	-.010	.001	.270
Gender	-.001	.002	.640
Age	-.000	.000	.112
Marriage	.001	.003	.019*
Education Level	-.004	.001	.000*
Health Condition	.000	.002	.886
Total Income	-.001	.001	.375
Household population	.000	.001	.872
Occupation (father of household head)	-.002	.002	.252
Occupation (mother of household head)	.003	.002	.157
Occupation (father of spouse)	-.000	.002	.856
Occupation (mother of spouse)	.002	.002	.425
Instrumented: Inflation Prob>chi2 = 0.000 R-squared = 0.040	Number of obs = 1749 Wald chi2(12) = 65.44 Root MSE = 0.042		
Health and medical expenditure			
HME	**Marginal effects**	**Std. Err**	**P>|z|**
Inflation	.013	.021	.549
Gender	.000	.006	.947
Age	.001	.000	.000*
Marriage	.033	.000	.000*
Education Level	.001	.008	.624
Health Condition	.031	.003	.000*
Household population	.004	.003	.177
Total Income	.006	.003	.022*
Occupation (father of household head)	.002	.004	.571
Occupation (mother of household head)	.001	.004	.795
Occupation (father of spouse)	.004	.005	.425
Occupation (mother of spouse)	-.004	.005	.482
Instrumented: Inflation Prob>chi2 = 0.000 R-squared = 0.085	Number of obs = 1749 Wald chi2(12) = 162.280 Root MSE = 0.962		

Expenditures are in percentage value.
*Statistically significant at 0.05.

Table **5** described the effect of inflation on tuition and miscellaneous goods and the effect of inflation on housing. Inflation positively affected the expenditure on tuition and miscellaneous with the coefficients of 0.018. Females, less educated people, and older people tended to spend more on tuition and miscellaneous. People with poorer health condition spent less on housing and related and miscellaneous goods and services. Males, more educated people, the married, and younger people tended to spend more on housing. People with poorer health condition spent less on housing and related and miscellaneous goods and services.

In conclusion, Table **2** through Table **6** describes the effect of inflation on eight different kinds of expenditures. The effect of inflation on clothing was the

Table 4: The Effect of Inflation on Expenditures on Transportation, Entertainment

Expenditure on transportation and communication			
TC	**Marginal effects**	**Std. Err**	**P>|z|**
Inflation	.025	.013	.056
Gender	.002	.004	.535
Age	.000	.000	.812
Marriage	-.003	.005	.486
Education Level	-.005	.001	.000*
Health Condition	-.004	.002	.087
Total Income	-.001	.002	.087
Household population	-.006	.002	.489
Occupation (father of household head)	.004	.002	.107
Occupation (mother of household head)	-.002	.003	.521
Occupation (father of spouse)	.002	.003	.447
Occupation (mother of spouse)	-.002	.003	.585
Instrumented: Inflation Prob>chi2 = 0.0000 R-squared =	Number of obs = 1749 Wald chi2(12) = 63.30 Root MSE = .057		
Expenditure on entertainment, educational and cultural activities			
EEC	**Marginal effects**	**Std. Err**	**P>|z|**
Inflation	.007	.018	.701
Gender	.014	.001	.009*
Age	.000	.000	.884
Marriage	-.006	.007	.364
Education Level	-.003	.001	.018*
Health Condition	-.003	.003	.365
Household population	.040	.002	.000*
Total Income	-.004	.002	.121
Occupation (father of household head)	-.003	.003	.322
Occupation (mother of household head)	.000	.004	.946
Occupation (father of spouse)	-.011	.004	.016*
Occupation (mother of spouse)	.012	.005	.008*
Instrumented: Inflation Prob>chi2 = 0.0000 R-squared = 0.1724	Number of obs = 1749 Wald chi2(12) = 374.370 Root MSE = 0.081		

Expenditures are in percentage value.
*Statistically significant at 0.05.

only one with statistically significant effect and the effects of inflation on other seven categories of expenditures are either negative or positive but were not significant. The magnitude of inflation on expenditure ranking from the largest to the smallest was in the following order: food (-0.086), clothing (-0.067), transportation and communication (0.025), tuition and miscellaneous (0.018), health and medical expenditure (0.013), entertainment, educational and cultural activities (0.007), house equipment, facilities and services (-0.010), housing (-0.000).

3.2. Inflation and Expenditure Behavior for Different Income Subsamples

In order to further analyzed the effect of inflation on immigrants from different income groups, Figure **2**

Table 5: Expenditure on Tuition, Housing

Expenditure on tuition and miscellaneous goods			
TM	**Marginal effects**	**Std. Err**	**P>|z|**
Inflation	.018	.010	.051
Gender	.001	.003	.585
Age	.000	.000	.143
Marriage	-.000	.004	.807
Education Level	-.001	.001	.209
Health Condition	-.005	.002	.008*
Total Income	.023	.001	.000*
Household population	.001	.001	.494
Occupation (father of household head)	-.002	.002	.301
Occupation (mother of household head)	.001	.002	.799
Occupation (father of spouse)	-.007	.003	.009*
Occupation (mother of spouse)	.005	.003	.047
Instrumented: Inflation Prob>chi2 = 0.000 R-squared = 0.154	Number of obs = 1749 Wald chi2(12) = 369.580 Root MSE = .048		
Expenditure on housing			
Housing	**Marginal effects**	**Std. Err**	**P>|z|**
Inflation	-.000	.036	.999
Gender	-.015	.011	.165
Age	-.002	.000	.000*
Marriage	-.019	.013	.157
Education Level	.010	.002	.000*
Health Condition	-.011	.006	.062
Household population	-.023	.004	.000*
Total Income	-.003	.005	.505
Occupation (father of household head)	.007	.006	.249
Occupation (mother of household head)	-.010	.007	.179
Occupation (father of spouse)	.002	.009	.802
Occupation (mother of spouse)	-.005	.009	.595
Instrumented: Inflation Prob>chi2 = 0.000 R-squared = 0.044	Number of obs = 1749 Wald chi2(13) = 80.89 Root MSE = .162		

Expenditures are in percentage value.
*Statistically significant at 0.05.

through Figure **7** compared the income level of urban residents with the migrant household and also compares the income level of male and female for different ages. Figure **2** showed that the average household income of migrants reach the highest level when the migrants were around forty years old; there were some outliers where the highest level of income arrived when people were fifty or sixty years old or even only twenty years old. For urban residents, there were no significant pattern between average household income and their ages. The majority of the household income was between 10,000 and 15,000 and it was stable from age 30 to 70 and it dropped after the person reached 70 years old.

Figures **4** and **5** used a pie chart to compare the income of urban residents and the migrant workers.

Table 6: The Effect of Inflation on Expenditures of Different Income Groups (per $1000)

	0~10	10~20	20~30	30~40	40~50	50~100
Food	**-0.017 (0.000)***	**-0.017 (0.000)***	-0.016 (0.000)*	-0.016 (0.000)*	-0.016 (0.000)*	-0.016 (0.000)*
Clothes	**-0.033 (0.000)**	-0.028 (0.000)*	-0.030 (0.000)*	-0.030 (0.000)*	-0.030 (0.000)*	-0.030 (0.000)*
HFS	-0.032 (0.000)*	-0.032 (0.000)*	**-0.035 (0.000)***	-0.031 (0.000)*	-0.032 (0.000)*	-0.032 (0.000)*
HME	-0.053 (0.000)*	**-0.056 (0.000)***	-0.055 (0.000)*	-0.055 (0.000)*	-0.055 (0.000)*	-0.055 (0.000)*
TC	**-0.036 (0.000)***	-0.035 (0.000)*	-0.035 (0.000)*	-0.033 (0.000)*	-0.035 (0.000)*	-0.034 (0.000)*
EEC	-0.045 (0.000)*	-0.046 (0.000)*	-0.046 (0.000)*	**-0.047 (0.000)***	**-0.047 (0.000)***	-0.046 (0.000)*
TM	**-0.049 (0.000)***	-0.042 (0.000)*	-0.043 (0.000)*	-0.048 (0.000)*	-0.047 (0.000)*	-0.045 (0.000)*
H	**-0.022 (0.000)***	-0.016 (0.000)*	-0.018 (0.000)*	-0.018 (0.000)*	-0.018 (0.000)*	-0.018 (0.000)*

Expenditures are in percentage value.
*Statistically significant at 0.05.
Food: Total expenditures on food consumption.
Clothes: Total expenditure on clothes.
HFS: Total expenditure on house equipment, facilities and services.
HME: Total expenditure on health and medical expenditure.
TC: Total expenditure on transportation and communication.
EEC: Total expenditure on entertainment, educational and cultural activities.
TM: Total expenditure on tuition and miscellaneous goods.
H: Total expenditure on housing.

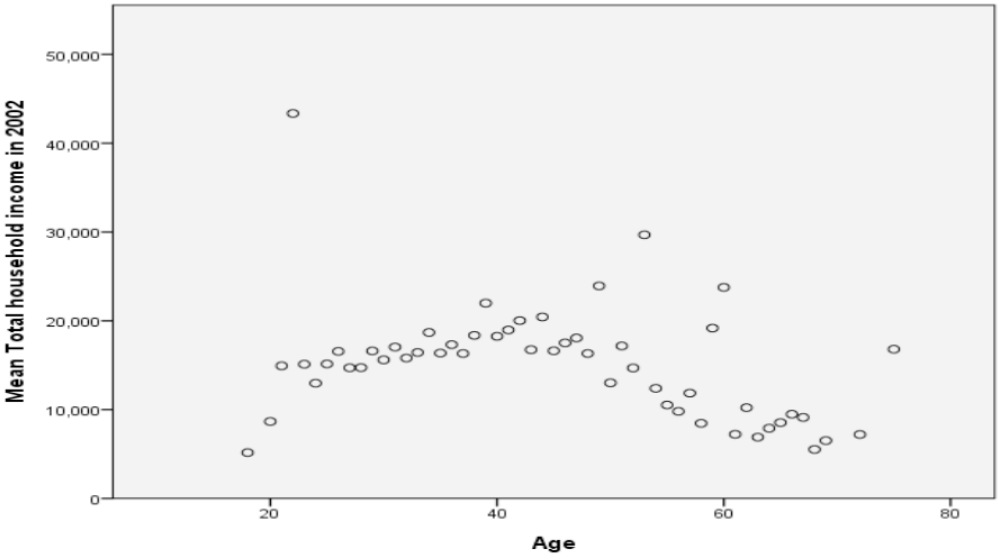

Figure 2: Rural Urban Immigrants Age and Income Level.

Figure **4** showed that 44.83% of the migrant workers' annual household income was between $10,001 and $20,000, compared with 42.78% of urban residents; 31.70% of the migrant workers' annual household income was between 0 to $10,000, this number was larger for urban residents at 45.61%. Surprisingly, the migrant workers had a larger percentage in higher income level than the urban residents.

Figure **6** showed the income of migrant household in year 2002, most of the households' income was below $10,000. The male population had a wider span

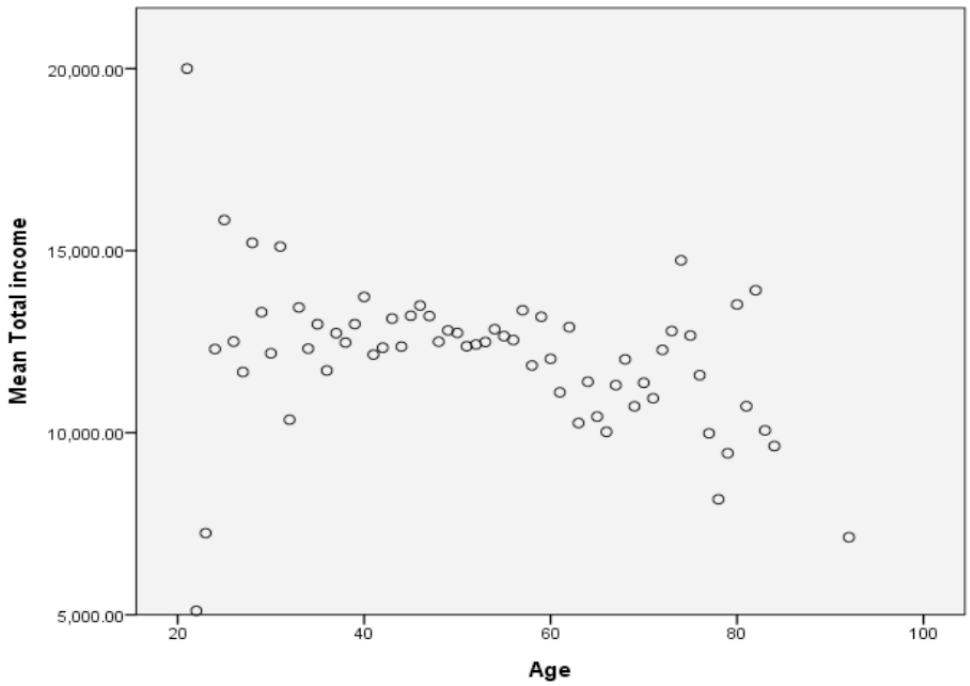

Figure 3: Urban Residents Age and Income Level.

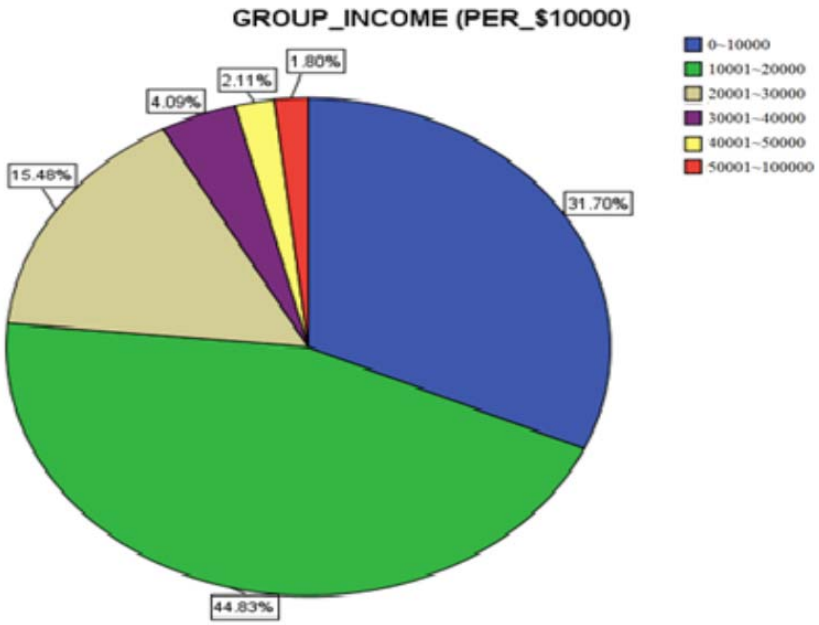

Figure 4: Rural-Urban Migrant Income Pie Chart.

of income than the female: the income of male migrants ranged from 0 to $30,000 while the highest income of female only reached around $15,000. Figure **7** demonstrated the relationship between migrants' age, income, and gender. Both male and female reached their highest income around 40 years old; again the male reached higher income levels than the female. Most of the female were between 20 years old to 40 years old while the ages of the male ranged from 20 to 60.

We divided the data into different income groups and analyzed the effect of inflation on people from different income groups. Table **6** showed that inflation significantly reduced the expenditures on all eight categories. Generally speaking, the reduction was larger for lower income categories than for higher income categories. The largest reduction was found in the income group of 0 to $10,000 (food, clothes, transportation and communication, tuition and miscellaneous goods, housing). The largest reduction

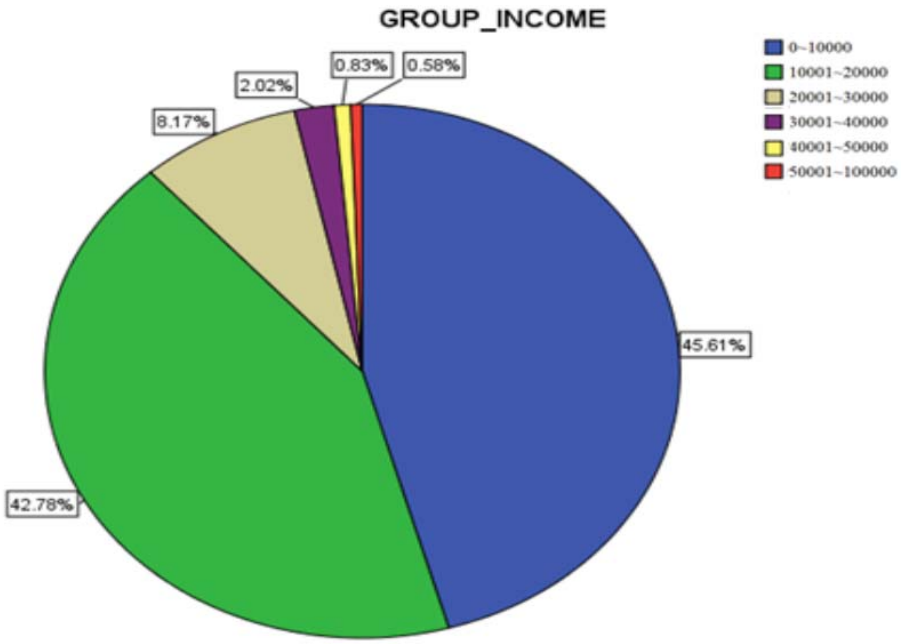

Figure 5: Urban Income Pie Chart.

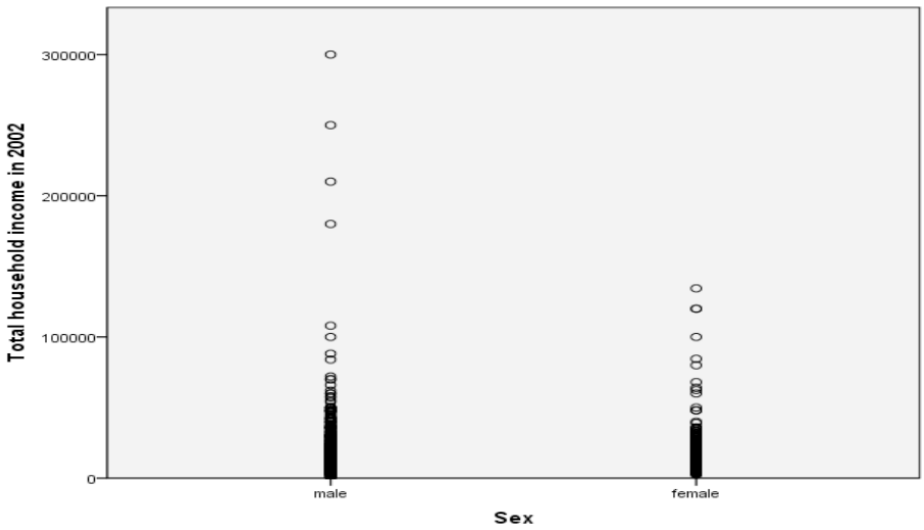

Figure 6: Total Income & Gender (Migrant Household).

in the expenditure on food and health and medical expenditure was found in the income level of 10,000 to 20,000; the largest reduction in expenditure on house equipment, facilities and services was found in the income group of 20,000 to 30,000. The largest reduction of entertainment, educational and cultural activities was found in the income group of 30,000 to 40,000 and 40,000 to 50,000. In terms of magnitude, for all income groups, the rankings of the effect of inflation on expenditures from the highest to the lowest were the following: health and medical expenditure (around -0.06), tuition and miscellaneous goods (around -0.05), entertainment, educational and cultural activities (around -0.05), transportation and communication (around -0.04), house equipment, facilities and services (around -0.03), clothes (around 0.03), housing (around -0.02), food (around -0.02).

3.3. Inflation and People's Feeling of Happiness and Satisfaction

The 2002-CHIP survey asked the respondents the following question: "Generally speaking, do you feel happy? " The researchers used "ordered logistic regression" to determine which independent variables (Gender, Marriage, Educational Level, Age, Total Income, Individual's Health Condition and Inflation in

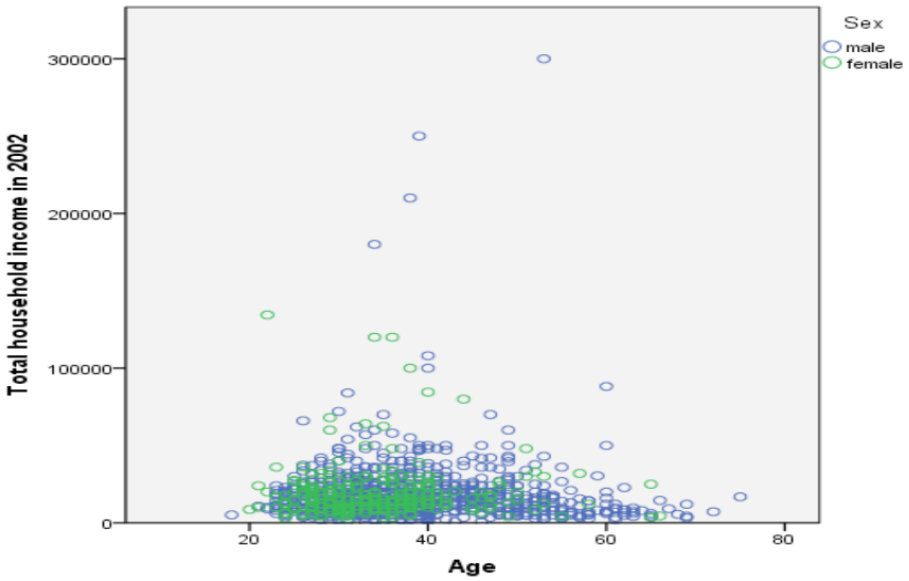

Figure 7: Total Income, Age, & Gender (Migrant Household).

2002) are predictors of personal happiness (Very happy, Happy, So-so, Not very happy, Not happy at all, and Don't know). The descriptive statistics showed that most people in the sample replied to be "happy" (43%) or "so-so" (45%).

We used the same control variables for happiness and satisfaction model as we used for the expenditure model:

$$(hap/sat)_t = \beta_0 + \beta_1 CPI_t + \beta_2 health_t + \beta_3 income_t + \beta_4 education_t + \beta_{it} x_{it} + \varepsilon_{it} \quad (2)$$

X included a set of control variables: age, gender, marriage status, education level, total income, and health condition.

Table **7** showed that only educational level is significantly and positively related with the happiness: the higher the educational level, the happier the person. Inflation negatively affected happiness but the effect is not significant: The increase of CPI by one unit reduced the expected value of happiness by 0.053. Besides, older people felt less happy than younger people; healthier people felt happier than people with poorer health conditions; and people with higher income felt happier.

In this part, we estimated how migrants' satisfaction was affected by inflation by using a variable derived from the following questionnaire in the survey "How satisfied are you with your present job?" The variable reflecting satisfaction was also a categorical variable with five different categories and the ordered logistic model was applied for the analysis. Table **8** displayed that the increase of Inflation (CPI) by one unit reduced the expected value of satisfaction by 0.084; however,

Table 7: The Effect of Inflation on Migrants' Feeling of Happiness

The Effect of Inflation on Happiness			
Happiness	**Marginal effects**	**Std. Err.**	**P>|z|**
Inflation	0.053	0.113	0.831
Gender	0.25	0.118	0.263
Age	-0.006	0.006	0.551
Marital status	0.102	0.171	0.111
Educational level	0.041	0.026	0.000*
Health conditions	0.267	0.068	0.641
Total Income	0.102	0.171	0.105

Expenditures are in percentage value.
*Statistically significant at 0.05.

Table 8: The Effect of Inflation on Migrants' Feeling of Satisfaction

The Effect of Inflation on Satisfaction			
Satisfaction	**Marginal effects**	**Std. Err.**	**P>|z|**
Inflation	-0.084	0.118	0.452
Gender	0.105	0.006	0.372
Age	0.009	0.145	0.106
Marital status	-0.110	0.026	0.447
Educational level	-0.024	0.067	0.351
Health conditions	-0.084	0.112	0.465
Household population	-0.087	0.050	0.452
Total Income	0.053	0.113	0.831

Expenditures are in percentage value.
*Statistically significant at 0.05.

this effect was not statistically significant. Similar to happiness results, younger people felt more satisfice than elder people, healthier people felt more satisfied than people with poorer health conditions, and people with higher income felt more satisfaction.

4. CONCLUSIONS AND DISCUSSIONS

4.1. Contributions of the Paper

According the current research about inflation, most studies pointed out that there was the detrimental effect of inflation. However, there was limited quantitative research to describe these effects. The purpose of this study is to determine the effects of inflation on domestic migrant workers' expenditures and their happiness and satisfaction. Very interesting results were found for the analysis. First, for all the eight categories of expenditure, only three categories (food, clothing, and housing) were negatively affected by inflation. In term of policy, the government policy needs to pay attention to increase expenditures of these three categories and to regulate prices for these categories or even provide subsidy to consumers. Other five expenditure categories (health and medical, house equipment, facilities and services, entertainment, educational and cultural activities, transportation and communication, and tuition and miscellaneous) were positively related with inflation. The biggest reduction of expenditure was found in transportation and communication with a coefficient of -0.025. This meant that people would significantly reduce travel and communication in case of inflation. Additionally, the paper divided the sample data into different income groups and found out that the low-income group's expenditure was more negatively affected by inflation, which was consistent with the literature.

Secondly, this paper analyzed the relationship between inflation and migrant workers' feeling of happiness and job satisfaction. It showed that inflation didn't have a significant effect on people's feeling of happiness or their job satisfaction. In the literature, it proved that in the US, women had higher levels of well-being than men in general, yet women's well-being declined in the 1970's and 1980's compared to men's (Nolen-Hoeksema and Rusting, 1999). Our paper showed that the feeling of happiness is also higher among young people, declined at middle age (reaches the lowest at ages 40–50), and increased again at an older age (Kahneman and Krueger, 2006). Marital status had a large effect on happiness: married people are 17% happier than those divorced, widowed, or never married (Kohler, Behrman, and Skytthe, 2005). Our paper didn't find that gender, age, or marital status significantly affect people's feeling of happiness. However, our paper found that education and health had a positive influence on happiness, which was consistent with the literature (Oreopoulos, 2007; Lucas, 2000).

For developing countries, Eduardo Lora mentioned the "paradox of unhappy growth" in which, after controlling for average per capital levels of GDP, respondents in faster growing countries are less satisfied in many aspects of their lives. Eduardo Lora explains the results, at least in part, by the increased inequality and insecurity and the changing rewards to different skill sets associated with lower levels of well-being in the short term. However, in our paper, the result showed that inflation didn't have a significant effect on migrants' feeling of satisfaction. In a word, inflation had a significant effect on migrant households' expenditures, especially the low-income migrants, but it doesn't have a significant effect on their happiness or job satisfaction.

4.2. Limitations and Future Research

The author drew two variables from China Compendium of Statistics (CCS), and Finance Years-Book of China (FYBC) to perform as instruments. The author combined China Statistical Yearbook (CSY) and the Chinese Household Income Project Survey 2002 (CHIP 2002) to provide comprehensive analysis of effect of inflation on domestic migrant households. However, the researcher could not find more recent data and also was unable to use former data like CHIPS 1995 to compare the results. The former data like CHIP 1995 doesn't have the same variables and CHIP 1995 does not provide a unique householder number (PCODE) to identify the individual participant's information to merge with other files.

As for the effect of inflation on people's psychology health, the author only used two survey questions for happiness and satisfaction because that other survey questions related with happiness and satisfaction had too many missing variables to perform reasonable analysis. Future researches may use other questionnaires for happiness and satisfaction and could also apply more recent data to analyze the expenditure behaviors in China in a longitudinal manner.

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