

**WHO FEARS CRIME? PERCEPTIONS OF PUBLIC SECURITY AND ATTITUDES TO
MIGRANTS AMONG CHINA'S URBAN POPULATION**

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ABSTRACT

Most extant research in the economics of crime literature has focused on explaining variations in crime rates. Public action to prevent crime, however, is often dependent on the level of concern about public security that is expressed in public perceptions surveys. The economics of crime literature has largely overlooked responses to such surveys as data sources and therefore it has not accounted for the role that public opinion might have in mobilizing public action against crime. We use a unique survey administered in 2003 in 32 Chinese cities to examine the determinants of perceptions of public security among China's urban population. In particular, we investigate the hypothesis that urbanites' attitudes to migrants influence their perceptions of public security. We find that individuals who have a negative perception of migrants also have a poor perception of public security. We also find that the unemployment rate, the masculinity ratio and expenditure on armed police in the city in which the individual resides, whether the individual lives in the coastal region as opposed to the central or western region and average changes in housing prices and average changes in rental prices in the city in which the individual lives are important predictors of perceptions of public security.

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1. INTRODUCTION

Beginning with Becker (1968) and Ehrlich (1973), the economics of crime literature has focused most of its attention on explaining determinants of crime within a rational actor framework. There are several studies employing a 'supply of offences' function where the crime rate per capita is the dependent variable and explanatory variables include the probability of apprehension, severity of sentence and proxies for returns to legitimate and illegitimate earnings activities (see Cameron, 1988 for a review). Economists have also examined the interaction between average crime rates and public spending on crime prevention across space and time as well as the substitutability between private and public spending on crime prevention (see eg. Behrman and Craig, 1987; Gyimah-Brempong, 1989; Clotfelter, 1977). There has, however, been little research in the economics literature on the determinants of concern about public security. This is true more generally for the determinants of public security in transitional economies. It is important to begin to address this apparent gap in the literature because public perceptions of security bear substantially upon both subjective quality of life and on further objective life quality measures, such as government spending on crime prevention and victimization support. Support for taking an economic approach to the study of perceptions of public security come from Pradhan and Ravillion (2003), who examined determinants of public security in Brazil. An earlier, and related, study was undertaken by Gavaria and Pages (2002), who examined patterns of victimization in Latin America.

The current paper adds to the scant literature on economic models of the determinants of public security by drawing on a large survey of urban residents conducted in 2003 to examine the determinants of people's perceptions of public security in Chinese cities. Public opinion polls have consistently shown that public security is an important concern for people all over the world (Pradhan and Ravillion, 2003) and public security is a major issue in transitional economies such as China. A 1991 national survey of 15,000 people in China reported that two-thirds of respondents were seriously worried about the level of public security (Research Institute of Ministry of Public Security, 1991). As Situ and Liu (1996) have graphically described the fear of crime among residents in Guangzhou:

"In Guangzhou, the residents' fear of victimization has turned them into 'prisoners at home'. To prevent burglary, which is the number one type of crime in the city, they install iron bars to protect their windows and balconies (even those who live in the upper stories do this), replace their wooden doors by steel doors, install intercom systems at the entrance of their apartment buildings, and some even hire round-the-clock security guards for their houses".

Increased concerns about public security in China mirror the startling increase in crime reflected in official crime statistics. In the first decade of market reform (1979-1990), statistics from the Ministry of Public Security indicate that total crime in China increased 340 per cent and that the incidence of serious crime increased tenfold (Curran, 1998). This was a trend that increased throughout the 1990s. Between 1985 and 1995 crime increased more than 210 per cent, which represented an average annual increase of more than 20 per cent. This increase compares to the period 1950 to 1985 where the average annual rate of increase in crime in China was just 2.7 per cent (Curran, 1998). According to the most recent official statistics, the number of offences against public order accepted for prosecution in China rose by 8 per cent from 2001 to 2002 (SSB, 2003). And, the true increase in the crime rate is larger than these official figures suggest because of the widespread phenomenon of underreporting of crime in China. The true crime rate has been estimated to be as much as three to four times higher than the official statistics suggest (Ma, 1995). This underestimation may be because police either intentionally downplay the true crime rate in order to

make their jurisdictions look good, or neglect to report offences because of poor reporting skills (Ma, 1995).

In this paper we test the effect of both individual and neighbourhood effects on perceptions of current security and perceived changes in public security among the urban population in the two years prior to the survey. In the Chinese context much attention has been given to the perceived role of migrants in contributing to urban crime rates (Solinger 1999). Thus, we also examine the effect of attitudes to migrants on people's perceptions of crime rates. Because we find 'attitudes to migrants' to be an endogenous variable, we correct for endogeneity and report both corrected and uncorrected results.

The paper is set out as follows. The next section discusses perceptions of crime and attitudes to migrants in China. Section 3 provides an overview of the data, presents the empirical specification and considers the expected signs on the explanatory variables from an economic perspective. The empirical results are presented in section 4. Foreshadowing our main results, we find that the respondent's attitudes to migrants and whether he or she lives in the coastal region, plus the masculinity ratio, unemployment rate and expenditure on armed police in the locale in which the respondent resides are statistically significant predictors of perceptions of public security, irrespective of how the dependent variable is defined. The final section contains some concluding comments.

2. PERCEPTIONS OF CRIME AND ATTITUDES TO MIGRANTS IN CHINA

From the founding of the People's Republic up until the start of economic reform China had a very low crime rate (Dutton, 1997; Deng and Cordilia, 1999). Between 1951 and 1965 the official crime rate in China dropped from 90 per 100,000 people to 30 per 100,000 people (Yu, 1993, pp. 43-44). Crime statistics were not collected from 1966 to 1971 at the height of the Cultural Revolution. From 1972 to 1976 the crime rate increased to 60 per 100,000 people (Yu, 1993, pp. 43-44). This latter increase has been blamed on the fact that the majority of young people had no school to attend or job to keep them occupied (Liang and Shapiro, 1983), although crime rates were still low compared to the market reform period (Deng and Cordilia, 1999). Since the beginning of the 1990s the official crime rate has hovered between 140 per 100,000 people and 200 per 100,000 people most years, peaking at 215 per 100,000 people in 1991 (Guo, 1996, p. 3). The rate of serious crime has shown a marked increase between the late 1980s and mid-1990s. For example, between 1988 and 1995 homicides increased 71 per cent, assaults 171 per cent, robbery 351 per cent, serious theft 237 percent and larceny 72 per cent (Guo, 1996, p. 4). The sharp increase in the crime rate has fueled government and public concerns of a crime wave. As one commentator put it, "the government leadership [considers] China [is] currently experiencing a period of criminal 'high-tide'" (Ma, 1995, p. 247).

Nevertheless, despite the existence of official crime estimates, Silverman and Della-Giustina (2001) observed that such objective measures do not always bear in any substantial way upon community fear of crime. In fact, several studies have shown that the fear of personal crime is actually greater than its objective incidence (Borooah and Carcach, 1997; Ito, 1993). The frequent lack of correspondence between actual crime rates and the fear of crime has led to a strong research focus on the latter (Busselle, 2003). While most existing research on fear of crime has been undertaken in the Anglo-American context (Ito, 1993), the tendency for people to display a divergence between perceptions of objective crime rates and subjective crime vulnerability has been observed in China by Guo *et al* (2001). These authors found that among residents of Guangzhou, recourse to "official crime statistics was almost irrelevant to people's crime estimates" (p.415). Yin (1985) made the point that in the Chinese context, few people make use of actual crime rate sources when assessing their community's vulnerability. This supported an earlier study

by Tyler (1980) on the origins of crime-related judgments, which concluded that people are both willing and able to separate their beliefs about personal vulnerability to crime from objective rates of crime in their community.

One of the central hypotheses that we test in this paper is that urbanites' perceptions of public security is influenced by their attitudes to migrants. It is estimated that 120-150 million peasant workers have relocated to China's cities (Pan, 2002), with this number expected to increase to around 300 million by 2010 (Lague, 2003). These rural to urban migrants are termed the 'floating population' (*liudong renkou*) because migrants' stays are typically temporary and follow work opportunities within and between locations. One result of the temporary nature of these migrants' stays in the city is that they tend to remain socially isolated from the indigenous urbanites, and relationships between the groups are, at best, strained. The predominant attitude towards the migrant population is one of suspicion (Roberts, 2002). Chai and Chai (1997) noted that there is often outright hostility towards migrants and that this perception seems to have translated into the development of broad negative attitudes towards temporary migrants. Another result of this massive migration phenomenon is the heterogenisation of China's cities. As Rountree and Land (2000) and Austin *et al* (2002) observed, the social dynamics and demographic composition of urban centres affect residents' attitudes towards crime and their perceptions of public security. China's urban centres have undergone substantial changes in demographic composition over the last few decades with the influx of the floating population being a major contributing factor. It is likely that these demographic changes may be important contributors to perceptions of compromised public security in urban China, following Taylor and Covington's (1993) study, in which higher levels of fear were reported in environments that had undergone recent demographic change.

Indeed, migrants are often blamed for contributing to escalating crime rates in urban China. As Wang and Zuo (1999) have put it: "The stereotype of rural migrants is that they are uneducated, ignorant, dirty, and also have high propensities to be criminals" (p.278). Situ and Liu (1996) suggested that "new migrants constitute a large majority of the [crime] problem in the major Chinese cities" (p.295). Curran (1998) concurred with this view, stating, "a large transient floating population ... particularly the rural floating unemployed, has been a major factor in the rise of crime, especially in the economically prosperous regions" (p.277). Shukai and Kipnis (2000) concluded: "Most previous research ... has suggested that migrants account for about half of all urban criminals. In areas where the migrant population is high, like Beijing, Shanghai, other large cities and the Pearl River Delta, this percentage is even higher" (p.102).

The economic model of crime predicts that migrants would commit more crime because of the existence of labor market discrimination. Studies for the United States have consistently found that African Americans commit more crime and have higher incarceration rates. An important reason for this is the existence of segmented labor markets, which makes the marginal return to illegal earning activities, such as dealing drugs, much higher for African American males (Freeman, 1996). In China, in urban areas the floating population and local urban residents participate in segmented labor markets. A survey of the floating population in Shanghai found a clear division between the floating population and local residents in terms of occupational composition, living conditions and income and benefits (Feng *et al* 2002). There is also much evidence of occupational stratification at the national level. According to 1990 census data, nationally only 3 per cent of all long-term temporary migrant employees are in professional/cadre/clerical positions compared with 24 per cent for permanent urban residents (Yang and Guo, 1996). Moreover, it is common for the floating population to do jobs that the urban populace do not want (Yang and Guo, 1996; Feng *et al* 2002).

These jobs are often so-called 'Three-D' jobs – jobs which are dirty, dangerous and demeaning - which are common in industries such as construction and mining for males and sanitation and textiles for females. A wealth of anecdotal evidence documented in Roberts (2001) and elsewhere supports this claim. In some cases occupational stratification has been institutionalized. Some municipal governments have implemented regulations to protect urban laborers through reserving

specific job categories for urban workers and making explicit suggestions that urban residents not be underpaid compared to outsiders. For instance, in the late 1990s, according to a report in the *Beijing Daily* (April 10, 1997), the Labor Bureau of one of Beijing's districts stipulated that at least 35 types of jobs should not be open to the floating population (cited in Wang & Zuo, 1999).

According to official statistics, in Beijing 44 per cent of crimes solved by the police in 1995 were committed by transients. In Shanghai, crimes recorded as committed by transients increased from 10 per cent in the mid-1980s to 60 per cent in the mid-1990s with the figure as high as 90 per cent in some districts (Xu, 1995). In Guangzhou 80 per cent of burglaries in the mid-1990s were recorded as being committed by transients and in Guangdong as a whole, 90 per cent of those charged with drug trafficking and prostitution were recorded as temporary residents (Chen and Luo, 1995).

A survey in the mid-1990s found that 74 per cent of Shanghai residents held migrants responsible for at least three of the following four problems: crime, transport, employment and environmental degradation (Solinger, 1999, p. 101). In the same survey, 81 per cent of respondents rated reduced security of property as the most troubling effect of the presence of migrants in Shanghai, with 14 per cent of respondents terming it "serious". The main reason these people felt insecure was that they had personally experienced theft in the recent past (Solinger, 1999, p. 131). Another survey, also in the mid-1990s, of residents in Beijing, Guangzhou and Shanghai found that poor social order has become the "number one public enemy" and that respondents considered migrants to be the "root cause" of their insecurity and rising crime rates (Solinger, 1999, p. 131).

3. OVERVIEW OF THE DATA, EMPIRICAL SPECIFICATION AND ECONOMETRIC METHODOLOGY

Since 2001, China Mainland Marketing Research Company (CMMRC) has conducted an annual survey of approximately 10,000 urban residents, asking a range of questions relating to their perceptions of changes in living standards, changes in economic circumstances, expenditure on household items and background characteristics such as age, education, gender, income and occupation. CMMRC employs multistage stratified random sampling to ensure a representative sample in terms of age, gender and income. The respondents were interviewed either in person or via telephone by a trained CMMRC interviewer and all responses were checked for accuracy both by a supervisor on location and subsequently at the CMMRC offices in Beijing before being entered into the data base. This study employs data from the CMMRC survey, which was conducted in September 2003, to examine the determinants of people's perceptions of public security. The 2003 survey contained information on 206 questions from 10,716 respondents across 32 Chinese cities;ⁱ of which responses from 8127 or 8133 respondents contained usable data relating to the variables of interest to us depending on the specification. Data from the CMMRC survey was supplemented with data on the city in which the respondent lived. These latter data were obtained from *China Statistical Yearbook*, *China Labor Statistical Yearbook*, *China Social Statistics* and *China Urban Statistical Yearbook*.

We used the following specification to examine urbanites' perception of public security:

$$PERCEPTION=f(X, Z, MIGRANT, \varepsilon) \quad (1)$$

Here *PERCEPTION* is an ordinal variable measuring the respondent's perception of public security; *X* is a vector of individual and household characteristics (age, gender, education, household income, household size, marital status, occupation, place of residence); *Z* is a vector of city characteristics (such as the masculinity ratio, population density, number of schools and expenditure on armed police); *MIGRANT* is a measure of the respondent's attitude to migrants and ε is the error term, reflecting unobserved random factors. In the survey conducted by CMMRC there were two questions asking about perceptions of public security and we examined them in alternative specifications. In one specification the dependent variable measured the response to the question: 'Over the past two years what changes in public security have you encountered in your living area?' The options were 'considerable fall', 'slight fall', 'no change', 'some improvement' or 'significant improvement'. In the second specification the dependent variable measured the response to the question: 'Are you satisfied with your current living standards in terms of the level of public security?' The respondent answered on a five point scale ranging from one (extremely satisfied) up to five (extremely dissatisfied).

Table 1 provides a breakdown of the frequencies for both dependent variables. Overall, 63.2 per cent of respondents considered that there had been either 'some improvement' or 'significant improvement', 21 per cent of respondents considered there had been no change and 15.8 per cent of respondents said there had been either a 'slight fall' or 'considerable fall' in public security in the two years prior to the survey. On the current level of satisfaction with public security, 37 per cent expressed 'satisfaction' or 'extreme satisfaction', 35.2 per cent answered on the mid-point of the scale and 27.8 per cent of respondents expressed 'dissatisfaction' or 'extreme dissatisfaction'.

Table 1: Subjective assessments of public security

'Over the past two years what changes in public security have you encountered in your living area?'		
		%
Significant improvement		8.4
Some improvement		54.8
No Change		21.0
Slight fall		13.5
Considerable fall		2.3
'Are you satisfied with your current living standards in terms of the level of public security?'		
Extremely satisfied	1	5.3
	2	31.7
	3	35.2
	4	19.5
Extremely dissatisfied	5	8.3

We used an ordered probit model to estimate Equation 1, employing the two proxies for the dependent variable in alternative specifications. It is possible that the respondent's perception of migrants is an endogenous variable. This will be the case if the respondent's perception of migrants are based on the same human capital, job-related and personal factors that influence their perception of public security. If this is the case, the error term (ε) will be correlated with *MIGRANT*, producing biased coefficients. In order to test whether *MIGRANT* was correlated with the error term we calculated the Hausman test. We used the respondent's level of satisfaction with transportation as the instrumental variable. Migrants are often blamed for clogging up transportation and contributing to traffic congestion (Solinger, 1999, p. 101). Thus, it is reasonable to believe that people's satisfaction with transportation will be correlated with their perception of migrants, but not with their perception of public security. The Hausman test suggested that *MIGRANT* is an endogenous variable in both versions of Equation (1).ⁱⁱ On this basis the estimation of Equation (1) proceeded in two stages. In the first stage we estimated a reduced form probit regression for the endogenous variable, *MIGRANT*. In the second stage we estimated an ordered probit regression for *PERCEPTION* after substituting estimates for the endogenous variable, *MIGRANT*, into Equation (1).

The definition of each of the explanatory variables that we have employed to explain people's perception of public security, together with either their mean values or, for the binary variables, the percentage of '1' responses, are given in Table 2. We now proceed to examine the rationale and expected signs for each of the explanatory variables.

Table 2: Definition and Descriptive Statistics for the Explanatory Variables

Variable name	Variable description	Descriptive statistics
Gender	Binary variable where 0 = male and 1 = female	49.8% male
Age	Age in years	Mean age = 39.11 years (<u>SD</u> = 13.90 years) in a range of 14 – 100 years
Age ²	Age squared	Mean squared age = 1722.59 (<u>SD</u> = 1210.75) in a range of 196 – 10000
Household income	Average monthly household income of respondent (from 1-20 where 1 is 260 RMB or below and 20 is greater than 20,000 RMB)	Median = 9 (2000 - 2250 RMB)
Average income in the city	Average monthly income per capita in the city (RMB)	Mean average income = 1612.84 RMB (<u>SD</u> = 870.22 RMB) in a range of 5.00 – 3939.18
Marital status	Binary variable where 0 = not married and 1 = married	69.8% married
Size of household	Number of people living in the respondent's household	Mean = 3.21 (<u>SD</u> = 1.14) in a range of 1 – 13
Junior middle school	Binary variable equal to 1 if highest educational qualification is junior middle school or less, otherwise equal to 0	20.9% junior middle education or less
Senior middle school	Binary variable equal to 1 if highest educational qualification is senior middle school, otherwise equal to 0	28.3% senior middle education or less
Three year higher degree or above	Binary variable equal to 1 if highest educational qualification is a three year degree or above, otherwise equal to 0	39.3% three year degree or above

Senior occupation	professional	Binary variable equal to 1 if a senior professional occupation, otherwise equal to 0	0.5% senior professional occupation
Middle occupation	professional	Binary variable equal to 1 if a middle professional occupation, otherwise equal to 0	9.3% middle professional occupation
Lower occupation	professional	Binary variable equal to 1 if a lower professional occupation, otherwise equal to 0	25.8% middle professional occupation
Technical occupation		Binary variable equal to 1 if a technical occupation, otherwise equal to 0	14.1% technical occupation
Semi-skilled occupation		Binary variable equal to 1 if a semi-skilled occupation, otherwise equal to 0	13.6% semi-skilled occupation
Manual occupation		Binary variable equal to 1 if a manual occupation, otherwise equal to 0	3.6% manual occupation
Unemployed		Binary variable equal to 1 if unemployed, otherwise equal to 0	8.8% unemployed
Retired		Binary variable equal to 1 if retired, otherwise equal to 0	15.9% retired
Coastal resident		Binary variable equal to 1 if a coastal resident, otherwise equal to 0	26.0% coastal residents
Attitudes to migrants in the city		Ordinal variable where 1 = most positive attitudes through 5 = least positive attitudes	Mean attitude score = 2.57 (<u>SD</u> = .89)
Floor space of buildings per capita in the city		Floor space of buildings completed in the city per capita (m ² /person)	Mean floor space = .79m ² (<u>SD</u> = .50m ²) in a range of .06m ² – 2.23m ²
Average change in selling price of houses in city		Average change in selling price indices of houses in the city (2000-2002) where preceding year = 100	Mean average change = 101.83 (<u>SD</u> = 1.48) in a range of 99.10 – 106.30
Average change in renting price in the city		Average change in renting price indices in the city (2000-2002) where preceding year = 100	Mean average change = 103.02 (<u>SD</u> = 7.59) in a range of 95.50 – 133.20
Unemployment rate in the city		Percentage registered unemployed in the city	Mean unemployment rate = 3.6% (<u>SD</u> = .91%) in a range of 11.40% to 4.90%
Masculinity ratio		Ratio of males to females in the city (departure from 100)	Mean males = 104.23 (<u>SD</u> = 3.55) in a range of 92.84 – 112.29
Expenditure on armed police per capita	armed	RMB expenditure on armed police per capita in the city	Mean expenditure = 1.91RMB (<u>SD</u> = 1.53 RMB) in a range of .01 RMB – 6.04 RMB
Number of schools per 100,000 population	per	Number of schools per 100,000 population in the city	Mean number of schools = 17.53 (<u>SD</u> = 13.22) in a range on 4.25 – 68.54
Population density		Population density in the city (persons/km ²)	Mean density = 1535.43 persons/km ² (<u>SD</u> = 815.51 persons/km ²) in a range of 147 – 4276 persons/km ²

4. INDIVIDUAL AND HOUSEHOLD CHARACTERISTICS

The expected sign on the coefficient for the household income of the respondent is *ex ante* unclear. On the one hand those with higher incomes should be better able to purchase private protection (Gavaria and Pages, 2002) or, if public security has properties of a local public good, mobilize local public action to prevent crime or move to a safer neighborhood (Pradhan and Ravallion, 2003). If this is the case, the rich should have better perceptions of public security. On the other hand, though, those on higher incomes will be more desirable targets for potential offenders, which might make those on higher incomes less satisfied with public security. This latter interpretation is consistent with the economic model of crime following Ehrlich (1973), which proxies returns to illegitimate earning activities using household income where household income is a measure of 'the availability of thievable property' (Witt *et al* 1999, p. 391). The wealthy will face a trade-off in terms of how much they invest in private protection depending on the extent to which they are willing to bear some victimization risk. Gavaria and Pages (2002) developed a model that shows that the trade-offs the rich make will vary with different sorts of crime depending on whether the risk is random (such as muggings) or if the criminal has targeted the victim to maximize expected gains (such as burglaries).

The empirical evidence from existing studies for income is mixed. In two studies using data for the United States (Skogan and Maxfield, 1981; Toseland, 1982) as well as in a study employing Australian data (Borooah and Carcach, 1997), it has been found that higher income individuals have less fear of crime. Pradhan and Ravallion (2003) also found that there was a positive, although small, income effect on the perceived current level of satisfaction with public security in Brazil. Baba and Austin (1989) and Keil and Vito (1991), however, found that income levels had no significant impact on perceived levels of public security. Meanwhile, Gavaria and Pages (2002) found a positive correlation between socioeconomic status and the probability of victimization in Latin America. Their explanation was that their findings were being "driven by both the difficulties of the relatively wealthy in protecting themselves against street crime and the tendency of burglars and kidnappers to target wealthy victims" Gavaria and Pages (2002, p. 182). Hraba *et al* (1998) found that wealth was positively related to perceived risk of crime in the Czech Republic, arguing that this reflected the fact that "the wealthy may feel vulnerable to crime, particularly property crime" (Hraba *et al* 1998, p. 239).

The expected sign on the coefficient of the respondent's education is *ex ante* unclear. While Hraba *et al* (1998) found that in the Czech Republic, the more educated had a higher perceived risk of crime, several earlier studies found that concerns about public security were stronger among people with lower levels of education (see eg Erskine, 1974, Clemente and Kleinman, 1977, Keil and Vito, 1991). While the latter finding might simply reflect that the less educated live in less safe neighbourhoods, the former can be explained by Festinger's (1957) theory of cognitive dissonance. In the context of crime perception, Pradhan and Ravallion's (2003) observed that cognitive dissonance often leads people to downplay the level of danger in their environment, since admitting to oneself that one lives in an unsafe environment is too psychologically provocative. To the extent that local crime rate knowledge is an indicator of education more generally, this suggests that an individual's education level might negatively influence his or her concern for public security.

In addition to the respondent's education and income we include other individual and household characteristics for age, gender, marital status, size of the household and respondent's occupation to account for possible heterogeneity in preferences. There are several studies which suggest that older people have higher levels of fear of crime (see eg. Skogan and Maxfield, 1981) and lower levels of perceived security (Baba and Austin, 1989). This is in spite of the fact that most crime

statistics indicate that older people are less likely to be the victims of crime, especially compared with teenagers and young adults. Warr (1984) has argued that the greater fear of crime among older people is attributable to their differential sensitivity to risk, despite their lower exposure. Others have suggested that higher levels of fear among the elderly might be partially due to social isolation (Sundeen and Matthieu, 1976). The effect of age on perceptions of security has, however, not been consistent. Clemente and Kleinman (1977) and Braungart *et al* (1980), using data for the United States, and Kiel *et al* (1996) using data for Romania did not find significant age effects. For China, Curran and Cook (1993), citing data from the Ministry of Public Security, argued that those aged 16 to 28 years were more fearful of crime than those aged over the age of 28. Ferraro (1995) and LaGrange and Ferraro (1989) concluded that the effect of age on perceptions of public security is non-linear. These authors found that perception of public security is lower among younger people, is higher in middle age and is lower again in old age. To allow for the possible non-linear effect of age on perceptions of public security, we include both the actual age and the squared value of the respondent's age as independent measures.

Most existing studies have found that women have a lower perception of public security than men (see eg. Borooah and Carcach, 1997; Perkins and Taylor, 1996). One explanation for this gender difference might be the positive relationship between fear and the potential for victimization (Taub *et al*, 1981). Women's fear of crime is fundamentally connected to their vulnerability to rape and sexual harassment (Ferraro, 1995). Warr (1984) found that the possibility of rape is the primary fear of most women. We also interact the gender of the respondent with the masculinity ratio. If females are mainly fearful of sexual crime we expect that women living in cities with a higher masculinity ratio will have a lower perceived level of public security.

Clark (1988) found that there is a direct negative relationship between burglary risk and the number of people in the home, while Mukherjee and Carach, (1998) found that households comprised of a married couple are at less risk of burglary victimization than single-person households. Following Mukherjee and Carach, we expect married people to perceive public security more favorably; and following Clark (1998), we expect perceptions of public security to increase with larger numbers of people living in the household. In including a variable for occupation, we follow Keil *et al* (1996), who included a measure of occupation in their study of perceptions of public security in Romania. While there is no *a priori* expectation that the respondent's occupation will effect concerns over public security one way or another, the rationale for including this variable is to see to what extent the traditional working class is concerned about public security. Curran (1998) has expressed the view that rising crime rates and perceived fear of crime among the working population is threatening social stability and the course of market reforms in China. Thus, considering the effects of occupation on perceptions of public security provides insights into whether fear of crime is an issue with which the government should be concerned in relation to urban workers, in addition to other grievances among the working class such as the growing problem of laid-off workers.

4.1 City Specific Characteristics

We include average income and the number of schools per 100,000 population in the city in which the respondent lives to investigate potential neighbourhood effects on perceptions of public security. A stylized fact in the economics of crime literature is that crime tends to be spatially concentrated in low income areas (Pradhan and Ravallion, 2003). One reason for this might be that in the Ehrlich (1973) supply of offences function the marginal return to illegitimate earning activities is higher for low income individuals. But, even though the marginal returns to crime are higher for low income individuals, this does not explain why if criminals live in poorer neighborhoods they still do not commit crime in richer neighborhoods where the marginal reward to crime is higher. Freeman *et al* (1996) developed a model explaining the spatial concentration of crime in poor areas. Their model is based on a positive externality that criminals create for each

other in equilibrium where the probability of detection is lowest in low income areas where the greatest number of criminals are concentrated, holding police resources constant.

We interact the respondent's household income with average income in the city. We expect that high income individuals in low income cities will have lower perceptions of public security. Cullen and Levitt (1999) examined the effect of crime on urban flight, showing that in the United States, each additional reported crime leads on average to one fewer resident in that locale. Using an interaction term allows us to examine the extent to which public security concerns encourage residential differentiation, such as "people flight", by non-poor people concerned about security in low income areas.

The number of schools per 100,000 people is a measure of education as an external neighborhood effect. We expect that individuals who live in cities with better educated populations will have better perceptions of public security. One reason for this is that the economic approach to crime suggests that crime rates will be lower in cities with better educated populations. First, in the time allocation model of Ehrlich (1973) education reduces the amount of time available for criminal activities for those enrolled in schools. Second, education enhances human capital skills in legitimate earning activities more than illegitimate earning activities and increases the opportunity cost of crime (Wong, 1995). Third, education acts to promote 'good citizenship' and as such generates positive externalities on social welfare reflected in greater respect for the property rights of others (Bodman and Maultby, 1997). Another reason why individuals who live in cities with better educated populations can be expected to have a better perception of public security is through its effect on reducing cognitive dissonance. As Pradhan and Ravillion (2003, p. 19) put it: "If own education matters to concern for public safety through its effect on knowledge about the true probabilities of crime, then one's neighbors' education could well have the same effect, assuming that education fosters different knowledge sets in different people, but that this knowledge is shared amongst concerned neighbors". We also interact the respondent's education with the number of schools in the city in which he or she lives. If education reduces cognitive dissonance and generates a positive externality, having better educated neighbors should accentuate the impact of concern for public security on differences in own education (Pradhan and Ravillion, 2003).

We include the floor space of buildings per capita and the average change in selling and rental price of housing as indicators of the attractiveness of the city to criminals. In addition, the average change in selling and rental prices of housing in the city will influence perceptions of public security through demand for housing (Pradhan and Ravillion, 2003). We include population density and a dummy variable for whether the respondent lives in a coastal province to examine the effect of city size on perceptions of public security. We expect that respondents living in cities in one of the coastal provinces and respondents living in more densely populated cities to have a lower perception of public security. One reason for this is that the market reforms have progressed further in the coastal provinces and this has resulted in higher levels of income inequality. Existing studies show that areas with higher income inequality tend to have higher crime rates (Witt *et al* 1999) and lower perceived levels of public security (Pradhan and Ravillion, 2003). A second reason is that the cities in the coastal provinces and the more densely populated cities tend to be larger. Gavaria and Pages (2002) found a positive correlation between victimization rates and city size, suggesting that perceptions of public security can be expected to be lower in larger cities. This could be because (i) larger cities harbor a higher proportion of crime prone individuals; (ii) the marginal returns to crime is higher in larger cities because either large cities contain a higher proportion of wealthier victims or markets for second-hand goods are better developed or (iii) the probability of detecting crime in big cities is lower because there are diseconomies of scale in the production of arrests or larger cities invest less in law enforcement (Gavaria and Pages, 2002).

Of the other city specific variables we expect that perceptions of public security will be lower in cities with higher unemployment rates. The economic approach to crime suggests that unemployment will have a positive effect on crime rates both in a time allocation sense and because the marginal returns to crime for the unemployed will be higher. Existing studies for

developed countries typically suggest that a one percentage point increase in unemployment results in a one per cent increase in property crime, although unemployment does not appear to influence violent crime (see Levitt, 2004; Raphael and Winter-Ebmer, 2001). We expect that perceptions of public security will be lower in cities with higher masculinity ratios because most blue collar property crime is committed by males (Reilly and Witt, 1996). We expect perceptions of public security to be higher in cities which spend more on armed police per capita. Existing studies suggest that increased police presence deters crime through increasing the probability of apprehension (Witt *et al* 1999, Di Tella and Schargrodsky, 2004; Klick and Tabarrok, 2004). The visibility of armed police can be expected to make people feel safer.

4.2 Attitudes Towards Migrants

In the CMMRC survey, the question asked: “Do you welcome migrants to live and work in your home city?” Responses were on a five point scale ranging from one (migrants are warmly welcome) to five (migrants are particularly unwelcome). Existing research suggests that race is a strong predictor of perceptions of public security (Pain, 2001). Results from extant studies suggest that fears frequently focus on other ethnic or minority groups. For example, in the United States, Tabb *et al* (1984) found that working-class whites believe that an influx of blacks into their neighborhood increases crime rates and reduces housing values. Moreover, these fears are often based on stereotypes of particular ethnicities (Smith, 1984; Lea and Young, 1984). Using these studies as a guide, we expect that respondents who are fearful of migrants will have a lower perception of public security. As the discussion in Section 2 made clear, there are strong stereotypes around migrants and criminality with migrants blamed for a disproportionate amount of crime in China’s cities. Individuals who have a poor image of migrants are more likely to link increased migrant presence in China’s cities to a perceived reduction in the level of urban public security even if these fears are based on ‘irrational prejudices’.

5. EMPIRICAL RESULTS

Table 3 presents the ordered probit results both uncorrected and corrected for endogeneity of perceptions of migrants where the dependent variable is ‘Are you satisfied with your current living standards in terms of the level of public security?’, where respondents’ answers were made on a five point scale ranging from one (extremely satisfied) to five (extremely dissatisfied). In the following discussion we focus only on the corrected results. Of the statistically significant variables with the expected signs, our first main finding is that respondents who view migrants as being unwelcome in their home city are less likely to be satisfied with current living standards in terms of public security. We find that in cities which spend more on armed police per capita, respondents are more likely to be satisfied with current public security. However, consistent with expectations, respondents living in cities in the coastal provinces or living in cities with a higher percentage of males are less likely to be satisfied with current public security.

The coefficients on floor space of buildings per capita and average changes in the renting and selling prices of houses in the city are each statistically significant with a negative sign. This implies that as new buildings go up and rental and selling prices of houses increase people are more satisfied with current levels of public security. In other words, in cities in which it is considered more desirable to live and work, reflected in higher demand for housing, people are also more likely to feel safer from crime.

Table 3: Ordered probit regression where the dependent variable is: ‘Are you satisfied with your current living standards in terms of the level of public security?’

Variable	Uncorrected		Corrected	
	Estimate	Wald	Estimate	Wald
Gender	.221	.077	.571	.517
Age	-.001	.042	.003	.155
Age ²	.000	.001	-.000	.287
Household income	.000	.001	.001	.025
Average income in the city	.000	2.406	.000	4.233**
Marital status	.070	4.019**	.063	3.197***
Size of household	.018	2.829***	.017	2.440
Junior middle school	-.034	.210	-.045	.370
Senior middle school	.008	.012	.024	.118
Three year higher degree or above	.018	.070	.041	.364
Senior professional occupation	.025	.020	.009	.003
Middle professional occupation	.062	.930	.044	.468
Lower professional occupation	.036	.428	.021	.154
Technical occupation	.048	.664	.034	.326
Semi-skilled occupation	.025	.190	.019	.103
Manual occupation	-.173	4.743**	-.186	5.529**
Unemployed	-.090	1.886	-.072	1.204
Retired	-.000	.000	-.007	.010
Coastal resident	.079	2.061	.104	3.555***
Attitudes to migrants in the city	.144	114.829*	.038	161.674*
Floor space of buildings per capita in the city	-.106	4.788**	-.117	5.865**
Average change in selling price of houses in city	-.054	26.729*	-.052	24.833*
Average change in renting price in the city	-.020	61.368*	-.021	66.158*
Unemployment rate in the city	-.101	26.851*	-.100	26.344*
Masculinity ratio	.026	4.250**	.029	5.523**
Expenditure on armed police per capita	-.039	12.435*	-.042	14.649*
Number of schools per 100,000 population	.001	.103	.002	.352
Population density	-.000	21.712*	-.000	30.478*
Gender x masculinity ratio	-.002	.069	-.005	.461
Household income x Average income in the city	-.000	5.309**	-.000	7.563***
Number of schools x Junior Middle education	.001	.040	.001	.170
Number of schools x Senior Middle education	-.000	.004	.000	.021
Number of schools x Three year degree or higher	-.000	.017	-.002	.251
Threshold 1	-6.719	15.242*	-6.486	14.195*
Threshold 2	-5.431	9.966*	-5.918	9.122*
Threshold 3	-4.508	6.865*	-4.270	6.157**
Threshold 4	-3.660	4.526**	-3.418	3.946**

-2 Log Likelihood (Unrestricted)	23089.103	23120.988
-2 Log Likelihood (Restricted)	22754.593	22739.575
- 2LR Statistic (33 df)	334.511*	381.413*
Nagelkerke Pseudo R ²	.043	.049
Number of observations	8127	8127

Notes: *(**)(***) coefficient is statistically different from zero at the 99%(95%)(90%) level of significance; * coefficient on -2LR statistic is statistically different from zero at the 99% level of significance. A Hausman test using satisfaction with public transportation as the instrument suggested that attitudes towards migrants in the city was endogenous ($p < 0.0001$). Therefore, we report results both corrected and uncorrected for endogeneity of attitudes towards migrants. The reference category for occupations is people not in the labor market such as homemakers and students. The reference category for education is people with a polytechnic education.

The unemployment rate in the city is statistically significant with a negative sign.ⁱⁱⁱ We hypothesised that the unemployment rate in the city would have a positive sign given that the economic model suggests that higher unemployment will result in higher crime rates. We expected, based upon Ehrlich's (1973) time allocation model, that those who are unemployed would have more time to allocate to crime and have a lower opportunity cost of committing crime. An alternative, perspective, however, on the crime-unemployment nexus, which is consistent with our results is the 'opportunity perspective' which has been put forward in a series of articles by the criminologist Kenneth Land and his colleagues (see eg. Cohen *et al* 1980, Cantor and Land, 1985, 2001). The opportunity perspective sees crime as a function of the supply of suitable targets for victimization. This perspective suggests that crime will fall during times of high unemployment and thus people will feel more secure, because in times of economic downturn the circulation of people and the level of spending on new property is reduced, curtailing the amount of plunderable victim stock. Moreover, as the unemployment rate rises, more people will remain in their homes or close neighborhoods which builds social cohesion and improves their perception of public security through reducing the incidence of property crime and curtailing the level of violent crime, most of which occurs outside the home.

Of the other variables which are statistically significant in Table 3, the coefficient on population density is zero to three decimal places, indicating that it has no practical effect on perceptions of public security in the current sample. Marital status has an unexpected positive sign, but its confidence intervals at the 95 per cent level bound zero, so we cannot reliably predict whether the sign on this variable is positive or negative. The only occupation which is statistically significant is the coefficient on manual workers, which has a negative sign, suggesting that manual workers have a better perception of public security than those not in the labor market, which was the reference category.

There is no evidence of an income effect in Table 3. The respondent's household income is statistically insignificant. While average income in the city and the term interacting household income and average income in the city are statistically significant, the coefficient on both terms is zero to three decimal places, indicating that neither has any practical effect on perceptions of public security. Similarly, neither the respondent's education, the number of schools per 100,000 population nor the terms interacting own education with the number of schools per 100,000 population are statistically significant. This suggests that neither socioeconomic status (own education and own income) nor neighborhood effects reflected in the education and average income of others in the city have any effect on the respondent's level of satisfaction with current public security.

We find that neither age, gender nor the size of the household has any statistically significant effect on perceptions of public security. Note also that while the masculinity ratio is statistically significant,

gender interacted with the masculinity ratio is statistically insignificant. This finding could reflect the fact that in urban China, criminological studies have found that property theft is the crime feared most by the populace (Situ and Liu, 1996). Meanwhile existing studies for developed countries suggest that gender differences on public security are most pronounced in relation to crime against the person and more specifically the female fear of being a victim of sexual crime.

Table 4 presents the ordered probit results both uncorrected and corrected for endogeneity of perceptions of migrants where the dependent variable is: ‘Over the past two years what changes in public security have you encountered in your living area?’ Answers are on a five point scale ranging from one (significant improvement) to five (considerable fall). Focusing on the corrected results, in Table 4 there are several significant variables with coefficients that have the same sign as in Table 3. Of these variables, respondents who consider migrants are not welcome and respondents who live in one of the coastal provinces are more likely to have perceived a fall in public security in their living area. The increase in the average rental and selling price of housing in the city has a positive effect on people’s perceptions of changes in public security, although floor space of buildings per capita ceases to be significant. Consistent with the results in Table 3, the unemployment rate in the city is statistically significant with a negative sign, giving further credence to the opportunity perspective. Respondents in cities which spend more on armed police are less likely to perceive a fall in public security, while respondents in cities with a higher masculinity ratio are more likely to perceive a fall in public security. Note, though, that both gender and gender interacted with the masculinity ratio have a statistically insignificant effect on perceptions of changes in public security. The population density variable is statistically significant, but it has no practical effect on perceptions of changes in public security in the two years prior to the survey.

Table 4: Ordered probit regression where the dependent variable is: ‘Over the past two years what changes in public security have you encountered in your living area?’

Variable	Uncorrected		Corrected	
	Estimate	Wald	Estimate	Wald
Gender	.072	.008	.562	.465
Age	.011	2.596	.015	5.330**
Age ²	-.000	2.743***	-.000	5.214**
Household income	.005	.528	.007	1.015
Average income in the city	.000	.647	.000	2.271
Marital status	.021	.345	.013	.138
Size of household	-.007	.356	-.009	.663
Junior middle school	.078	1.039	.052	.453
Senior middle school	.152	4.510**	.168	5.454**
Three year higher degree or above	.018	.070	.048	.470
Senior professional occupation	.131	.525	.114	.394
Middle professional occupation	-.016	.055	-.048	.516
Lower professional occupation	-.030	.288	-.058	1.049
Technical occupation	-.005	.007	-.035	.324
Semi-skilled occupation	-.056	.877	-.078	1.681
Manual occupation	-.145	3.157***	-.178	4.678**
Unemployed	-.149	4.762**	-.149	4.761**
Retired	.128	3.546***	.108	2.480

Coastal resident	.104	3.324***	.128	4.985**
Attitudes to migrants in the city	.142	104.849*	.130	600.872*
Floor space of buildings per capita in the city	.018	.136	.005	.008
Average change in selling price of houses in city	-.040	13.554*	-.040	13.350*
Average change in renting price in the city	-.023	76.612*	-.025	87.065*
Unemployment rate in the city	-.105	27.423*	-.108	28.773*
Masculinity ratio	.023	3.108***	.029	5.163**
Expenditure on armed police per capita	-.074	42.515*	-.079	48.715*
Number of schools per 100,000 population	.001	.213	.002	.434
Population density	-.000	7.044**	-.000	12.785*
Gender x masculinity ratio	-.000	.001	-.005	.360
Household income x Average income in the city	-.000	5.614**	-.000	9.136**
Number of schools x Junior Middle education	-.007	4.377**	-.005	2.744*
Number of schools x Senior Middle education	-.005	2.606	-.005	2.648*
Number of schools x Three year degree or higher	-.003	1.037	-.005	2.320
Threshold 1	-5.441	9.335*	-5.211	8.482*
Threshold 2	-3.718	4.361**	-3.437	3.691***
Threshold 3	-3.040	2.916***	-2.726	2.322
Threshold 4	-1.964	1.217	-1.596	.796
-2 Log Likelihood (Unrestricted)	20158.220		20185.946	
-2 Log Likelihood (Restricted)	19800.947		19319.997	
- 2LR Statistic (33 df)	357.272*		865.949*	
Nagelkerke Pseudo R ²	.047		.110	
Number of observations	8133		8133	

Notes: *(**)(***) coefficient is statistically different from zero at the 99%(95%)(90%) level of significance; * coefficient on -2LR statistic is statistically different from zero at the 99% level of significance. A Hausman test using satisfaction with public transportation as the instrument suggested that attitudes towards migrants in the city were endogenous ($p < 0.0001$). Therefore, we report results both corrected and uncorrected for endogeneity of attitudes towards migrants. The reference category for occupations is people not in the labor market such as homemakers and students. The reference category for education is people with a polytechnic education.

In terms of occupation, the coefficient on manual workers is statistically significant with a negative sign as in Table 3 and, in addition, a dummy variable for whether the respondent is unemployed is also statistically significant with a negative sign. The respondent's household income and the average income in the city are statistically insignificant. The respondent's income interacted with average income in the city is statistically significant, but the coefficient on this variable indicates that it has no practical effect on perceptions of public security in the current sample. In contrast to Table 3, in Table 4, both age and age squared are statistically significant. The sign on the coefficient on age is positive suggesting that older respondents are more likely to perceive a fall in public security, while the coefficient on age squared is zero to three decimal points, indicating that it has no practical effect in our sample.

Respondents with a senior middle school education are more likely to perceive a fall in public security relative to those with a polytechnic education, while the other dummy variables for the respondent's education are statistically insignificant. The result for those with a senior middle school education is consistent with the argument that education reduces cognitive dissonance, although the fact that the other own education variables are statistically insignificant means that

support for this explanation is qualified. When the number of schools per 100,000 people is interacted with junior middle school the interaction term is statistically significant with a negative sign; however, its coefficient is quantitatively small. Schools interacted with senior middle school education is also statistically significant with a negative sign, but its confidence intervals at the 95 per cent level bound zero, so we cannot reliably predict whether it positive or negative.

6. CONCLUSION

We have examined the determinants of perceptions of public security in urban China using a large survey administered in 2003 containing approximately 8,130 valid responses on questions of interest to us, supplemented with city specific variables likely to influence perceptions of public security from the locale in which the respondent lived. We find strong support for our central hypothesis that the individual's attitude to migrants affects his or her perception of public security. However, in contrast to a similar recent study by Pradhan and Ravillion (2003) for Brazil, we find little evidence that own education, own income or neighbourhood effects have any effect on perceptions of public security. Similarly, in general the individual's personal and household characteristics seem to have little role to play in influencing perceptions of public security. This is true for the individual's age, gender, marital status, occupation and size of household, although being in a manual occupation seems to be important and age was statistically significant with the expected sign in the model examining perceptions of changes in public security. Apart from whether the individual welcomes migrants, the factors which seem most important in explaining perceptions of public security are city specific variables. These variables include the unemployment rate in the city, the masculinity ratio, expenditure on armed police, whether the individual lives in the coastal region as opposed to the central or western region and average changes in housing and rental prices in the city reflecting the demand for housing and the city's urban development.

One of the limitations of our study is that because we do not have the data we are unable to examine how desire for increased public security affects current perceptions of public security, which is an interesting issue examined by Pradhan and Ravillion (2003) with their Brazilian crime data. Pradhan and Ravillion (2003) found that the desire for increased public security has a positive own-income effect, but a negative neighbourhood effect. If we had data on desire for increased public security it would provide a richer framework for examining income and neighborhood effects. This could be the basis for further research. A second limitation of our study, in common with most studies, is that we do not have data on perceptions of public security disaggregated into different sorts of crimes. The limited evidence from criminological studies is that the determinants of perceptions of public security differ for different sorts of crimes. One obvious difference, mentioned earlier in this paper is gender differences in perceptions of crime against the person and in particular fear of sexual assault. In light of our findings that gender is a statistically insignificant determinant of perceptions of public security in our sample, this is a result which requires further investigation with more disaggregated perceptions data.

We have focused on how attitudes to migrants influence people's perceptions of public security in China. We do not consider how people's perceptions of other central issues in China influence their perceptions of public security. Examples would be their attitude to the pace of marketization and their views on corruptions and their level of trust in the government and the police. Several studies for both China and other transitional countries have suggested that increased levels of organized and other forms of crime, including violent crime are associated with bureaucratic corruption and marketization (see eg Kwong 1997, Squires Meaney 1991, Glinkina *et al.* 2000, Radaev 2000). This can be expected to influence perceptions of public security. Dammert and Malone (2002) found that Argentinean citizens had lower perceptions of public security, despite lower levels of crime rates and victimization relative to other Latin American countries because of

lower levels of public trust in the police and more experience with corruption. Future research could examine how attitudes to marketization and bureaucratic corruption influence people's perception of public security using data for China or transitional economies in Central and Eastern Europe, including Russia, where organized crime is a major problem.

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NOTES

ⁱ The cities sampled were Beijing, Tianjin, Shijiazhuang, Taiyuan, Huhehaote, Shenyang, Changchun, Harbin, Shanghai, Nanjing, Hangzhou, Hefei, Fuzhou, Nanchang, Jinan, Zhenzhou, Wuhan, Changsha, Guangzhou, Nanning, Haikou, Chongqing, Chengdu, Guizhou, Kunming, Lasa, Xi'an, Lanzhou, Xining, Yinchuan, Wulumuqi, Xiamen.

ⁱⁱ We implemented the version of the Hausman test proposed by Davidson and MacKinnon (1989), which carries out the test by running an auxiliary regression. In the second stage, the coefficient on the first stage residuals for *MIGRANT* was significantly different from zero ($p < 0.0001$) in both cases.

ⁱⁱⁱ We use the official unemployment rate at the city level. It might be argued that the official unemployment rate underestimates the true unemployment rate once workers laid-off from state-owned enterprises are considered. Thus, we also experimented with using the percentage of laid-off workers to on-post workers in state-owned enterprises, which is available at the provincial level and the results were quantitatively similar.