

How Could the Guide Dog Industry in China Thrive Sustainably?

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Abstract

Raising pet dogs is very popular in recent years in China and guide dogs are in high demand. However, the guide dog raising industry is faced with many problems. The purpose of this essay is to give sustainable policy suggestions corresponding to the problem that appeared in China's guide dog market. I'll start by analyzing the existing domestic guide dog market, evaluating demand and supply and determining the nature of the market failure. Then a qualitative analysis to identify which type of goods guide dogs belong to is carried out and eventually reaches the result of a quasi-public good. Lastly, corresponding solutions with appropriate evaluation are given, where policy suggestions are divided into two parts with distinction in private and public ownership respectively with evaluations mainly reflecting on sustainability, efficiency and moral judgment.

Keywords

Guide dog; Qualitative analysis; Financial constraint;

Introduction

The guide dog is a kind of specially trained dog to help serve human beings. And the targeting people are mainly the blind and visually impaired, who are provided with guide dogs mainly because they are reckoned as a disadvantaged group in society and thus need special treatments. But it is noticeable that it is fairly hard for those people to possess a formally

trained guide dog, and loads of people are now criticizing for such inadequate production. And it seems that there are increasingly larger amount of related activities carried out aimed to promote such a situation, yet most of them failed. The situation in China is especially unfavorable. What is the true market condition now? Why is it the case? What type of goods do guide dogs belong to? What are the possible solutions to the market failure? Are those policies justified? Those are the questions that will hopefully be solved in the later discussion.

I chose this topic primarily because news about how guide dogs in China are in an adverse situation, as well as claims made by some visually impaired people about how they want a guide dog but cannot get one, touched me deeply and compelled me to delve deeper into why such a market failed to function properly. As a student passionate about economics, I believe that economics is a helpful tool to address social problems like this. Therefore, in the essay, I would use methodologies and theories used by other economists to examine the market failure so as to give corresponding policy suggestions. To achieve those objectives, data from several guide dog organizations such as International Guide Dog Federation and China Guide Dog as well as economic theories and research related to public goods and government interventions will be used.

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Literature Review

What is a Guide Dog?

According to Wikipedia, “Guide dogs (colloquially known in the USA as seeing-eye dogs) are assistance dogs trained to lead blind and visually impaired people around obstacles.”

According to the Cambridge dictionary, “A guide dog is a dog that has been specially trained to help a blind person travel around safely.”

According to The Guide Dog Foundation, “Guide dogs are trained to provide increased independence and enhanced mobility to people who are blind, have low vision or have other disabilities.”

According to the definitions above, “A guide dog is essentially all about specially trained dogs helping people with disabilities, especially with visual impairment.”

Benefits of Owning a Guide Dog

Overall, there are generally two main benefits the guide dog ownership, which are improved living standards and benefits to society as a whole.

Research done by Kathleen E. Wirth and David B. Rein in 2008 calculated the incremental economic benefits as a decrease in costs associated with the formal and informal treatment of approximately US\$21,568 per guide dog by estimating health care utilization and expenditure.

Such reduction may be because, first of all, companion ownership itself is beneficial to human beings. In the article, *The Human-Companion Animal Bond: How Humans Benefit* (Erika Friedmann and Heesook Son, 2009), it is demonstrated that both in the short term and the longer-term animal companionship has a positive impact on humans’ well-being, including enhanced perceptions of situations, reduction in stress and influence on the progression of chronic diseases. Moreover, such a positive impact is of particular value to socially isolated individuals.

Apart from the companionship that a typical dog offers, service dogs give their owners the gift of freedom, enabling them to live regular, productive lives. According to research carried

out by D.R.Lane, J. McNicholas, and G.M. Collis, *Dogs for the disabled: benefits to recipients and welfare of the do* in 1998, subjects investigated (those visually impaired with ownership of guide dogs) generally show satisfying attitudes towards their relationships with the guide dogs. The questionnaires and afterwards analysis illustrate that, overall, guide dogs could be seen as a social facilitator helping enhance social interactions due to increased independence and mobility, and an affectionate relationship providing emotional and esteem support.

In terms of societal benefits, it may be calculated in terms of the reduced opportunity cost of the non-barrier constructions. According to the *China Consumers’ association* and the *China Association of the Blind*, the coverage of barrier-free facilities in various industries is only 40%, and those facilities are frequently occupied by shared bikes and other blind roads⁷. The cost of non-barrier construction of one single town, Fuyang in south-east China, is estimated as approximately ¥998,000 RMB, according to the documents released by the local government⁸. The wide provision of guide dogs can largely reduce such costs, especially for the under-developed regions where the population is sparsely distributed.

Cultivation and Application

According to the *Industries of the Blind and Visually Impaired (What it takes to be A Guide Dog / Blog | IBVI*, 2021, it is usually the guide dog school that trains guide dogs. The majority of guide dog schools are often non-profit organizations that offer their dogs for free or at a reduced price, and they mostly do more than just train dogs; they also handle everything from breeding to finding permanent homes for retired dogs, as well as educating owners on how to communicate with their service dogs.

Most guide dog schools use German shepherds, Labrador retrievers, and golden retrievers. Knowledge, discipline, good memory, sensitivity to the environment, desire to learn, and ability to focus are all qualities that should be present in service dogs, and dogs will be removed from the program if it shows signs of aggression, nervousness, or responds adversely to other animals.

In terms of the training process, guide dog schools work with carefully chosen and highly trained puppyraisers who train the puppies from the start. The raisers make sure they're well-cared for and socialized, and they know how to sit, stand, and walk on a leash properly. Official guide dog training takes about four months to complete. Guide dogs are conditioned on a reward scheme, similar to formal obedience training, to promote good conduct. Instead of rewards, guide dog trainers use encouragement as a reward because treats will cause the dog to become distracted by food.

Current Obstacles

High costs and lack of investments are the two main difficulties for efficient production. The cost of training a guide dog is generally approximated to be US \$40,000 – \$60,000, including breeding fees, raising and training the dog, the cost of a team sponsor and capital costs such as renting lands and training facilities.¹⁰ The success rates are also rather low, which is only approximately 13% according to the International Guide Dog Federation. Furthermore, government policies are ineffective and few government subsidies are provided. Investments and donations made by businesses and individuals are insufficient as well. However, there are some problems faced by the guide dog industry in China only. The most obvious one is the lack of related technology. People in China have barely found efficient ways to improve the efficiency of guide dog production. For instance, the only main guide dog school on China's mainland has just produced 174 guide dogs from 2006 to the present, according to their official websites. It illustrates no good efficiency. And sometimes sight-impaired people do not want to raise a guide dog that they might benefit from, or the owners have to bear discrimination due to strong prejudice held against dogs in Chinese traditional culture. Examples could refer to the news *Guide dog Criticized To Cry* in April 2020 and *Shanghai's Guide Dog Driven Out Of Community Because Of Defecation Problems* in September 2021 reported by *Pengpai News*.

After compiling all of this information, it was clear that the guide dog is well-defined, the cultivation and training process is well-illustrated and the benefits of them

accompanying the disabled are evident. However, although reasons for the underdevelopment have been analyzed to some extent, further analysis in terms of demand analysis, as well as public goods provision, is needed and some possible solutions will be provided, which will be discussed and evaluated later in the project.

Discussion

What Is the Current Demand and Supply?

Data Analysis

Nation	Number of Visually Impaired People/million	Number of Guide Dogs	Ratio/per million
USA	322	10000	31.1
UK	200	5000	25
France	170	1000	5.9
Australia	57.5	1000	17.4
German	50	600	12
China	1731	200	0.1

Figure 1. The number of the guide dog and the number of visually impaired people

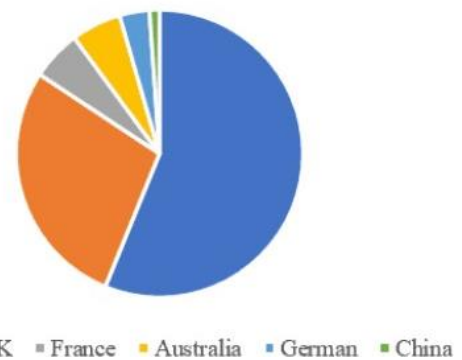


Figure 2. The distribution of guide dogs in different countries



Figure 3. The distribution of visually impaired people in different countries

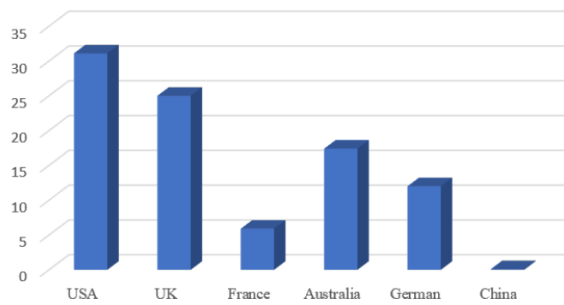


Figure 4. The Ratio of guide dogs used in different countries

Source: International Guide Dog Federation, CNN, National Bureau of Statistics of China, research done by Khairallah and Moncef.

The first table (Figure 1) lays out the estimated number of the guide dog as well as the number of visually impaired people (including blind people and people with moderately or severely vision impairment) in some relatively developed nations. It is worth mentioning that the number of guidedogs in China is only around 200 according to state broadcaster CCTV (Nectar Gan, 2020).

From Figure 2 and Figure 3, it could be easily observed that China has the greatest number of visually impaired people while possessing the least amount of guide dogs. By contrast, the USA shows a relatively good performance in providing guide dogs. The varying numbers in those two charts lead to the result illustrated in Figure 4, which depicts the number of guide dogs seen per million visually impaired people. Guide dogs in China enjoy the least popularity with much less only 0.001% while in other countries listed above, they enjoy popularity ranging from roughly 0.12% to 0.35%. A merely 0.001% rate of coverage rate is not enough compared to other nations, or the standardized rate of 0.1% set by the International Guide Dog Federation.

From the data observation, we could conclude that the supply of guide dogs in the market around the world is considerably lower than the quantity of visually impaired people and an enormous shortage is presented, given the assumption that every person counted in the data demands a guide dog. Such shortage in China is extremely severe compared to that in other

relatively developed economies such as the USA and Britain, with less than 200 guide dogs for 17,300,000 blind people.

Evaluating Demand and Supply

However, whether the data shown in the tables could precisely illustrate the relationship of the demand and supply in the guide dog market and whether the assumption is appropriate needs further evaluation to support the conclusion effectively.

The supply of guide dogs is estimated by the International Guide Dog Federation, where the use of estimated numbers rather than accurate quantities could be justified due to its extremely low quantity contrasted with that of blind or visually impaired people. The number of guide dogs, on average, only takes up less than one percent of the blind people, where accurate figures are not necessary for comparisons.

In terms of demand, only the quantity of blind or visually impaired people may be considered insufficient for analysis, because not every blind people may desire a companion dog. Some of them may be psychologically reluctant to keep a dog, or they may lack the information on guide dog's accessibility. In theory, the proportion of the population who desire a guide dog needs to be acquired with data support. However, due to technological limitations, the precise amount of applicants cannot be provided. Fortunately, the main guide dog supplier in China, Mini Pet Planet, states that just in Shanghai, a relatively developed city in China, over ten thousand qualified applicants are waiting for less than 60 guide dogs, and few of them cannot eventually receive one until 2024. Such information may support the shortage observed at least in China.

Moreover, it doesn't mean those data on the population of visually impaired cannot reflect the potential demand for the guide dog, where the potential demand refers to those consumers who could have bought a guide dog and enjoyed benefits derived from it, but eventually didn't. Several reasons could lead to this consequence.

The main reason for it is that the consumers are unable to know all the explicit and implicit benefits guide dogs may bring to them due to information failure. Most blind people are only

aware of the direct advantages of using guide dogs, including more convenience in daily lives and lower feeding fees compared to directly hiring a qualified nurse. But the actual utility of owning a guide dog is considerably higher, such as psychological benefits and improved social interactions as mentioned in the literature review. In terms of its implicit benefits, referring to those that cannot be directly observed by the guide dog owners, the prevalence of guide dogs may replace the use of barrier-free constructions, or increase the labor force by helping not only the blind but also individuals who used to spend loads of time looking after the blind to work. The situation could be improved if more education on the external benefits of a guide dog is provided.

Besides, it can also be true that people who wish to have a guide dog are not dared to raise one due to other misconceptions, especially in the case of China. According to the research done by Ma Jun and Yang Zhongqiang in 2009, the estimated purchasing power of blind assistance facilities, such as guide dogs and walking sticks, is approximately 24.4 million yuan after subtracting the consumption for daily necessities and adding the government's transfer payment. Therefore, it could be concluded that most blind people have quite high budgets for guide dogs. The low quantity traded may be caused by a lack of preferences which may result from a lack of proper advertising by the agencies in terms of free access to guide dogs. According to the responses to several guide dog-related questions in some Chinese online forums such as Weibo and Zhihu, loads of residents do not know that it is free to adopt a guide dog if their identity of being blind or visually impaired could be justified by the government or the organization. And it also shows that the majority of the population does not even know where and how to apply for one. Hence, even though the consumers have sufficient budgets for raising a guide dog for free adoption and have the willingness to enjoy the benefits they could have bought, they still fail to provide an active demanding signal for the suppliers due to such misconceptions.

As explained above, some potential consumers are not involved in the buying of guide dogs due to information failure of various kinds, and the solution to this can lead to a large increase in the

proportion of the blind who desire a guide dog. Moreover, the increase in demand may be seen as an incentive for the suppliers to breed and train more. Other than this, a reasonable deduction could also be made with the help of the analysis, which is that a percentage at least higher than 0.1% of the population may demand a guide dog, thus a market failure could be concluded.

Which Type of Goods Do Guide Dogs Belong to?

From the demand and supply analysis, it is demonstrated that there is a market failure in the guide dog market. And generally, there are four types of market failures, which are the provision of public goods, disequilibrium due to market control, provision of goods with externalities (either positive or negative), and market where imperfect information exists.

Before analyzing which type of goods, the guide dog belongs to, it needs to be assured first that the market failure is not caused by market control implemented by the government. Fortunately, the world's governments and committees mostly show morally and politically positive attitudes towards the use of guide dogs, and some national or local governments, especially those in developed economies, have released related documents concerning guide dogs' and their owners' legal rights, such as *Law of People's Republic of China on the Protection of Disabled Persons* (2008) in China and the *Guide Dog and Service Dog Act* (2017) in Canada. However, there are few policies related to financial support or restrictions on the production of guide dogs, instead, most suppliers are NGOs (Non-Governmental Organizations), who don't receive government funds but rely on public support and generosity. Therefore, currently, the guide dog market could be seen as a free market with little government intervention.

Then it comes to determining the economic nature of guide dogs to give appropriate policy suggestions. After subtracting the possibility of market control causing market failure, 3 more options remain—public goods, externalities, and imperfect information. It indicates that there are two possible types of goods that guide dogs may be classified into, which are club goods (quasi-public goods) and merit goods respectively.

Compared to pure public goods which usually possess two features—non-rivalry and non-excludability, club goods, by contrast, are rival but non-excludable. Its rivalry differentiates it from pure public goods. Yet a market failure still exists mainly due to its non-excludability causes loss in profits and thus a lack of production in the free market where production is largely driven by profit incentives. Merit goods, on the other hand, commonly classified as one special type of private goods, is both rival and excludable. It is believed to have a positive externality which leads to under-consumption and under-production instead of quantity traded at the socially optimal equilibrium.

As the two types of goods have one common feature, rivalry, it is appropriate to ascertain that the guidedog is a rival. Rivalry means that the consumption of a good by one person reduces the amount available for others, and guide dogs cannot be shared between a group of disabled people. Therefore, the problem lies in determining whether a guide dog is excludable or not.

Non-excludability means that the benefits derived from the goods and services cannot be confined solely to those who have paid for them. Indeed, the guide dog markets seem to exclude healthy individuals as their purchasing incentives can be hardly justified. However, it is, from the most fundamental level, not necessary at all for them to purchase one. In other words, no healthy individuals would ever have the willingness to purchase a guide dog and they are therefore willingly excluded from the market. It may be more appropriate to conclude that the healthy ones don't constitute demand in the guide dog market, rather than saying being excluded from the market. Due to the fact that visually impaired people, the real purchasers making up the demand, can adopt one guide dog for free, the non-excludability of guide dogs can be therefore justified.

Moreover, recently, some organizations have started running a program to make guide dogs even more non-excludable, such as *the Veterinary Financial Assistance Program of Guide Dogs for the Blind*²², aiming to provide financial assistance to the applicants with a low-income

level as well as veterinary attention for their guide dogs to ensure that finance is not a barrier to guide dog recipients.

In conclusion, guide dogs are non-excludable but a rival, and thus can be classified as a common good. It is also worth mentioning that, as discussed in the previous demand and supply analysis part, the positive externality of guide dogs also contributes to such a market failure, where the positive externality refers to benefits a third party can receive that are not involved in the transaction of guide dogs. Therefore, a more precise conclusion should be that a guide dog is a good with an inability to exclude, which may be considered as a quasi-public good, as well as a lack of information for market trades to permit.

How Can NGOs Improve Their Efficiency?

Current Situation?

Currently, there are five guide dog schools on the Chinese mainland whose duties go far beyond simply training dogs—those schools are also responsible for managing funds to purchase qualified puppies, paying for the trainers, etc. As discussed before, due to the fact that guide dogs are non-excludable, the agencies (guide dog schools) are unable to earn a profit from running the campaign. Therefore, to cover the costs spent on purchasing, training, and maintaining the school facilities, the most feasible way to finance the schools is to raise funds.

Since the Chinese government hasn't stepped in to improve the guide dog industry yet, the producers can only rely on their own ways of raising funds. Those private guide dog schools, which had faced severe financial problems due to the hit of Covid-19, have now found a new way of encouraging public donation, which could be seen as revolutionary progress inspired by the pandemic—an online guide dog adoption campaign.

The Online Adoption Campaign

The online users don't actually adopt a guide dog, instead, they pay a small amount of joining fees to an online foundation charity called Mini Pet Planet, a program aiming to help stray pets and guide dogs, so as to enter a guide dog "parenting" group where the advanced Internet technology has made trainers working in the guide dog

schools capable of updating the trainees' daily lives or testing scores as an award to the joining fees into the club. The official website claims that the online donation campaign has helped some near schools facing insolvency return to their normal operations thanks to the dramatic increase in donation revenue (quantity of donators could be counted up to over ten thousand). There may be two possible reasons leading to this favorable outcome.

The use of the Internet could be the first reason. A survey of 1090 randomly selected UK internet users established in 2006 found that 7 per cent of the sample had donated to a charity online over the past 12 months, reflecting the 1.8 million donations by internet users in the total population. It is also worth mentioning that research also demonstrated that on average, the value of online donations is consistently higher than that of offline ones (NFG, 2007). Moreover, a study completed by Donthu and Garcia in 1999 discovered a significant difference in the level of impulsiveness between the internet and non-internet shoppers, with the former exhibiting higher impulsiveness than the latter, indicating that impulsive purchases are more likely to occur on an online donation.

Secondly, incentives and convenience provided to the donators (joining a guide dog group simply with the help of a cell phone to view updates of puppies' lives) could be seen as a nudge—a term widely defined by behavioral economists as a small improvement that can make big differences (a dramatic increase donation in this case) while preserving people's freedom of choice (Richard Thaler and Cass Sunstein, 2008). In this case, due to the fact that the costs of sending pictures and videos on social media are little while the gain in donations is considerable, such an action could be seen as an effective nudge. Moreover, compared to the direct provision of public goods which is often considered a paternalistic action, nudging has gained popularity due to the preservation of consumers' freedom for moral evaluations.

Financial Constraint and Its Solutions as a Private Organization

Despite the enhanced fundraising technique, financial constraints, which are considered a major cause of inefficiency in production, are

still a severe problem. This is because, in the case of guide dogs, costs per unit are too high when small amounts of them are produced when taking the costs of land and crews needed for training into account. For this reason, if economies of scale are achieved by increased funds it can receive, marginal costs may decrease considerably for every extra unit guide dogs produced. Some may argue that decreasing costs per unit in such a way may lead to an increase in organization costs. However, as long as the net costs are reduced, reaching economies of scale by increasing total output, economies of scale can be considered an improvement, which is beneficial for production.

Then how can a privately owned organization produce quasi-public goods have enough assets to increase its output to improve efficiency?

One option could be attracting other corporations' investment. Under the situation where there is a severe shortage of public goods (or a quasi-public good), individuals tend to have especially positive social evaluation towards people who are struggling to provide it, which corresponds to certain corporations' publicity needs. Hence, some entrepreneurs will invest in the public goods production campaigns by making transfer payments to them or directly providing them with necessary equipment so as to improve their social image, which may help them attract more investment in the financial market where some people will invest in firms with social responsibility. Therefore, connecting with the firms with such intentions may be considered an appropriate way of fundraising. More specifically, firms producing pet necessities (e.g. Dog food) or veterinary corporations should be the optimal choice to consider cooperating with.

Another possible solution may be charging consumers fees for using it, yet this sounds fairly unreasonable as the provision of guide dogs, according to the *International Guide Dog Federation*, aims to offer more convenience to the disabled who are reckoned as disadvantaged groups in society, and thus, ethically, to show social justice and fairness, it should be provided freely. Having said that, it is not deniable that profit is one of the most effective incentives awarding the producer to produce more, as well

as the fundamental elements for them to continue production. Considering these factors, charging and making guide dogs slightly excludable is economically reasonable, and also vital. An appropriate policy could be charging the visually impaired with a relatively higher income level and higher consumer surplus while making guide dogs remain non-excludable for others. In the meantime, in order to avoid ethical problems such as claims concerning unfairness made by those charged by the fees, only small amounts of money should be charged, or focusing on the public reputation is essential.

But indeed, the second suggestion seems quite inappropriate and the first one seems infeasible if the NGOs lack authorities' qualified certification. Therefore, in order to maximize efficiency, the government should step in.

To What Extent Should the Government Step in?

Direct Provision

Sometimes the government may participate in the market to allocate resources together with private individuals and firms to address market failures, whose aim is also to achieve Pareto Optimality in terms of efficiency. And specifically, when it comes to the provision of goods and services concerning national sovereignty (e.g. National defense), societal fairness (e.g. Healthcare and education), allocative goals (e.g. Public housing), or long term development (e.g. Roads and environmental protection), the government usually directly provide those pure or quasi-public goods due to their enormous positive externalities. Guide dogs seem to possess some of these features—societal fairness and allocative goals, as guide dogs are directly distributed to the disabled group in the society and their non-excludability demonstrates fairness.

However, problems that direct provision may bring mean that those features don't necessarily, indicate that government should directly provide guide dogs.

One problem is paternalism. Paternalism is widely considered as the interference with another person against one's will, commonly justified or motivated by claims that the person being interfered with may be better off or

protected from harm, and it often applies to situations where a person is not fully rational or they lack perfect information (Dworkin and Gerald, 2020). In this case, the government seems rather paternalistic since such provision infringes the key principle of liberal society (J S Mill, 1859). Moreover, further elaboration demonstrates the fact that paternalistic policies released by the government tend to be less effective and may even deviate from its intrinsic goal of increasing welfare (B New, 1999), referring to deadweight loss. This may be because government agents are not usually involved in the market and thus lack the incentive to higher efficiency, or they just cannot get close enough to the subjects and understand their interests and preferences, thus being incapable of providing guide dogs at an appropriate level.

Another problem is fairness. Guide dogs are provided by some altruistic organizations for free because it is justified that the visually impaired should enjoy more social welfare due to their natural disability resulting in inconvenience and lower living standards, as well as the discrimination they have suffered. Therefore, on a moral level, more donations are made out of altruism. But the way public provision gets its fund is rather different. Such funds often come from the government budget and thus are financed out by the taxes paid by the general public, which makes it different from the previous one—the general public includes those who are altruistic as well as non-altruism. It seems unreasonable to force someone to lower his/her living standards (as more taxes are paid and opportunity costs such as lower unemployment benefits may occur) to support another. In this case, whether such direct provision should still be concerned as fair remains unknown.

As discussed above, due to paternalism and imperfect information leading to inefficiency, direct provision could be hardly justified, and its allocation of resources can barely achieve Pareto Optimality. Consequently, we may seek less intervention, making the production more effective and morally justifiable.

Indirect Provision

With the development of modern economies, the

phenomenon of public goods not directly provided by the government is more and more common mainly due to the higher efficiency indirect provision may possess. Several measures could be applied in the case of guide dog provision.

The most transparent and convenient one is financial support provided by the government to guide dog suppliers, including subsidies and lower taxes. In such a way, private organizations can have more assets to produce more and thus lower marginal costs and may achieve economies of scale. Subsidies implemented by the government could help them start their production with a larger number and thus achieve economies of scale. Some may argue that such policy also involves problems concerning higher government spending and higher burdens on other citizens, yet compared to direct provision this is not a severe issue—higher efficiency that markets may bring indicate less deadweight loss and less money needed, and subsidies can be reduced by a large amount or even ceased as long as economies of scale are achieved.

Another prevalent measure in the modern economy in terms of the provision of public goods is called contracting out. In such a way, although the government is still the owner, the production is intrinsically carried out and managed by private corporations. Its main benefits are that the government and the market could complement each other's advantages through contracting out, as it can introduce competition throughout the production, helping it to control production costs, improve efficiency and possibly meet the socially optimal equilibrium quantity.

However, despite the predicted benefits indirect provision may bring, further evaluation of its effectiveness is still required. First of all, the goal of provision should be achieved—the quality and quantity of guide dogs produced should be enhanced and the visually impaired should enjoy more welfare. Secondly, less financial support should be spent by the government when the production has reached a relatively efficient level (economies of scale), helping it thrive in the long term.

Government Regulation and Other Complementary Acts
Other than intending to provide guide dogs either directly or indirectly, the government could also intervene in the market through regulation, or enhancing education on basic knowledge of the visually impaired and guide dogs as a lesser degree of intervention. Regulation is essential especially when private organizations step into the production of public goods. This is because the nature of a rational individual, as generally assumed in the study of economics, makes them only willing to provide public goods to those who may be willing to pay more rather than those with a lower income level. Therefore, they may deviate from the primary goal of achieving societal fairness to profit maximization. Although this theory is inappropriate for the guide dog production where the provision of the quasi-public goods is currently non-excludable, discrimination still exists—the NGO says that they could only provide guide dogs in developed regions in China such as Shanghai and Beijing where they have confidence in local people for their living standards and taking care of the dogs, but in the poor or rural areas where the disabled needs support the most and where few non-barrier facilities exist, guide dogs are not formally provided even by those altruism organizations. Such discriminations are to be blamed and should be regulated. Moreover, regulation is especially critical when a market failure exists, such as such failure involving shortages and unequal distribution in this case. Regulations are of various kinds, and corresponding regulations in this scenario could be providing incentives to those who provide guide dogs to the relatively impoverished. The Chinese government should also set up laws protecting guide dog owners' legal human rights such as making more public places accessible to guide dogs and making the laws into the act. Another issue that the government should be dealing with is imperfect information. Chinese people often hold strong prejudice and stereotypes against dogs due to sociological and cultural backgrounds. Such stereotypes are highly likely to block them from having the willingness to acquire and understand the benefits guide dogs may bring to the disabled and the society they live in. Therefore, appropriate educational measures should be taking place to eliminate stereotypes, such as

providing authorized platforms to showcase the knowledge or sponsoring public speech about guide dogs in schools.

Conclusion

After thoroughly examining the market of guide dogs with the help of the demand and supply model and relative evaluation, a market failure of underproduction is deduced. It leads to further elaboration on its goods classification so as to give appropriate policy suggestions. Eventually, guidedogs are classified as a quasi-public goods with positive externalities due to their rivalry and non-excludability as well as the potential benefits they may exert on other members of society. Such identification is extremely beneficial when analyzing possible improvements that could enhance its production.

When it comes to determining policy suggestions, the discussion is split into two major parts — improvements that could be made within private ownership and the extent to which government should intervene. In the first part, the current situation and the effectiveness of the recently released online adoption campaign are examined, which turns out that the situation is getting better over the last several years. Then the main problems of financial constraints and lack of technological support are identified. Two possible policies are suggested, which are attracting investment and imposing charges on guide dogs respectively. But due to their limitations including instability, unjustified incentives, and infeasibility, maximized efficiency in guide dog production can hardly be achieved if privatization remains. Therefore, the government should step in, and the degree to which the intervention is appropriate is the subject of the second section. Initially, direct provision is considered, but due to its low efficiency and problems concerning paternalism and fairness, such suggestion is abandoned. Eventually, the discussion reaches the result that indirect provision of guide dogs by the government should exist in the ways of contracting out or giving financial support. It is also suggested that relevant regulations and other complementary acts such as providing educational public speeches and advertising to eliminate stereotypes are also essential.

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