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on Private Car Ownership in China**

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Abstract

A diamond effect exists when an individual's utility depends on the exchange value in addition to the intrinsic consumption effects of the good. This concept was first studied by Ng (1987). The existence of the diamond effect justifies a higher tax than a good with no diamond effect, and the stronger the effect is, the higher the tax should be. This paper attempts to test the diamond effect of private car ownership in China. While taxi services are very convenient in most of the large and medium-size Chinese cities, and the cost of owning a private car is much higher than using a taxi for all travel purposes, many people still choose to buy a private car. This suggests the existence of diamond effects. A survey of 118 private car owners in three Chinese cities was conducted to test this conjecture. The survey results show that the relative income and the purchase decisions of colleagues, friends and relatives may have a strong impact on the purchase decisions of potential car owners, and that the closer the relationship, the stronger the impact. It also suggests that private car ownership may act as a sign of social status in China. In conclusion, the survey is supportive of the existence of a diamond effect in private car ownership in China.

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The last decade saw a dramatic expansion of private car ownership in China. The number of private passenger vehicles¹ jumped from 303,600 units in 1991 to 3,650,900 units in 2000 (National Bureau of Statistics of China 2001, p 528). This trend is especially obvious in the super large cities. In 1991, Beijing had only 14,526 private passenger vehicles, and the figure reached 434,800 in 2000, a nearly 30-fold jump (Editors' Committee of Yearbook of China Transportation and Communications 2000). While the rapid growth of private car ownership may largely be attributed to the rising income level, compared with other countries, there are some interesting features in China's private car consumption. One interesting phenomenon is that people choose to own a car, while taxi services are convenient and much cheaper. This suggests the existence of the diamond effect, which was studied by Ng (1987). This paper attempts to test the diamond effect through a survey of 118 private car owners in China. It starts with a comparison of the cost between taxis and private car ownership, and then explores several explanations regarding this phenomenon. While conspicuous consumption theory may produce good explanation, the tax policy related to conspicuous consumption is controversial. As a result, diamond goods theory is introduced to provide a different point of view. However, there remains a problem of testing the existence of the diamond effect, which is a major part of the paper. After discussing research methodology, hypotheses and the questionnaire

¹ The private passenger vehicles include cars, privately owned taxis and minibuses.

design, the preliminary results are presented. Foreshadowing the main conclusions, these results are supportive of the existence of diamond effects. The paper concludes with a discussion of several interesting findings of the survey and suggestions for further research directions.

1. The Puzzle of Private Car Ownership in China

1.1 A Comparison of Taxi and Private Car Ownership

First of all, it is necessary to clarify why the taxi in China is a perfect substitute for the private car. In many developed countries, people have to call a taxi company to get a taxi to pick up the passengers at an appointed time, except for popular places such as the airport, train station or busy shopping centres, where lots of queuing may be involved. In China, however, it is quite easy to get a taxi within a five minute walking distance or less in most medium and large cities. Moreover, the models that are used for taxis - Santana, Citroen and Charade – are also favourite brands for private car owners. Though it can be argued that it is less private in a taxi, and it takes a longer time to get a taxi during peak time, these effects can be offset by the inconvenience of owning a private car, such as the complicated registration and annual inspection process, the frustration of finding a parking place, the stress derived from driving and so on. Therefore, a taxi can be considered a perfect or even a superior substitute for a private car, as far as the intrinsic effect of commuting is concerned.

The taxi is also an affordable travel mode for many urban residents. For example, the flag fall of the Santana in Beijing is *RMB10*, with the first three kilometres free of charge, and the rate thereafter is *RMB1.6* per kilometre. It costs around *RMB18,000* per annum even under the unrealistic assumption² that a person relies solely on taxis for all his or her travelling, and hence travels for 12,000 kilometres each year.³

On the other hand, private car ownership is more expensive. The price of a Santana was more than *RMB200,000* for many years, and still costs around *RMB150,000* for its basic model (Veryauto 2001a). Apart from the purchase price, the buyer has to pay a purchase tax that is equivalent to 8.55 per cent of the price.⁴ Even if the owner did not borrow money at all, the annual depreciation is nearly *RMB25,000* based on a 15 per cent depreciation rate. Moreover, the annual running cost can be as high as *RMB20,000*, according to a calculation based on a medium car priced at around *RMB130,000*, with a 1.6 litre engine size (Veryauto 2001b).⁵ Thus a conservative estimate of the cost of private car ownership is

² The assumption is unrealistic because people may conduct much less car travel if they do not own a car.

³ This calculation is based on the assumption that a person may travel 20 kilometres for each trip, twice a day, 300 days per annum.

⁴ The purchase tax rate is 10% of the sale price excluding value added tax. The formula is: $t = P * 10\% / (1 + 17\%) \approx P * 8.55\%$, where t is the purchase tax, P is price including value added tax, and 17% is the value added tax rate applicable to automobiles.

⁵ The cost components include: insurance 3,000 – 6,000 (RMB, same afterwards), standard annual government charges: 1,700, petrol cost: 2,700 - 5,400 (assuming traveling 10,000 to 20,000 kilometers per annum, the petrol price is 3, and the fuel economy is 9 liter per 100 kilometers), parking fee: 3600 –

RMB35,800, which is double the cost of continuously relying on a taxi. If the owner borrowed 70 per cent of the sale price, he or she needs to add another *RMB5,250* to the cost, given that the interest rate is as low as 5 per cent.⁶ Moreover, the opportunity cost of the money used for purchase is also a cost item that cannot be ignored.

This comparison would be more striking if we did the same calculation in Australia. According to the estimation of the Royal Automobile Club of Victoria (RACV), owning a popular Australian car, Holden Commodore, costs the motorist AUD8,599 per annum (Royal Automobile Club of Victoria 2001). This calculation is based on an assumption of an interest rate of 8.55 per cent and depreciation rate of around 13 per cent. However, if an individual chose to use a taxi for all his or her travel, the annual cost would be AUD21,108,⁷ more than double the cost of owning a car.

Moreover, the convenience factor will add more weight to owning a car in Australia, as people need to book in advance for a taxi service. This factor, however, has little impact on private car ownership in China, as

6000, maintenance cost: 500 – 1,000. Taking the median figures of these cost items, the annual running cost is *RMB15,800*.

⁶ This rate is the official interest rate for a car loan, however, it is important to notice that the interest rate in China is very low at the present stage. The interest rate for five-year government bonds is only 2.74 per cent (Ministry of Finance 2002).

using a taxi is very convenient in most Chinese cities.

1.2 The Relevance of Diamond Effects

Obviously, private car consumption in China cannot be adequately explained by the intrinsic utility derived from using it, which can be better fulfilled by taxis at a lower cost. However, the phenomenon that people would like to pay more for a certain good, while a cheaper substitute is available, has existed for a long time. Early studies by Veblen (1899) and Rae (1834) attributed it to trying to achieve higher social status via displaying wealth. Veblen (1899, chapter 3) identified two main ways in which an individual can display wealth: conspicuous leisure and conspicuous consumption, and saw the latter to be increasingly important as societies become more industrialised and as the distribution of income and wealth becomes more equitable. While much research on conspicuous consumption has shown that the quest for social status by conspicuous consumption may cause serious inefficiencies in the form of downward distortions in individual demand for non-positional goods (Bagwell and Bernheim 1996; Frank 1985; Ireland 1994), the tax implications of conspicuous consumption are controversial. Considering a signalling model of conspicuous consumption, Ireland (1994) showed that a tax on luxury goods is welfare improving. Bagwell and Bernheim (1996), on the other hand, recommended a reasonably broad-based luxury

⁷ This calculation is based on the information acquired from Yellow Cab (A Taxi Company in Melbourne), assuming that the person travels 600 times a year, 25 kilometres per trip, the flag fall each

tax; and Corneo and Jeanne (1997) suggested that taxing conspicuous expenditure is welfare reducing.

Ng (1987) took a different approach, and studied a special class of commodities, which he labels as “diamond goods”, for which consumers’ preferences are defined over the value (or the amount of money) spent on the acquisition, rather than over the quantity consumed. One of the characteristics of a pure diamond good is that a change in price does not change the utility received by the consumer; as a result, the optimal rate of taxation for a pure diamond good is infinite. The abnormal consumption pattern of private cars in China suggests the value of the car may play an important role in the purchase decision, a sign of the existence of the diamond effect. If that is the case, a heavy tax should be imposed on private car ownership, as suggested by the theory. To test the diamond effect of private car ownership, we need to fully understand the diamond effect and its policy implications.

2 Diamond Effects and Policy Implications

A diamond effect exists when people value a good for its exchange value (price multiplied by quantity) rather than, or in addition to, the intrinsic consumption effect (Ng 1987). This effect is named after diamonds, as it is most prominent with diamonds and other precious stones. Ng noticed

that some goods, such as diamonds, are not valued for their intrinsic consumption effects. Despite the fact that it may require experts with fine instruments to tell the difference between a real diamond and an imitation diamond, people still wish to spend thousands more to own a real one. As a piece of jewellery, the consumption effect of a diamond can be fulfilled by a piece of costume jewellery that looks virtually the same, but costs only a few dollars. While there may be many reasons for a person to spend thousands more to have a real diamond, one thing is obvious: the intrinsic consumption effect is trivial.

Ng listed three factors that may give rise to the diamond effect: conspicuous consumption, value storage and gift giving. In all three cases, the cheaper imitation diamond is useless. If a consumer wishes to show off his or her wealth to others, only the real diamond can perform the task (provided that there doesn't exist information asymmetry, that is, others can't be fooled by the fake diamond). Precious stones and metals are well-known for their value storage function, especially in the cases of high inflation, war and other emergent situations. While looking similar, imitations are worth almost nothing, and are unable to be exchanged for cash when needed. The necessity for real diamonds is also manifested in the case of gift giving. The purpose of the gift giving to please the receiver, and if only an expensive gift can achieve that, sending an

imitation will only offend the receiver.

In all of the three cases, it is the value of the goods that generate the utility for the consumers. While this is obvious for the value storage case, further clarification is needed for the other two cases. While value is not necessarily the only consideration in all gift-giving cases, it is an important factor. Taking a simple example: a man wants to buy some roses for his wife as a gift, and he normally has a budget in his mind – implicitly or explicitly. If a rose was priced at 1 dollar each, a man may need to buy 20 roses for his wife to show his love; while if the roses were priced at 10 dollars each, two or three roses should be enough. In this case, the rose is a symbol to show how much the man wants to spend to show his love, and the increase of the price is not really an excess burden for him.

In the case of conspicuous consumption, as Mason (1981, p 8) argued, conspicuous consumption is motivated not by the direct utility of the “consumption” but by the opportunity it affords for establishing relative financial superiority. Therefore, while all goods consumed for conspicuous display purposes normally have to conform to some minimum level of quality, it is the value or cost of the goods that offers utility to the consumer.

While conspicuous consumption may partly contribute to the diamond effect, it is different from the diamond effect. Conspicuous consumption, or the 'Veblen effect', is defined as a willingness to pay a higher price for a functionally equivalent good (Bagwell and Bernheim 1996). The motivation of conspicuous consumption is to impress others with the ability to pay particularly high prices for prestige products (Mason 1981, vii). In other words, the form of consumption is inspired by the desire to signal wealth. In fact, many researchers have adopted signalling models to study the phenomenon (see for example Bagwell and Bernheim 1996; Corneo and Jeanne 1997; Ireland 1994). The diamond effect, however, focuses on the fact that consumers derive utility from the value of the products, while ignoring the reason why that happens. As addressed by Ng (1987), the diamond effect must be distinguished from other similar phenomena. One is the habit of judging quality by price with the belief that price reflects differences in quality (Scitovsky 1945). The other is consumption where the intrinsic effect depends on other people's consumption, such as the use of telephone. In this case, the utility of having a phone would be zero if none of the people you wish to communicate owns one, unless you wish to display it as an antique. On the other hand, as more people use one, higher utility can be derived from owning a phone.

Ng's initial research focused on pure diamond goods that have no intrinsic consumption effect, and found that: 1) a change in the price of a diamond good leaves its value and the amounts of all other goods consumed, and hence the utility level of the consumer unaffected; 2) the demand curve for a pure diamond good is a rectangular hyperbola with unit elasticity; 3) a pure diamond good has an infinite tax in an optimal tax system (Ng 1987, p188-192). The third result is of great interest to the policy maker, as the diamond effect opens up a door for burden-free taxes. While Dusansky (1989) criticised the proof given by Ng (1987) for not taking into account the impact of the price change of the diamond good on all other goods, Ng (1989) pointed out that the tax on the pure diamond good is still significantly burdenless even after taking that impact in consideration.

While the case of a pure diamond good discussed by Ng (1987) may have limited application, it can be proven that stronger diamond effects justify higher tax in the mixed diamond goods case, when both the intrinsic utility and the value of the goods affect consumers' preference (Deng and Ng 2002). And the higher the proportion of the diamond effect, the higher the tax should be.

3 Survey Design and Methodology

3.1 Background Information

While a comparison of the costs of private car ownership and taxis can provide a guideline, the following questions are left open:

1. How does the diamond effect take place in private car ownership?
2. What is the driving force for the diamond effect in private car ownership?
3. Will the diamond effect change with the income level?

A survey was conducted to collect relevant information. The survey was distributed to 118 private car owners in three Chinese cities – Beijing, Changsha and Guangzhou. A questionnaire was prepared and distributed via some personal contacts of the researcher. In addition, the researcher conducted some informal interviews based on the questionnaire.

Beijing is the capital city, and it is also one of the largest cities in China. In 2000, it had a population of 12.23 million, the per capita disposable income of urban residents was *RMB10,349*, and the per capita consumption was *RMB8,493*. The balance of savings deposit per capita was *RMB26,406* (National Bureau of Statistics of China 2001). Changsha is the capital city of Hunan province. It is a medium-size city located in the central part of China. In 1999, it had a population of 5.76 million, per capita disposable income of urban residents was *RMB7,297*, and the per

capita expenditure of urban residents was RMB6538 (Changsha Municipal Government 2000). Guangzhou is the capital city of Guangdong Province. It is a large city located in the southern part of China. In 2000, it had a population of 6.74 million, the per capita disposable income of urban residents was RMB13,966 and the per capita consumption of urban residents was RMB11,349 (Wei 2001).

Sixty-three questionnaires were distributed via three branches of the Agricultural Bank of China from early January to the end of March 2002. Of these, 23 questionnaires were distributed via a car loan department of a branch in Beijing, 30 questionnaires were distributed via a car loan department of a branch in Changsha, and 10 questionnaires were distributed over the counter of a branch in Beijing. The respondents were asked to fill in the questionnaires when they came to the bank, and they filled in the form straight away if they agreed. Therefore the response rate was 100 per cent.

A further 80 questionnaires were distributed to the staff who owned private cars in four companies in Beijing from early March to the end of May 2002, and 36 questionnaires were collected as a result. Three of them were incomplete. Thus the effective response rate was 45 per cent.

Finally 20 more questionnaires were distributed via the Guangzhou Branch of the China Pacific Insurance Company from April to May 2002, and as in the case of the Agricultural Bank of China, all questionnaires were collected. All of the questionnaires were in Chinese, and all the questionnaires were anonymous. The questionnaire in Chinese and the English translation are given in the appendix.

3.2 Research Methodology

The four categories of research methods which may be used to obtain information on economic phenomena are: use of documents, observation, questionnaires and interviews (Moser and Kalton 1979). The information required for this investigation is not documented. Observation clearly would yield indicative information on the subjective questions raised, which is not enough for the analysis. In this research, the reasons for using a questionnaire are two fold: First, questionnaires provide wider coverage and larger sample size. On the one hand, only a few people can be contacted via interview, given limited time and budget. On the other hand, it is difficult to find enough people who would like to commit the time required by the interview. Even reimbursement is unlikely to be effective, because most of the private car owners are high-income earners. Secondly, the anonymity feature of the questionnaire may encourage the respondents to provide more objective opinions. Since the

survey investigated private issues such as income, age and the attitude of the respondents towards private car ownership, the respondent may hesitate to disclose some information to the interviewer.

While the decision to purchase a private car is likely to be a complex one, questions included in the questionnaire have to be sufficiently simple and straightforward. Ambiguity could arise as a result. Therefore, several informal interviews were conducted to facilitate preparation of the questionnaire to overcome this disadvantage, as suggested by Moser (1979). Two were conducted in early November 2001. The purpose of these interviews was to find out information such as what factors are likely to affect the decision to purchase a private car, and to check if the questionnaire was able to be understood and filled in. A further two interviews were conducted in early June 2002, after all the questionnaires were collected. The major purpose of these interviews was to clarify some ambiguity in the answers to the initial questionnaire, such as the implications of convenience. All interviewees were from Beijing, and are direct or indirect personal friends of the author. At the time of the interview, two of them owned a private car, and the other two did not own a car.⁸

⁸ The reason for selecting two interviewees who do not own a car is to compare the attitude of car owners and non-owners, and to find out why they chose not to own a car.

The sampling method is the so-called “snowball, chain or network” sampling technique (Merriam 1998). That is, the questionnaires were mainly distributed through the personal channels of the researcher. As stated by Gliner and Morgan (2000, p 145), snowball sampling is used “... when the participants of interest are from a population that is rare or at least whose members are unknown”, which is exactly the case in this survey. As shown in the preceding section, private car owners only account for 1 per cent of the urban population even after allowing for rapid growth in recent years (Yi 2001).

3.3 Hypotheses

We expect that the diamond effect will play an important role in private car ownership, as suggested by the cost comparison in the previous section. However, testing this effect is not easy. It is well known that the value of the car depreciates quickly; therefore value storage is unlikely to cause the diamond effect. And since all the respondents covered by this survey purchased their own cars, gift giving is not the reason that produces the diamond effect either. While conspicuous consumption is most likely to be the reason, few people will admit that they bought the car to show off, as “by acknowledging that a particular purchase decision is undertaken primarily for status or other ‘social’ purposes the conspicuous consumer loses any advantages which such consumption would otherwise afford him” (Mason 1981, p x).

Moreover, the diamond effect of a mixed diamond good is implicit. This is a general difficulty for all mixed diamond goods. Since the intrinsic consumption effect of a mixed diamond good like the private car is explicit and the diamond effect is implicit, there is a potential risk that the explicit intrinsic consumption effect is overestimated. Therefore, the questionnaire has to be carefully designed to at least partly solve these difficulties.

According to the definition, a diamond effect exists when utility derives from the value (or more precisely relative value) of the car. While the definition is relatively simple, it is not easy to test the effect on private car ownership. A preference for a more expensive car does not necessarily prove the existence of the effect, as a more expensive car can be functionally different.⁹ Therefore, a roundabout method has to be adopted.

While there isn't any research on testing diamond effects, the literature on conspicuous consumption suggests that signalling could be the reason why the value of the good may generate utility, and the signal is

⁹ As pointed out by many researchers (for example, Bagwell and Bernheim 1996, Frank 1999), the difference in functions may not justify the price difference, and the preference towards a more expensive car can at least be partly explained by the diamond effect. However, we here assumed that the expensive car is functionally different to avoid the complexity.

necessary to identify the social status and prestige of the consumer (Mason 1981; Veblen 1899). If there exists a diamond effect, then the owner can derive utility from private car ownership itself. That is, car ownership can be a symbol to identify him or her among the social groups he or she belongs to or wishes to belong to. And these groups are recognized as a person's "reference groups" (Mason 1981). The closer the relationship is, the stronger the symbol will be. The logic is that the private car is a sign of social status, and that private car ownership has lowered the relative social status of non-owners, therefore, the non-owners will buy a car to maintain their social status. In other words, there is a "demonstration effect" among existing owners or a "matching effect" among potential owners. Two groups – colleagues, relatives and friends – were included in this survey. The reasons to include these two groups are two fold. First we can test if the above effects exist for both groups. Second, since relatives and friends are a closer social group compared to colleagues, we can compare their influence and see if a closer social group has a stronger influence. Therefore, we have the following two hypotheses:

Hypothesis 1: The ownership of colleagues, relatives and friends will exert strong influence on the purchase decisions of the potential owners.

Hypothesis 2: Relatives and friends will have a stronger influence than colleagues.

Another way to show the existence of the diamond effect is to show that the intrinsic consumption effect of the private car is relatively small. In developed countries, private cars are most frequently used for work or business purposes, and the major benefit brought by private car ownership is in terms of time saving. However, if the diamond effect exists, these intrinsic utilities will be less important. Therefore, we have the third hypothesis:

Hypothesis 3: Commuting will be a less important factor in private car ownership, and time saving will not be the principal benefit brought by private car ownership.

3.4 Questionnaire Design

The questionnaire can be broken down into four parts. The aim of the first part was to collect general information such as the occupation, education, age and income of the respondents. It included questions one to four. Since private car owners were assumed to be high-income earners, the occupation category follows the classification of a survey on urban high-income groups released by the Urban Investigation Team (USEIT) (2001).

Questions five to nine form the second part of the survey. The aim of this part is to test the impact of colleagues, relatives and friends on the purchase decision. This part asks how many of the colleagues, relatives

and friends of the respondent had bought a car before he or she bought the car, and what is his or her relative income compared with his or her colleagues, relatives and friends.

The third part of the survey is designed to further explore the real reason for private car ownership. First several reasons were listed for the respondents to choose from as their major reason to purchase a car. Following this, questions were asked about average commuting distance and time spent on commuting. This part finishes by asking respondents to compare the advantages and disadvantages of private car ownership and taxis. Since private cars are mainly used for commuting in developed countries, the aim of this part of the survey is to find out how important the commuting function (or the intrinsic consumption effect) of the private car is, and why did they choose private cars instead of taxis.

Apart from these three parts, a table was attached to the end of the questionnaire asking the respondent to fill in the specifications of the car, such as model, purchase year, purchase price, and charges and fees paid per annum. Since the questionnaires were filled in voluntarily by the respondents, and were collected anonymously, it is impossible to force them to answer all of the questions. Many respondents chose not to fill in the table, mainly because it takes time and requires calculation (the other

questions were multiple choice, and respondents only needed to tick the option that applied to them).

4 Survey Results

4.1 Characteristics of the Respondents

The respondents covered almost all occupations listed in the questionnaire. Of all the respondents, the largest group are managers in enterprises and institutional organizations, accounting for 29.66 per cent of total respondents. This is followed by ordinary staff of enterprises and institutional organizations (17.8 per cent), and self-employed (15.25 per cent). Other occupations of the respondents include employees in the business and service industry (9.32 per cent), and professionals and technical workers (8.47 per cent). This breakdown of occupations is largely consistent with the results of a survey on high-income earners conducted by the Urban Economic and Social Investigation Team (UESIT) (see Table 1), except for the categories of “Professional and Technical staff” and “Agricultural worker”. These two categories accounted for 25.2 and 0.1 per cent of the total high-income earners in the UESIT survey, while their respective shares in this survey was 8.47 and 4.24 per cent. The reason for this could be the smaller sample size in this survey.

The respondents’ level of education, age and income is highly

concentrated. As shown in Table 2, nearly 80 per cent of private car owners surveyed have completed a tertiary education. Nearly half of the respondents have a postgraduate degree, and 30.5 per cent of respondents have completed specialized tertiary education. The high proportion of respondents with higher degrees reflects the fact that people with higher degrees have a better chance of earning high incomes. Nearly half of the respondents are aged between 30 and 40 years of age (47.46 per cent), and nearly 95 per cent of the respondents are aged between 20 and 50 years old. The high proportion of respondents aged between 30 and 40 years who are car owners may be explained by two factors. One is the preference factor. People at this age are more open-minded and are more adaptive to new consumption patterns. To some extent, a private car represents a new life-style, and therefore attracts their attention. Another is the income factor. People at this age normally have about 10 to 15 years working experience. They have either got a managerial position in the institution they work for, or have started their own business, and as a result, have accumulated substantial personal wealth to buy a car. This is also reflected in their income. Sixty six per cent of the respondents earn an annual income above *RMB50,000*, which is at least four times higher than the average annual income of urban residents in any of the three cities. Less than 10 per cent of the respondents earn an annual income of less than *RMB30,000*.

4.2 Demonstration Effects and Private Car Ownership

This survey shows that the proportion of “first purchasers” is higher among those who have higher both absolute and relative income levels. As shown in Table 3, the proportion of the respondents who were the first to buy a car among their colleagues, relatives and friends changed in accordance with their relative income among their colleagues, relatives and friends. And this pattern is more obvious for friends and relatives than colleagues. Seventy six per cent of the respondents who considered their income as high were the first one among their friends and relatives to buy a private car, while none of the respondents who considered their relative income as medium to low who were the first to buy a car. The difference is less significant among colleagues. While 40 per cent of the respondents who considered their income as high among their colleagues were the first among their colleagues to buy a private car, there were 6.67 percent of the respondents who considered their income as medium to low were the first to buy a private car among the colleagues.

A similar trend is also apparent as far as absolute income is concerned. However, the difference in the proportion of “first purchasers” between the highest and lowest income groups is less significant. Thirty three per cent of the respondents whose annual income is over *RMB200,000* are the first to own a private car among their colleagues, friends and relatives;

while 18 per cent of the respondents whose annual income is below *RMB30,000* are the first to own a private car. The coincidence of the proportion of “first purchaser” and being high in self-identified relative income is consistent with the likely possibility that a private car is a symbol of relative social status – reflected by relative income in this case.

However, the above pattern does not appear in cases where some of the colleagues, friends and relatives around the potential car owner had bought a car. Instead, in these cases we found significant “matching effects”. This suggests that the car ownership level of people around the potential car owner has a strong influence on the purchase decision of the person.

We found that most of the respondents bought their cars after one to five people around them had bought a car. One of the interesting findings is that the proportion of respondents who had less than five colleagues, relatives and friends who had bought a car before their purchase is quite similar. The proportion of respondents who had less than five colleagues who owned a car are 66.67 per cent, 63.16 per cent, 58.92 per cent, 59.26 per cent and 45.45 per cent for the five income groups; and the figures in terms of friends and relatives are 66.67 per cent, 84.21 per cent, 69.65 per cent, 85.19 per cent and 81.82 (see Table 3). This suggests that the

absolute income level may not be crucial in private car ownership. While the proportion of respondents who have less than five colleagues owning a car decreased with their absolute income level in general, the difference between the highest income group (over *RMB200,000*) and the lowest income group (less than *RMB30,000*) is only 10 percentage. And in the case of friends and relatives, this figure for the lowest income group is 15 percentage points higher than the highest income group. Indeed, we can see little, if any, relationship between the absolute income level and the proportion of respondents who have less than five friends and relatives who owned a car before them. In other words, people are most likely to purchase a car when they have one to five colleagues or friends and relatives who owned a car. While this is true for all income groups, this phenomenon is more obvious among friends and relatives.

Similar patterns can be found in the relative income scenario. Except for the respondents who considered that their relative income was high, we found the proportion of purchases is the highest among respondents for whom one to five of their colleagues, relatives and friends had bought a car. And even surprisingly this figure is quite high for people who considered their relative income as medium to low among others. The proportion of respondents who have one to five colleagues who owned a car before they purchased their cars were 33.33 per cent, 34.21 per cent,

40 per cent and 53.33 per cent for those who considered their relative income as high, medium to high, medium and medium to low among their colleagues. The corresponding figures are 23.81 per cent, 61.11 per cent, 51 per cent and 54.55 per cent in the case of relatives and friends. The fact that over half of the respondents who considered their income as medium to low purchased their cars when one to five of their colleagues or friends and relatives had owned a car suggests a strong demonstration effect in private car ownership.

In summary, the results derived from a comparison between private car ownership and income is supportive of the first two hypotheses: The ownership of both colleagues, relatives and friends have a strong influence on the purchase decision of the potential owner; and relatives and friends will have a stronger influence than colleagues. Moreover, the results show that relative income has a far more important influence on private car ownership than absolute income, suggesting social status consideration played an important role in private car ownership.

4.3 The Function of the Private Car

In most countries, private cars are mainly used for work and business related trips, which can also be considered as the intrinsic utility of car ownership. If the utility solely or mainly comes from the intrinsic consumption effect, there exists little or no diamond effect; otherwise, the

diamond effect could be the main explanation for private car ownership.

To test the intrinsic consumption effect of the private car, we tried both direct inquiry and an indirect approach. The direct inquiry was to ask the respondent directly their main reasons for purchasing a car; while the indirect approach was to explore the commuting function of the car and to compare the respondents' attitude towards taxis and private cars. Direct inquiry is not a good method to test the diamond effect, because as indicated above, there is a potential risk that the respondents would overestimate the explicit intrinsic utility, and underestimate the implicit diamond effect. Therefore, the results should be viewed with caution, taking this into account.

There are several interesting findings from this part. First, while work and business related trips were important considerations for private car ownership, they are not the most important factors for private car ownership. As shown in Figure 1, they account for less than half of the total responses.¹⁰ To "commute to work" accounts for 16 per cent of the total responses, and only 5 per cent of responses claimed "business purpose" as the reason for purchasing a car. And among the 28 respondents who claimed commuting to work as the main reason for

buying a private car, thirteen or nearly half of them lived within a five-kilometre distance of their working places. This suggests that even if the car was mainly used for travelling to and from work, the benefits derived from that (e.g. time saving) are unlikely to be significant. On the other hand, while “required by the occupation” accounts for 24 per cent of the total responses, it does not necessarily mean that the car was bought for travelling itself, as 8 out of 42 respondents had a company car, and 16 used taxis as the major way for commuting. It is worth noting that many people can be reimbursed for the costs of using taxis.¹¹

Secondly, private cars provide intangible satisfaction for their owners. Nineteen respondents stated that they bought their cars because they feel good by owning a car. While this group accounts for only 11 per cent of the total responses (see Table 4), this is still significant given the fact that people will not normally admit conspicuous display as the purpose for consumption (Mason 1981). This suggests that ownership itself can generate satisfaction or utility for the owner, which supports the existence of the diamond effect.

Thirdly, private cars are superior to taxis in the sense that they provide

¹⁰ Since some respondents chose more than one reason, the percentage was calculated by dividing all the responses with a certain option (e.g. convenience for travelling), by the total responses – if the respondent ticked four options, then four instead of one was added to the total.

more conspicuous display opportunities for the owner. "Convenience" seems to be the most important reason behind private car ownership, accounting for nearly half of the total responses on the advantages of private car ownership (Table 4). It also accounts for the largest share (26 per cent) of the reasons given for purchasing a private car (see Figure 1). While "convenience" may be interpreted as being more flexible, other factors may reduce this advantage. "Congestion" and "difficulty in finding parking places" jointly account for nearly half of the total responses on disadvantages of private car ownership (Table 5), showing that it is often not convenient to drive private cars around even after paying a high price to purchase and keep the car.

Since "convenience" is a vague expression, its meaning was discussed in detail in the informal interviews after the questionnaires were collected. The interviewees' explanations on "convenience" can largely be classified into three categories: first, car owners can go to places (e.g. some entertainment places) that he or she does not want others (even taxi drivers) to know about; secondly, car owners can go to remote places where getting a taxi is less convenient; thirdly, car owners can travel even at the peak time when it may take a much longer time to get a taxi. While these reasons all make sense to some extent, they are not convincing

¹¹ Theoretically, people can be reimbursed for work-related taxi trips only, however, it is almost impossible to distinguish a work trip from a private trip, as the invoices provided by the taxi driver

evidence to illustrate the superiority of the private car in term of travelling. The first reason is not plausible because it is much easier to track someone with a private car,¹² while few taxi drivers will remember their passengers. The third reason is plausible given the fact that it is less easy to get a taxi during the peak time. However, it is worth noting that driving during the peak time is not a pleasant experience either. The anxiety and stress derived from congestion is well known, and 39 respondents indeed ticked congestion as a disadvantage of private car ownership (see Table 5). Sitting in the taxi can be more relaxing than driving.

Two examples were given to illustrate the second reason. One is that an interviewee wanted to invite his guests for dinner after a meeting, and that with a car he can go wherever his guests wanted without worrying about getting a taxi back after the dinner. The second is that when an interviewee went back to his hometown – a small city where getting taxis is less convenient - he did not have to worry about not getting a taxi if he took his own car. It is not difficult to find the conspicuous display in both examples. In the first case, the fact that the host can take his guests with his private car is more important than the availability of taxis. The ostentatious display is even more obvious in the second example. The

would only show the total taxi fare.

road charges plus the petrol cost are several times higher than the cost of a train ticket,¹³ and there is little, if any, time saving by driving. Conspicuous display sounds more logical to explain why the person preferred to drive several hundred kilometres without rest and pay more just to avoid a little inconvenience of getting a taxi in his hometown: the satisfaction derived from driving a private car to visit friends and relatives in his hometown would compensate for the extra costs and suffering.

5 Conclusion

The results of the survey revealed some interesting aspects of private car ownership in China. While it is difficult to show directly, several findings are suggestive of the existence of a diamond effect in private car ownership. We found that the purchase behaviour of the people from the same social group has a strong impact on the purchase decision of the respondents, and that the closer the relationship, the stronger the impact. We also found that social recognition was an important consideration in private car ownership, apart from work and business travel needs. These findings suggest that private car ownership itself brings satisfaction for the owners, which is a strong indicator of the existence of the diamond effect.

¹² Unless the place where the person wanted to go has a garage, which is uncommon in China, people can track the person by spotting his or her car in the parking lot. This is a popular method used by the media in China to locate government officials in some entertainment places.

¹³ Depreciation should also be included for such a long trip.

Since this is the first attempt to show the existence of the diamond effect empirically, there is little previous research that could be utilized to provide guidance for this research. There is still a lot of room for further research. Firstly, the sample size can be increased. Sampling bias can be one of the disadvantages of the snowball sampling technique (Biernacki *et al.* 1981), and a larger sample size may mitigate this disadvantage. Secondly, more interviews can be conducted to further explore the diamond effect, where the answers to the questionnaire were ambiguous. Thirdly, the questionnaire can be further improved to avoid the ambiguity of some questions. The options for the questions are derived from the interviews with the private car owners by the researcher. The advantage is that the respondents had little problem in picking the option in his or her mind; however, some vague options, such as “convenience”, was included as a result. Ways to avoid the vagueness could be displaying several options under the vague answers, or conducting more interviews to clarify the issue.

Table 1 Occupation of The Respondents

	Government Official	Manager of Enterprise or Institution	Ordinary Staff of Enterprise or Institution	Professional or Technical staff	Self-employed	Employee in business & Service Industries	Operators of Production & Transport Equipments	Agricultural Workers	Others
Number	5	35	21	10	18	11	5	5	8
Percent (%)	4.24	29.66	17.80	8.47	15.25	9.32	4.24	4.24	6.78
Result of USEIT* (%)		31	9.5	25.2	17.8	8.5	4.4	0.1	3.5

*Source: (Urban Social and Economic Investigation Team 2001).

Table 2 Education of The Respondents

	Master and above	Bachelor	Specialised Tertiary Education	Secondary technical schools	Senior Secondary school	Junior Secondary School	Primary School and Below
Number	10	48	36	4	15	4	1
Percentage (%)	8.47	40.68	30.51	3.39	12.71	3.39	0.85

Source: Survey conducted by the author

Table 3 Income and Car Ownership

%

Private Car Ownership		Relative Income				Absolute Income (RMB 10000)				
		High	Medium to high	Medium	Low to Medium	More than 20	10-20	5-10	3-5	Less than 3
Colleagues	None	40.00	26.32	15.56	6.67	33.33	26.32	23.21	11.11	18.18
	1-5	33.33	34.21	40.00	53.33	33.33	36.84	35.71	48.15	27.27
	6-10	6.67	10.53	8.89	20.00	33.33	21.05	5.36	7.41	9.09
	More than 11	13.33	21.05	24.44	20.00	0	15.79	21.43	25.93	36.36
	NA	6.67	7.89	11.11	0.00	0	0.00	14.29	7.41	9.09
Friends & Relatives	None	76.19	30.56	10.20	0.00	33.33	36.84	26.79	25.93	18.18
	1-5	23.81	61.11	51.02	54.55	33.33	47.37	42.86	59.26	63.64
	6-10	0.00	5.56	14.29	18.18	33.33	0.00	12.50	11.11	0.00
	More than 11	0.00	2.78	20.41	18.18	0.00	15.79	16.07	0.00	9.09
	NA	0.00	0.00	4.08	9.09	0.00	0.00	1.79	3.70	9.09
Total Respondents		21	36	49	11	3	19	56	27	11

Source: Survey conducted by the author.

Table 4 Advantages of Owning a Private Car

	Convenience	Save time and increase efficiency	Feel Good	Others	Not Answered
Number	77	59	11	5	4
Percentage (%)	49.36	37.82	7.05	3.21	2.56

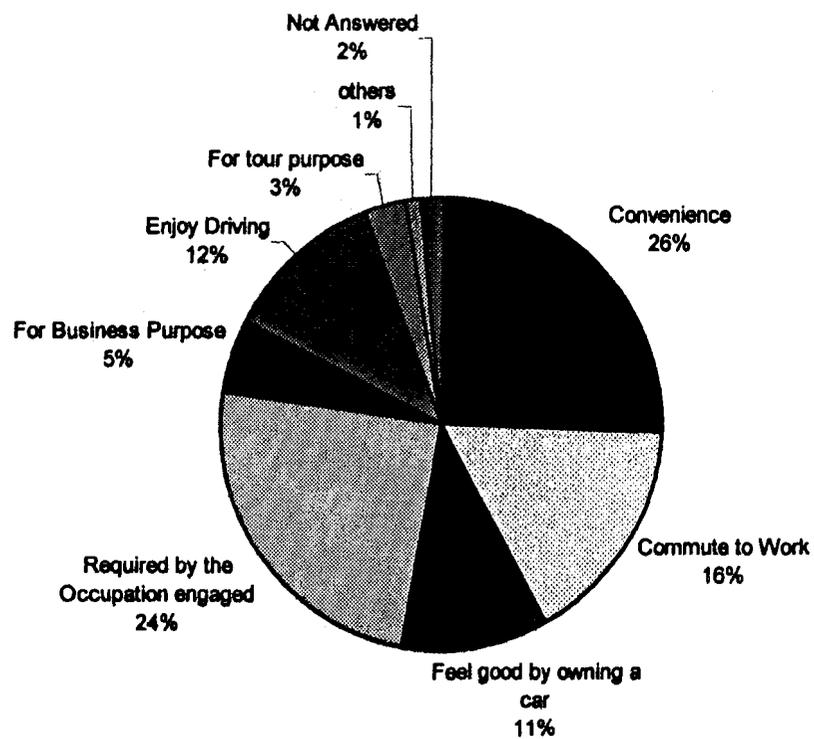
Source: Survey conducted by the author.

Table 5 Disadvantages of Owning a Private Car

	<i>Congestion</i>	<i>Parking</i>	<i>Arbitrary Charges</i>	<i>Cost</i>	<i>Others</i>	<i>Not Answered</i>
Number	39	49	20	56	8	17
Percentage (%)	20.63	25.93	10.58	29.63	4.23	8.99

Source: Survey conducted by the author.

Figure 1 Reasons for Purchasing a Car



Source: Survey conducted by the author.

Annex 1: The Questionnaire (in English)

1. What is your occupation?

- 1) Government official
- 2) Manager in enterprise and institutional organization
- 3) Ordinary staff of enterprise and institutional organization
- 4) Professional or technical worker
- 5) Self-employed
- 6) Employee in the business and service industry
- 7) Operator of Production and Transport Equipment
- 8) Agricultural worker
- 9) Other, please explain _____

2. Education

- 1) Master or above
- 2) Bachelor's degree
- 3) Specialised Tertiary Education
- 4) Secondary Technical Schools
- 5) Senior Secondary School
- 6) Junior Secondary School
- 7) Primary School or Below

3. Your Age

- 1) 20-30
- 2) 30-40
- 3) 40-50
- 4) 50-60
- 5) More than 60

4. Your annual income (RMB10,000)

- 1) More than 20
- 2) 10-20
- 3) 5-10
- 4) 3-5
- 5) Below 3

5. The annual income of your family

- 1) More than 20
- 2) 10-20
- 3) 5-10
- 4) 3-5
- 5) Below 3

6. According to your understanding, how many people among your colleagues had bought cars before you purchased your car?

- 1) None
- 2) 1-5
- 3) 6-10
- 4) More than 11

Total number of your colleagues _____

7. According to your understanding, how many people among your relatives and friends bought cars before you purchased your car?

- 1) None
- 2) 1-5
- 3) 6-10
- 4) More than 11

8. According to your understanding, the income level of your family among your colleagues is

- 1) High
- 2) Medium to high
- 3) Medium
- 4) Medium to low
- 5) Low

9. According to your understanding, the income level of your family among your friends and relatives is

- 1) High
- 2) Medium to high
- 3) Medium
- 4) Medium to low
- 5) Low

10. The major reason for you to buy a car is

- 1) Freedom of travelling
- 2) Commuting to work
- 3) Feel good by owning a car
- 3) Necessary for your job
- 4) For business purposes
- 5) Enjoy driving
- 6) Other people around have bought cars
- 7) Other, please specify _____

11. Before buying a car, your major commuting mode is

- 1) Public transport
- 2) Taxi
- 3) Company car
- 4) Company bus
- 5) Bicycle
- 6) Walk
- 7) Motorcycle
- 8) Others, please specify _____

12. The distance between your home and your work place is
 1) Below 5 km 2) 5-10 km 3) 10-20 km 4) 20-30 km 5) More than 30 km
13. The average distance you travel in your car per week is
 1) Below 25 km 2) 25-50 km 3) 50-100 km 4) 100-200 km
 5) 200-400km 6) More than 400 km
14. How much time does it take for you to go to work from your home (one way)
 1) Below 10 min. 2)10-20 min. 3) 20-30 min. 4) More than 30 min.
15. The disadvantage of using a taxi compared to a private car is
 1) The cost of taxi is high, please estimate annual cost _____
 2) Inconvenient, because often can not find a taxi
 3) Lack of privacy 4) Lose face 5) Other
16. The advantage of owning a private car is
 1) Able to travel wherever I want 2) Save time and improve efficiency
 3) A sign of social status 4) Other, please explain _____
17. The disadvantage of owning a private car is
 1) Congestion 2) Parking 3) Arbitrary charges
 4) High cost in keeping a car 5) Other, please explain _____
18. Relevant information of the car:

Model	
Purchase Year	
Purchase Price	
Surcharge	
Vehicle and Vessel Tax	
Annual Parking Cost	
Interest	
Road Maintenance Fee	
Repair and maintenance cost	

Annex 2: The Questionnaire (in Chinese)

私家车车主问卷调查

1. 您的职业

- 1) 政府官员 2) 企事业单位管理人员 3) 企事业单位工作人员 4) 专业技术人员
5) 自由职业者 6) 商业服务人员 7) 生产、运输设备操作人员
8) 农、林、牧、渔、水利业生产人员 9) 其它从业人员, 请说明_____

2. 受教育程度

- 1) 硕士及以上学历 2) 大学本科 3) 大学专科
4) 中专 5) 中 6) 初中 7) 小学及以下

4. 您的年

- 1) 20-30 2) 30-40 3) 40-50 4) 50-60 5) 60 以上

4. 您个人的年收入

- 1) 20 万以上 2) 10-20 万 3) 5-10 万 4) 3-5 万 5) 3 万以下

5. 您家庭的年收入

- 1) 20 万以上 2) 10-20 万 3) 5-10 万 4) 3-5 万 5) 3 万以下

6. 据您所知 您买车时 您单位同事中有几位买了车

- 1) 无人买车 2) 1-5 位 3) 6-10 位 4) 11 位 以上

您单位同事总数为_____ (只需给出大约数字即可)

7. 据您所知 您买车时 您亲戚朋友中有几位买了车

- 1) 无人买车 2) 1-5 位 3) 6-10 位 4) 11 位 以上

8. 据您所知 您的家庭收入水平在单位同事中属于

- 1) 等 2) 中等偏上 3) 中等 4) 中等偏下 5) 低等

9. 据您所知 您的家庭收入水平在亲戚朋友中属于

- 1) 等 2) 中等偏上 3) 中等 4) 中等偏下 5) 低等

10. 您买车的主要原因是

- 1) 出行方便 2) 上下班 3) 拥有汽车感觉好 3) 职业需要 4) 用于营运
5) 喜欢开车 6) 周围的人都买了车 7) 出去旅游方便 8) 其他 请说明_____

11. 未买车之前 您出门主要使用

- 1) 公共交通 2) 出租车 3) 单位配车 4) 单位班车 5) 自行车
6) 步行 7) 摩托车 8) 其他 请说明_____

12. 您家到单位的距离约为

- 1) 5 公里以下 2) 5-10 公里 3) 11-20 公里 4) 21-30 公里 5) 30 公里以上

13. 您的车每周行使多少公里

- 1) 25 公里以下 2) 25-50 公里 3) 51-100 公里 4) 101-200 公里 5) 201-400 公里 6) 400 公里以上

14. 没有买车之前 您上下班(单程)路上通常要花多少时间

- 1) 10 分钟以下 2) 10-20 分钟 3) 20-30 分钟 4) 30-60 分钟 5) 1 小时以上

15. 您觉得出租车与私家车相比之下的不利之处在于

- 1) 出租车费用 请大致估算一下一年的费用 _____ 2) 出租车不方便 经常打不到车
3) 坐出租车没有自己的空间 4) 坐出租很掉份 没面子 5) 其它 _____

16. 您觉得有车最大的好处是

- 1) 自由自在 随心所欲 2) 节省时间 提 效率 3) 感觉与众不同 有身份 4) 其它 请说明

17. 您觉得有车最大的不利之处是

- 1) 道路拥挤 2) 停车难 3) 乱收费 4) 养车费用 5) 其它 请说明 _____

18. 车辆有关信息

车型	
购买年份	
买价	
附加费	
车船使用税	
停车费	
利息	
养路费	
维修保养费	

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