

THE ECONOMICS OF FIRE PROTECTION: FROM THE GREAT FIRE OF LONDON TO RURAL/METRO

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Introduction

At 1am on Sunday 2 September 1666 fire was discovered at a baker's on Pudding Lane in the heart of the City¹ of London. The baker, Mr Farynor, had forgotten to douse his embers the previous evening and sparks had ignited his nearby woodpile. For four days the Great Fire of London raged consuming 436 acres, including 80 per cent of the City and some 50 Livery Halls, 87 churches and 13,200 homes. Out of the ashes of this disaster arose a new type of business, namely competing for-profit fire insurance companies each one of which also owned a fire brigade. For the next two centuries London enjoyed this unique form of protection.

This paper begins by examining how this historical episode is represented today and how in general fire suppression is represented in the public goods sections of some economics text books. Next it examines the history of fire fighting in London from Roman times to today with particular emphasis on the era of private insurance and provision. We will show that fire protection was developed in the private market by the fire insurance companies themselves. It will become clear that the services provided by the insurance companies were sufficient for their objective of protecting insured property and more. But fire protection did not remain in the private sector because the business model employed by the insurance companies did not provide appropriate incentives. Finally, the paper examines modern day models of privatised fire suppression that show how such a service can be sustained successfully by private enterprise.

Fire Suppression: Modern Perception

Modern day accounts of the history of the fire service suggest that, when private independent insurance brigades supplied fire suppression buildings would be left to burn. In the earliest days of insurance, companies issued plaques, or fire marks, to policy holders to affix to their homes rendering them covered. Popular perception suggests that the insurance brigades would refuse to provide assistance to those homes that, without a plaque, were deemed uninsured. Further, it is suggested that an insurance company would

¹ In London, "City" is used to denote the financial district, an area of approximately one square mile.

extinguish a fire only if it was in a home insured by that particular company; thus a house bearing the plaque of a different insurance company would receive no assistance. Finally, it is said that competing insurance brigades would often spend time fighting each other instead of the fire.

These popular perceptions are found in a number of sources, including the London Fire Brigade Museum. On a recent tour, the guide informed visitors that private insurance brigades would not provide protection to the uninsured, or to those insured by a competing company. The guide also said that, even if a neighbouring property was insured by an attending fire brigade, efforts to extinguish the fire would not commence until the fire actually reached the insured property (London Fire Brigade Museum, 2004).

The Chief and Assistant Chief Fire Officers Association (CACFOA), the professional voice of the UK fire service, describes the early use of fire marks on its website: ‘...if the house [on fire] bore the insignia of one of the brigades’ employers then that brigade would fight the fire. If it did not, then it was time for the occupier to visit the nearest estate agent!’ (CACFOA, http://www.fire-uk.org/fire_service_structure.htm, 2003)

The London Fire and Civil Defence Authority, in association with AngliaCampus, an online education service, has posted information regarding the history of the London fire service on the AngliaCampus website. The use of fire marks by insurance companies to designate a property insured is described. The website further indicates that: ‘Each policy holder was issued with a metal badge or mark which was fixed to the outside of a building. When a fire broke out, it was not unusual for several companies’ firemen to arrive at the scene. If the building did not carry their mark, they would leave, often leaving the building to burn down’ (<http://www.angliacampus.com/education/fire/london/history/begin.htm>, n.d.).

Derek Wright, a former officer, recently explored the history of fire fighting in an article which is posted on the Channel 4 website. He describes the use of fire marks by insurance companies to designate a property as protected. According to Wright, ‘When fire was

reported, insurance fire-fighters raced to the scene, but only those whose mark was on the building actually fought the fire. It's believed that on occasions rival crews actually interfered with each others' fire-fighting efforts'. Wright goes on to acknowledge that rival brigades eventually saw benefits associated with 'pooling their fire fighting resources' and formed the London Fire Engine Establishment, later to become the London Fire Brigade (Wright, 2003).

The perception that buildings would be left to burn in the early days of private fire suppression can also be found in sources not directly affiliated with the fire service. Take a walking tour through Old Westminster and you will both see a fire mark and hear about its use. Pointing out one of the last remaining fire plaques in Westminster, the highly qualified Blue Badge tour guide told of how private fire brigades would fight fires only on property insured by their company. If owners of the property had not paid the insurance premiums, or if the property was insured by another company, the building was to left burn (The Original London Walks, 2004).

Robert M. Shea, CPCU, in his paper *American Fire Marks – A good story* notes the difference between the American and English use of fire marks. He writes:

The misconception that volunteer fire companies put out fires only on buildings that displayed a fire mark arises from the fact that some articles on fire marks do not make a distinction between the English and American relationship to fire marks. The early English fire insurance companies originally used fire marks to identify properties they insured because each insurance company had its own fire brigade. These private insurance brigades only fought fires on properties identified by their employers' mark or badge. In England, the insurance companies originated before the firefighting companies. In America, it was the reverse – the volunteer fire companies were in existence before the first fire insurance company was organized. They fought fires whether or not a building displayed a fire mark. Even the literature that recognizes this distinction does not always follow through. It tends to generalize and equate the American experience with the English for the sake of the story.

Connelly Campion Wright, an insurance company providing insurance since 1926, includes a brief history of fire marks on its website. Describing the origin and use of fire marks, Connelly Campion Wright (2004) claims 'marks, or plaques, which clearly named the insurance company, were conspicuously placed on buildings in order to identify which businesses and residences were insured. A competing fire brigade working for a competing insurance company would often pass a burning building and stay on the scene to cheer or jeer the particular brigade attempting to extinguish the blaze!'

From these various sources it is clear that the popular perception is that, at best, insurance brigades would allow buildings to burn if uninsured or insured by a competing company; at worst they would actually impede a brigade wanting to attend the fire.

The Economics of Fire Protection

Fire protection is comprised of two components: fire prevention and fire suppression. Fire prevention is the employment of initiatives such as flame retarding materials to limit the likelihood of fire. Fire suppression refers to the act of extinguishing a fire. Frequently, no distinction is made between these two elements and fire protection is used interchangeably with fire suppression. This is often the case when fire protection is discussed in economic texts. However, it is clear from the context that it is the act of putting out fires that is meant by fire protection.

Reference to fire protection (as in fire suppression) can be found in economics text books in the discussions of public goods. Economists define public goods in terms of two key attributes: non-rivalry and non-excludability. Non-rivalry occurs when a good can be used by one individual without inhibiting the use of the good for another individual. In other words, the marginal cost of an additional individual enjoying the good is zero. Non-excludability occurs when it is impossible to exclude any individual from the benefits of a particular good; or, the cost of exclusion is too high for it to be a consideration. A pure public good is one that has both absolute non-rivalry and absolute non-excludability. National defence is often used as an example of a pure public good (Stiglitz, 2000).

The supply of pure public goods is considered to need some type of government involvement if it is to be efficient. A free-rider problem often arises as it is impossible to exclude any individual from the benefit of the good or service; therefore, no one individual has any incentive to provide it. Thus private provision of these goods or services is thought to produce an inadequate level of consumption or supply (Begg, 2003; Stiglitz, 2000).

Many goods may have only a degree of non-rivalry and/or non-excludability. These goods are often referred to as 'impure' public goods. Fire protection falls in this category. Joseph Stiglitz, in his *Economics of the Public Sector*, maps various goods according to the degree to which they possess the properties of a pure public good. According to Stiglitz, fire protection is similar to a pure public good in that the marginal cost of use is very low. However, the ease of exclusion for fire protection is similar to that of the pure private good. That is, fire protection possesses attributes of both a public and a private good which Stiglitz goes on to describe:

Many goods are not pure public goods but have one or the other property (non-rivalrousness or non-excludability) to some degree. Fire protection is like a private good in that exclusion is relatively easy – individuals who refuse to contribute to the fire department could simply not be helped in the event of a fire. But fire protection is like a public good in that the marginal cost of covering an additional person is low. Most of the time, fire fighters are not engaged in fighting fires but are waiting for calls. Protecting an additional individual has little extra cost. Only in that rare event when two fires break out simultaneously will there be a significant cost to extending fire protection to an additional person. But even here, matters are more complicated: if we want to protect the building next door which has paid for fire protection, it may be necessary to put out the fire in the building which has not paid for protection – exclusion may not really be feasible (Stiglitz, 2000, p. 134).

The 'impure' nature of fire protection is further described by Edmund S. Phelps in his *Political Economy*. Phelps considers the collective good of extinguishing a fire that arises in an individual's kitchen. He says that '...It is the presence of the fire department that is the

collective good, not extinguishing someone's flaming steak (even if there is some risk of the flame spreading)...’ (Phelps, pp. 334-335) Phelps clearly identifies fire protection as containing attributes of both a public and private good.

However, it is the ‘impure’ nature of fire protection that makes the supply of the good so interesting. Unlike pure public goods, the necessity of government involvement is not as obvious. Several more economics texts do touch upon on the supply of fire protection briefly, noting that it is a service most often provided by government. Baumol and Blinder in *Economics: Principles and Policy* indicate that: ‘national defense, public health, police and fire protection, and research are among services governments provide because they offer beneficial externalities or are public goods’ (p. 277). Alchian and Allen in *Exchange and Production: Competition, Coordination, and Control* state that ‘Some governmental actions are designed to enable some people to pay for services they could not otherwise obtained so cheaply through private contractual arrangements – for example, nearby public parks, better roads, sewers, police protection, sanitation, and protection from disease, insect pests and fire’ (p.397).

Ekelund, Hebert and Ekelund, in *Secret Origins of Modern Microeconomics: Dupuit and the Engineers*, state that ‘Dupuit found a rationale for some government activities in, for example, the case of local police and fire protection’ (p. 183). Ekelund, Hebert and Ekelund also address briefly the possible benefits of privatisation, yet with some reservation: ‘Dupuit mentioned fire and police protections as examples of public goods that could be provided less expensively by consolidation, but ultimately he maintained that the issue of private versus communal provision always needed to be settled empirically’ (p. 330).

Levy, in his *Essential Microeconomics for Public Policy Analysis*, addresses both the elements of a pure public good found in fire protection and the beginnings of fire service. In respect to the economic nature of fire protection, Levy indicates ‘there is an element of exclusion in that it is possible to charge for it in some circumstances. There may also be an element of rivalry in that the same fire company cannot be at two fires at the same time’ (p. 85). He goes on to discuss the start of fire protection saying: ‘Originally,

fire protection in cities was provided on a paid basis. Today, in some exurban and rural areas, fire companies do provide protection on a fee basis. The subscriber to the service gets a plaque that is attached to the house. If the house without a plaque burns, the fire company will do what it can to prevent loss of life but it will not put out the fire. A system like this, however, cannot be used in a densely built up area in which fire can spread from one building to another' (p. 91).

Economics text books define fire protection as a good that possesses both public and private attributes. However, the supply of fire protection is more often assumed to require government involvement. Privatisation proposals do exist, but tend to be limited and cautious. Levy perpetuates the idea that fee-based privatisation does not work.

The History of the London Fire Service

Fire protection in London is today publicly provided and is funded by the Greater London Authority using money raised from council tax, Revenue Support Grant from central government and income from business and commercial ratepayers (London Fire Brigade website, 2004). However, for a significant period private enterprise protected the area. London's fire service evolved over several centuries during which there are five distinct periods of provision: Mixed Voluntary Provision (pre 1666), The Heyday of Competing Private Providers (1666 – 1832), Private Collaboration (1832 – 1866), Partial Municipal Provision (1866 – 1938), and Full Municipal Provision (post 1938).

Mixed Voluntary Provision (Pre 1666)

Fire fighting in London probably developed under the Roman Empire. Corps of Vigiles², or firemen, were employed to protect the city of Rome beginning in AD6 under the Emperor Augustus. According to Blackstone (1957), the equipment used by the Vigiles to put out fires was 'as varied and as extensive as that of any of the early nineteenth-century fire brigade in Britain' (p. 3). Not only did the Vigiles extinguish fires, they also performed other duties such as policing the city at night and capturing runaway slaves. Vigiles may have existed in London as the city's first form of fire protection (Blackstone, 1957).

² 'Vigiles' is from the Latin vigilance hence vigilant as in to keep watch and stay alert.

After the fall of the Roman Empire, organised fire fighting in London, if it did exist, was lost. However, laws to prevent fires were instituted by later rulers. Among them was a law implemented by the Normans after 1066 requiring all house fires to be extinguished by nightfall. To quench the fires easily, a metal cover was put over the flame suffocating it by depriving it of air. The French speaking Normans called the metal cover a 'Couvre Feu',³ as in to cover the fire and their law took this name (Blackstone, 1957).

Despite such laws, London was almost lost to fire in 1212. This disaster was to be known as the 'Great Fire of London' until 1666. No brigade was formed in the aftermath of 1212 and fires continued to be fought by volunteers in the community. Over the next several hundred years more laws were enacted, equipment was improved, and records of the various fires became more detailed. During the 16th Century, the Lord Mayor of London had a pamphlet originally prepared by an engineer, including details on how to fight fires, printed and distributed to houses in London. King Briefs, or Fire Briefs, were introduced. These briefs, issued by the King, contained information on recent fires and the amount of loss each incurred. They were read aloud in churches, and collections were made for those who had suffered (Blackstone, 1957). Frequently the collections did not provide 'adequate compensation for those whose properties had burned' (Davies, 1952, p. 13).

During this time fire was regarded as 'a natural evil, like disease, against which only rudimentary provision could be made' (Dickson, 1960, p. 2). As London's prosperity grew, the market for fire insurance opened (Trebilcock, 1985). Records dating back to the early 1630s show plans for insurance submitted to the Privy Council. According to Dickson (1960) in 1635 a 'plan for fire insurance in London at 1s. per cent. per annum was laid before the Privy Council in 1635, and it was followed three years later by a more elaborate scheme including provision for fire-engines in each Ward of the City, a nightly watch for fires, and the deposit of £5,000 in the Chamber of London as a security for those insured' (Dickson, 1960, p. 3). This plan was approved, but the start of the Civil War (1642-1646) turned attention elsewhere and the plan was abandoned. After the war,

³ The word 'curfew' is derived from couvre feu.

other attempts were made to develop insurance, but its necessity was not considered paramount and nothing came to fruition until after the Great Fire in 1666 (Dickson, 1960).

Given that the occurrence of fire was attributed to the 'hands of God' it is not surprising that no formal brigade was organised, or that fire insurance preceded fire-fighting (Blackstone, 1957). Because it was believed that little could be done against fire, individuals looked first for mechanisms to deal with the consequent loss. King briefs were an early form of relief from the devastation of fire: however, they often proved insufficient for the level of loss. We see early plans for insurance laid down but in spite of the Great Fire in 1666, need for this form of protection was seen as a luxury, not a necessity. The prevalent belief that fire was an act of God against which only 'rudimentary provision could be made' strongly influenced the mindsets of those at the time and delayed the formation of any organised brigade.

The Heyday of Competing Private Providers (1666 – 1832)

As described above, the Great Fire of London erupted on 2 September 1666 in a baker's premises near London Bridge. This fire, which burned for four days, provided the impetus for the development of fire insurance in London. It is through the development of fire insurance companies that organised fire fighting appeared (or reappeared) in London.

Not surprisingly, the City attributed the great fire to the 'hands of God', as it had before, and made no immediate effort to establish any form of public fire fighting. Much energy was, however, put into the rebuilding of the city. The government immediately passed the Rebuilding Act of 1667 requiring that only certain types of houses were rebuilt. The provisions were designed to lessen the likelihood of fire (Blackstone, 1957).

Concern must have existed over the lack of formal fire brigades as many suggestions to employ firemen were laid before the City. Andrew Yarranton, in his pamphlet *England's Improvement by Sea & Land*, proposed that sentinels, or special fire commissioners, be assigned for protection. The sentinel, it was suggested, be placed on

the 'top of the highest steeple whereby he may look all over the Town... if he observes any Smoak or Fire he presently sounds a Trumpet and hangs out a bloody Flag towards that quarter of the City where the fire is'. Yarranton further proposed that upon hearing the sounding trumpet: 'Immediately all the people which are for the quenching of Fires with the Commissioners and engineers, or as many as there are in the Town run to the place' (as cited by Blackstone, 1957). Yarranton's plan was never implemented. Instead, the government passed another Act, this time requiring that fire-fighting equipment be kept in each district of the city, parishes were given equipment, and water supply was improved (Blackstone, 1957). The government's limited response to the Great Fire focused mostly on fire prevention and so left the door open for the private market to develop a more adequate solution to the issue of fire suppression.

The private sector recognised the need for a mechanism to protect individuals against the loss from fire. Insurance companies emerged to answer this call. Dr. Nicholas Barbon is generally credited with creating the first insurance company, although plans had appeared earlier. Barbon's company was entitled the Insurance Office for houses on the Backside of the Royal Exchange, or the Fire Office. It opened around 1681, limited those insured to 5,000, and set up terms of insurance for 31 years. The company, which insured homes, charged property owners a premium and in return agreed to rebuild property lost in the event of a fire. It also employed 'watermen and other lusty Persons... in liveries with Badges' to serve as a fire-brigade (Dickson, 1960, p. 11). This, it would seem, was the beginning (or return) of organised fire fighting in London.

In the same year that the Fire Office opened, the government laid down its own plan for insurance. It entered the market with a similar scheme to Barbon (most likely because they were both designed after earlier plans for insurance), yet offered notably lower premiums. In protest, Barbon engaged the government in a price war, recognising profits would likely disappear. He further claimed the government had stolen his idea and he noted that it would be unable to do as an effective job as he. According to Barbon, 'it may Appear, That the Gentlemen of the [City] Committee did not well understand the Design they were about; for which they are not to be Blaimed; for

it is not Reasonable to expect that they should so well (on a suddain) understand a Design, as the Inventor of it, who had spent much Time and Study in the Contrivance' (as cited from Dickson, 1960, p. 8-9). The government, unable to 'concentrate' on insurance with the 'same attention as private individuals', closed its door to the business in 1683⁴ (Dickson, 1960, p. 9). The government could not compete against private enterprise even in the 1600s.

Barbon's private monopoly in the fire insurance market did not last. Many insurance companies developed, each with the purpose of providing their clientele with protection in the event of loss from fire. Insurance companies charged premiums to customers to insure the agreed-upon property at an agreed upon value. Lack of any organised fire fighting created a necessity for the insurance companies to employ a brigade. According to Davies (1952), brigades provided policy holders with an added feeling of security. Perhaps most importantly the employment of firemen was a crucial element to the success of the insurance industry (Blackstone, 1957). Insurance companies were in the business of providing for loss against fire and the brigades were there presumably to minimise such losses. Thus organised fire-fighting emerged in the private sector because it was a necessary element to the insurance companies' success.

The insurance companies generally hired watermen already working on the River Thames as their firemen. Watermen were thought to be fearless, and they were easy to recruit. They were not required to work as firemen full-time; rather they were paid by the insurance companies per fire attended. Insurance companies had recognised the cost saving mechanism of flexible-employment. Some reports suggest these men were rowdy and could be disruptive, but generally it is thought that they behaved with consideration.⁵ The importance of these watermen to the safety of the City is made clear with the passing of the 1707 Act (6 Anne, c. 58) which excluded the men from impressment (Henham, 1996). Protection from the press gangs was

⁴ In addition, the Government was involved in some type of 'serious quarrel with the Crown' which contributed to it closing its door to the insurance business (Dickson, 1960, p. 9).

⁵ The Hand in Hand insurance company had recorded irresponsible behaviour as early as 1702. Henham notes that an enquiry was conducted into the 'ill language and disrespectful expressions they made' to Directors. But Henham indicates the documentation showing cooperation of firemen at fires demonstrated brigades were 'behaving responsibly' (Henham, 1996, p. 35-36).

particularly important as the gangs were notorious for picking up watermen.

Insurance companies charged different premiums according to the level of risk associated with each property. For example, the early rate of insurance was 2 per cent of the rental value for brick and 5 per cent of the rental value for wood. The market was rewarding the use of safer building materials – and with a very significant margin of 2:5. In other words, from day one insurance companies offered incentives for the practice of fire prevention.

The practice of providing a plaque, or fire mark, to affix to each building insured by a particular company was common. The original purpose of the fire mark, as introduced by the Friendly Society, was to denote a house 'secure' (Dickson, 1960, p. 10). The fire marks or plaques were designed to show which houses were insured, and to indicate by which company. Further, fire marks were to be used as a directive to brigades; if the fire mark was from their company, services were to be provided (Blackstone, 1957). However, ample evidence suggests this usage was never sustained, if it was even used at all.

The entire system of using fire marks broke down. First, the practice of insurance companies removing the plaques after a policy had expired eventually stopped (Blackstone, p. 68). Insurance companies often let the plaques remain on buildings as a form of advertisement. Second, many individuals were in the practice of insuring their property and valuables with different insurance companies. This would mean two plaques, or possibly more, would be affixed to one building (Blackstone, 1957). Therefore, it would have been impossible, certainly in the long-term, for insurance brigades to use fire marks as reliable directives.

Various records on the use of fire marks suggest that plaques were never used in the fashion for which they were developed. Albion, an insurance company, made the following statement about firemarks publicly in 1809:

It is not the practice of this office to affix any marks on buildings. It is known that such marks are used only as a mode

of advertisement. They continue on buildings many years after policies have ceased, and afford no guide whatever to the firemen of any company to regulate the attention they might show to persons really insured. The Company trusts that its conduct and character are sufficiently popular to remove the necessity of any such species of advertisement; and as the firemen of the Company are enjoined to render the utmost assistance to all who need it, the security of persons injured will in no respect be diminished by the disuse of this superfluous appendage (cited by Blackstone, 1957, p. 69).

The following excerpt from Hodges' pamphlet on private fire brigades notes the proclamation by Albion and asserts that firemen from different brigades worked in tandem:

Through keen competition the insurance companies had voluntarily shouldered the public duty of fire extinction. One company (ALBION) publicly stated in the early 19th century (1809) that as well as no longer putting up firemarks – its firemen were enjoined to render the utmost assistance to all who needed it. Undoubtedly this had in fact been going on for a long time in the 1700s on both politic and humanitarian grounds. To allow a fire to spread from an 'un-marked' property to one which had their own or any firemark would of course be imprudent. The houses of the poor – who could not afford insurance anyway – were dealt with out of charity and for the good name it brought to the Company.

Davies in *An Account of the Formation and early years of the Westminster fire office* writes in his chapter on The Westminster Fire Brigade:

...Brigades were usually expected to assist in extinguishing all fires in their district whether the buildings affected were insured in a particular Office or were not insured at all, and in this way they performed a notable service to the community when there were no organised public fire brigades (p. 47).

These accounts provide evidence that insurance brigades did not intentionally allow buildings to burn. Neither did fire marks influence those who gave protection. Insurance brigades were in the practice of

providing services to all who were in need, irrespective of insurance. Services to the uninsured were provided out of goodwill and the positive effect it had on a company's image.

Cooperation amongst the different, supposedly competing fire brigades can be observed in various other forms. Records of payments show one insurance company clerk making payment to firemen from different brigades (Henham, 1996). In 1791 three insurance companies joined forces and formed a night watch. The night watch stayed in effect until about 1805 when the companies involved became frustrated at shouldering this expense for the rest of the industry. In 1808 suggestions were made by the newly formed Globe Insurance Company to form an 'associated Engine Establishment' but this did not take off until over 20 years later (Dickson, 1960, p. 65). Much of this collaboration was driven by the desire of insurance companies to find cost-saving measures. Such demonstrations of ongoing managerial cooperation further suggest that brigades did not work against each other at fires.

We also must not forget that it was the insurance companies which developed fire brigades in the first place. They did so as a mechanism to reduce the loss from fire and their subsequent payouts. Fire spreads so, to allow a building to burn simply because it did not display the appropriate mark, could result in that very same fire reaching another house that was so insured. It is counter-intuitive to suggest that the same individuals who created fire protection would have allowed buildings to burn.

During the mid-1700s the government imposed a tax on the insurance companies because it was in need of money for the American War of Independence (Dickson, 1960). The insurance companies passed the tax onto the policy holders by raising the insurance premium. This increase in cost to policy holders is thought to have discouraged some potential clients from taking out protection. Though the tax was not all bad for insurance companies, it was generally disliked and it was repealed in 1869 (Dickson, 1960).

The majority of fire fighting in this era was supplied by private fire insurance companies. However, parishes, volunteers and individuals who owned private equipment also contributed to the protection of

London. The government required parishes to maintain certain fire-fighting equipment, including one small and one large engine. Various records suggest that parishes did not keep their equipment in good working condition. Church wardens were placed in charge of fire plugs, an early fire hydrant. According to Brian Henham in *Hand in Hand*, the Hand in Hand insurance company ran an advertisement 'prosecuting' the churchwardens for 'failing in their duty' (Henham, 1996, p. 39). The government clearly did not enforce the guidelines it had laid down. If these mandates did anything, they contributed to confusion at fires as parishes were often unable to operate their engines and water was sometimes unavailable at fires because the church wardens had been remiss in their duty to supply fire plugs.

Volunteers provided additional assistance during this period, particularly in areas not covered sufficiently by the private insurance brigades. Individuals owned and operated their own fire-fighting equipment as well. This practice was in part due to early insurance policies written to protect only houses, and in part due to the length of time it took to call the insurance brigades. Often it was the manufacturers and high-risk companies who pursued this form of self-protection.

Fires at this time were often scenes of chaos and disorganisation. Contributing to the confusion were rewards laid down by Parliament, among them varying payments for the first three engines to arrive complete with necessary equipment. Further, watermen could not always recognise their office directors. And, there was no unified control system. The chaos that ensued at fires is described in *A Record of the Guardian Assurance Company Limited*:

Great rivalry existed among Fire Insurance Companies in their attendance at fires. Their firemen were not exclusively employed for this service, being, as a rule, drawn from the ranks of the Thames watermen, and to get them together when a fire broke out was often a slow process. As these men wore the livery of whatever Fire Office they were attached to, their presence was a constant means of advertisement for their particular offices. Often the brigades quarrelled among themselves about the rewards earned for prompt attendance at fires, and the absence of any central control on such occasions

frequently resulted in their duties being performed in a confused and inefficient manner. At the best their exertions were largely confined to saving the property which happened to be insured in their own offices (p. 34 and p. 35).

This excerpt depicts the disarray that occurred at fires. It also makes clear that the chaos may not be attributed solely to the private insurance companies. The government's rewards for prompt arrival contributed. So did lack of any central control. This would have been a function of not only the private brigades operating independently, but also the presence of parishes and whoever else may have rushed to the scene. As explained below, the insurance companies developed a partial solution to this problem. Finally, it is not surprising that some confusion existed at fires; fire fighting was, after all, a new trade.

This time period is characterised by the formation of the first organised brigades. Private insurance companies which emerged post 1666 to protect individuals from the loss of fire introduced the first such brigades. Fire protection was a business necessity for the insurance companies but it was not their primary business. Insurance companies introduced fire marks as a means to distinguish properties. However, it is improbable that a fire mark ever served as a directive to a brigade. More evidence suggests the brigades provided assistance to all in need. Finally, fire scenes were chaotic. This confusion was the result of a combination of factors; it was not because fire protection was privately provided.

Private Collaboration (1832 -1866)

Brigades provided by private independent insurance companies were the main source of fire suppression until 1832. In that year the majority of insurance companies combined their forces, forming the London Fire Engine Establishment (LFEE), a single fire brigade made up of those previously independent. This amalgamation of brigades surely helped to remove some of the chaos reportedly occurring at fires.

The LFEE remained a private body, although it was recognised as the public fire service for the whole Greater London area. An advert running on 1 January 1833 announced its goal was to provide better

protection to the inhabitants of the Metropolis (London Fire Engine Establishment, 1832-1866). But in 1862 when John Drummond, Esq., Managing Director of the Sun, and Chairman of the Committee for Managing Fire Extinguishing, was questioned on the 'principles on which the London Fire Brigade has been formed' he replied 'solely for the protection of the offices; it is an association of nearly all the offices in London' (House of Commons, 1862).

James Braidwood led a force that consisted of 80 watermen, and 19 stations. Braidwood instituted formal training programs for the firemen, and required that they have working knowledge of the district to which they were appointed. The LFEE was considered to be a very efficient organisation. However, according to Trebilcock in *Phoenix Assurance and the Development of British Insurance*, the large insurance offices did not consider the protection the Brigade provided adequate for the City of London, and preferred fire protection to be publicly provided (Blackstone, 1957). London was expanding rapidly and so was the cost of protecting the metropolis from fire. In 1833, the cost of fire fighting was £7,988, and by 1865 the cost had risen to £26,005 (Trebilcock, 1985, p. 133). Insurance companies were becoming acutely aware of the financial strain of fire protection, and sought opportunities to rid themselves of the burden.

The insurance companies involved in the LFEE expressed their concerns over shouldering the duty of fire protection, therefore relieving the government of the duty, in a letter to the acting Prime Minister following the Westminster fire in which the Houses of Parliament were lost. Among the concerns were the failing conditions of the parochial engines and possibility of an insured property and an uninsured property catching fire at the same time. Although insurance brigades were willing to provide services to all in need, they were responsible only to their employers and through them to those purchasing insurance. Therefore, insurance brigades were not required to provide assistance to uninsured property, including public buildings. The insurance companies explained '....if during the late conflagration at Westminster, any insured property in danger, or any simultaneous fire or fires in other parts of the town, had imperatively called upon the Superintendent to devote the service of the engines elsewhere, Westminster Hall and the public property adjoining must have shared the fate of the two Houses of Parliament'. The acting

Prime Minister replied indicating '...the interference of Government would be productive of little benefit, while it might and probably would relax those private and parochial exertions which have hitherto been made with so much effect and so much satisfaction to the public' (cited by Blackstone, 1957, p. 121). The private brigades continued to supply fire protection to London for the next 30 years (Blackstone, 1957).

With London expanding and the cost of fire-fighting growing, insurance companies struggled to continue to provide the service. It was clearly not a profitable endeavour. They were paid to provide insurance, not to fight fires, and the cost of offering fire protection must have now outweighed the benefit. Furthermore, because insurance companies were paid to provide insurance, an incentive existed for the offices to protect insured homes. A problem could certainly arise if both an uninsured property and insured property caught fire at the same time – the insurance companies would focus first on the insured property and the uninsured would follow. No incentive existed for insurance companies to correct this problem because they were not paid to fight fires. The government however felt the services provided were adequate and turned its attention otherwise.

In 1836 The Royal Society for the Protection of Life from Fire was formed. It followed in the footsteps of the Fire Escape Society (1828), an organisation set up by philanthropists in reaction to the high death rate in domestic properties. The Royal Society for the Protection of Life from Fire provided escapes at fires working alongside the private insurance brigade to protect the citizens of London from fire (Blackstone, 1957).

As before, parishes, volunteers and individuals owning and operating equipment continued to exist. Parishes, while perhaps providing some assistance at fires, generally had not improved the condition of their equipment. Volunteers continued to supplement the private brigades' coverage, providing a great assistance to Braidwood and his force that were responsible only for the insured property located primarily in the centre of London (Blackstone, 1957, p. 178). Individuals owning their own fire equipment continued to provide additional protection.

This period is characterised by the unification of the previously independent fire brigades. Although the formation of a single brigade did improve fire service in London, and reduce the costs experienced by the brigade, there were problems with the business model employed. Insurance companies were responsible only for insured property. Uninsured property would suffer if ever it should catch fire at the same time as an insured property. Despite having concerns about the fire service brought to its attention, the government declined to become involved.

Partial Municipalisation (1866 – 1938)

In 1861 a fire started on Tooley Street, which lies south of the River Thames opposite the City, that would change the face of fire-fighting in London. First, Captain Braidwood was lost in the fire. His death was said to have created confusion and disorganisation at the fire since there was no one appointed to lead in his absence. Further, the economic implications of the fire were profound as it cost the insurance companies over £2,000,000 (Blackstone, 1957).

Insurance companies attempted to raise premiums – some report by as much as 300 per cent. This created a loud response from merchants who believed the size of increase was unjustified. The insurance companies also tried yet again to relinquish their fire-fighting duties. In a letter to the government, insurance companies note that ‘without any public authority whatever it [the LFEE] has for nearly 30 years extinguished the fires which have occurred in the metropolis and surrounding districts without inquiry and without charge’. The insurance companies pleaded for reconsideration of the state of the fire service: ‘In the opinion of the Committee such an increase in the number of fires and in the expenditure incurred, rendered a reconsideration of the whole subject imperatively necessary, more particularly as they were satisfied that a system for the extinction of fires which might formerly have been adequate for the metropolis, has now become very insufficient for its present greatly extended limits’ (House of Commons, 1862).

In response to the post Tooley Street uproar, a Select Committee was established to evaluate the system of fire protection in London. The Committee interviewed many witnesses to prepare its report

discovering among other things that the insurance companies had been operating at a loss for some time. When John Drummond, Esq., Managing Director of the Sun and Chairman of the Committee for Managing Fire Extinguishings, was questioned regarding premiums he indicated that competition was such a factor that he doubted an increase could be carried into effect. Drummond was also asked why the insurance brigade would pay for fire extinction at all houses, to which he replied: 'There is no reason why we should do so; we do so on the principle that it is our interest to put out every fire; that this house may not be insured, but that the next may, and that the one not insured may set fire to the other' (House of Commons, 1862).

The report produced from the Committee noted that the insurance companies had agreed to supply fire suppression 'so long as the expense was moderate'; however, the cost of the duty had now grown to a 'magnitude' which the insurance companies believed 'they cannot continue to bear'. The report noted that of the £900,000,000 of insurable property only about £300,000,000 was actually insured (House of Commons, 1862). The final report also noted that the insurance brigades 'as far as their means would enable them, have performed most ably and most efficiently. It has, however, been equally admitted by every witness that the present scale of their staff, engines, and stations is totally inadequate for the general protection of London and its immediate vicinity from the dangers of fire. This is admitted by the managers of the brigade; but as they consider it efficient for the protection of that part of London where the largest amount of insured property is located, they have no desire or intention to add to their expense by placing additional stations in situations where, if a fire occurs, it is not likely to cause such comparative injury to the offices as if it occurred in the water-side warehouse, &c. near the city' (House of Commons, 1862).

The final Report from the Select Committee, and the details leading up to it, shed more light on why the insurance companies fought so hard to relinquish the duty of fire protection. The cost of fire fighting was rising significantly, and insurance companies were not getting paid to fight fires. There was a severe free-rider problem because of the difficulty of excluding uninsured properties. Premiums on the one-third of property in London that was insured were covering the cost of fire protection for the remaining uninsured two thirds. Even if

competition had not impeded the implementation of increased premiums, it would have only affected those individuals already paying for the service. To operate profitably the insurance companies would have needed to find a way to charge individual home owners for fire protection, separate from the charge associated with insurance. Alternatively, insurance companies needed to find another body to assume the duty of fire protection.

Following the Report an Act was passed in 1865 to transfer fire protection into the hands of the Metropolitan Board of Works (MBW), a public authority. Public provision of fire protection began in London on 1 January 1866. Insurance companies and parishes were officially relieved of their fire-fighting duties. Both were required, however, to contribute monetarily to the new public brigade. Insurance companies were mandated to pay at a rate of £35 per million gross insured (House of Commons, 1862; Blackstone, 1957). Those previously providing brigades were now required to pay for the service. In addition, insurance companies remained actively and voluntarily involved in monitoring the efficiency of the new institution. They served up recommendations for improvement of the fire service, including the development of several smaller stations versus fewer larger stations (Blackstone, 1957).

In addition to assuming the fire fighting duty, the MBW also took on the services previously provided by the Royal Society for the Protection of Life from Fire. This transfer was driven by the Society which had experienced a drop in income. Additionally, the parishes which were now paying for fire protection believed protection of life should be included as part of their payment. The MBW eventually succumbed and took over the duty (Blackstone, 1957).

The transfer of fire suppression from the private to public sector was not without difficulties. The financial situation was dire: the budget set for the brigade was tight, and borrowing power of the Board was restricted. The MBW received funds from the parishes and the insurance companies, as well as the government. Yet, financial troubles ensued. The brigade had difficulty taking over mortgages of existing stations from the insurance companies, not to mention the need to build new stations where no coverage had been in place (Blackstone, 1957).

The working conditions for the firemen worsened under the MBW. Firemen were forced to work longer hours, and in uncomfortable settings. Pay and funds provided in the event of a loss were slashed: the LFEE had paid families of those lost £10 to cover funeral expenses, but the Board paid only £5. The MBW faced a serious manpower issue, fuelled by the small budget and the growing metropolis (Blackstone, 1957).

Eventually, fire protection was transferred from the MBW to the London County Council (LCC), a wealthier branch of government. The Board did admit that the fire brigade was 'left in a condition of insufficiency when the necessities of London are taken into consideration' (Blackstone, 1967, p. 257). The LCC increased the size of the fire brigade, and began to build one of the 'finest and most experienced brigades in the world' (Blackstone, 1957, p. 258). In 1904, the name of the Metropolitan Fire Brigade was changed to the London Fire Brigade, a name believed to be better suited given that the brigade now only covered the whole Greater London area (Blackstone, 1957).

Although the LCC may have had more money, firemen were still notably disgruntled. A correspondent to *The Firemen* in 1902 explained: 'An undercurrent of discontent pervades the whole brigade, for the firemen recognise that, notwithstanding the fact they are directly under the control of the London County Council, their hours of service are as bad as –and in consequence of more stringent discipline, perhaps worse than – they were thirty-six years ago' (as cited by Blackstone, 1957, p. 310). Unions began to develop to protect the firemen's rights (Blackstone, 1957).

Historical records show that public authority encountered many problems in the early days of providing fire service, the largest of which was financial. The Board did not have the funds to improve protection, or perhaps even offer the same level of service that had been provided by the insurance companies. Compensation for firemen was cut, and manpower issues prevailed. Even after fire protection was transferred to a wealthier branch of government, worker-related issues continued. While the transfer of fire protection

to public authority certainly aided the ailing insurance companies, it is arguable whether fire protection improved.

Volunteer brigades continued to operate after fire protection was transferred to public authority. However, many split up over the uncomfortable relationship with the new captain. Those continuing to operate formed the London Auxiliary Fire Brigade in 1875. While they often helped at fires, there are cases documented where the volunteers failed to supply the most efficient of services (Blackstone, 1957).

Private fire fighting equipment was still maintained during this period. In 1902, the Victoria Street fire commenced in an office building that was said to have had internal fire hydrants and a private fire brigade. According to Blackstone's *A History of the British Fire Service*, the public brigade was not called immediately because directions for the office brigade had recently removed orders to call the public authority. Upon arrival on scene, the public brigade found the fire was well under way (Blackstone, 1957).

This period is defined by the transfer of fire protection from the private to public sector. The insurance companies drove this change, distressed by the high cost associated with the Tooley Street fire. The insurance companies had been experiencing a profound free-rider problem with respect to fire-fighting. Furthermore, they had no incentive to expand their fire protection services because they were paid only for insurance, and the bulk of insured property existed in the centre of London. The coverage provided by the insurance companies was deemed adequate so far as their means would allow, but insufficient for the expanding metropolis. The government took ownership of fire protection. However, the government experienced many of the same financial difficulties, and also a manpower shortage unknown under private enterprise. Unquestionably the government helped the ailing insurance companies, but it is doubtful if fire protection improved.

Full Municipal Provision (post 1938)

Fire service in the first half of the 20th Century was influenced by the difficult international climate. The Civil Defence Act was passed in 1937, calling for the formation of the Auxiliary Fire Service (AFS); recruitment for the service began in London in 1938. The AFS was designed to provide additional protection in those war-burdened times. For a period in the 1940s, the AFS was disbanded, but it was reconstituted through the passing of the 1948 Civil Defence Act. The AFS remained in operation until 1968 (Blackstone, 1957).

In 1938, the Fire Brigades Act was passed, requiring every local district in the country to provide fire protection, and every individual was now entitled to receive the service at no cost. London, however, was excluded from the Act because it was thought to be more advanced; after all, the London Fire Brigade had been operating for over 70 years. This meant that the insurance companies were still required to contribute to the brigade at the rate of £35 per million of insured property, as established under the 1865 Act. The insurance companies did, however, stop providing the statutory and *ex gratia* payments that they had made voluntarily for many years. Under the 1938 Act, the insurance companies were no longer required to pay for the services of the fire brigades (Blackstone, 1957).

In 1941, fire service across the UK was passed to the control of one governmental body. The government believed nationalisation was necessary during time of war; and it was understood that fire service would return to local authorities after the war's end. Nationalisation ended in 1947, and the London Fire Brigade reverted to the LCC. In 1950 the international situation worsened and the government obtained agreement from the local authorities that in the event of war nationalisation would reoccur, but it was never reinstated (Blackstone, 1957).

Following the end of nationalisation, the London Fire Brigade established new ranks and appointed new officers. Unions still existed to protect firemen and were becoming more established. In 1951, the London Fire Brigade staged its first demonstration. Firemen responded to fires, but refused to perform basic duties. Firemen were torn between their loyalty to the trade union and to the service. The LCC began to press charges against the firemen for failure to perform their duties, but eventually charges were dropped (Blackstone, 1957).

Today, the London Fire Brigade is run by the London Fire and Emergency Planning Authority. Firemen are still members of the Fire Brigade Union. In recent times an independent review of the UK fire service found significant room for improvement (Bain et al 2002). The government has since put forward an initiative asking that each fire service in the country spend more time focusing on fire prevention, and other emergencies, rather than working mainly on fire suppression. The London Fire Brigade (2004) views this request from the government as the 'beginning of the biggest overhaul of the fire service in London since the Second World War'.

Discussion

From historical records, we learn several important lessons. First, fire protection emerged in the private market through the development of insurance companies. Second, the popular perception that insurance companies intentionally allowed buildings to burn is at variance with the evidence. Third, historical records reveal the business model laid down by the insurance companies did not provide for adequate provision of fire protection. Finally, we will show below that by using the right business model fire protection may be provided successfully by the private sector.

Fire fighting emerged in a private competitive market. After the Great Fire of 1666, private enterprise responded to the need for protection against loss from fire and produced fire insurance. Lack of organised fire-fighting in London created a need for insurance companies to employ their own brigades. Brigades would have limited the loss from fire, and as a result the subsequent payout by insurance companies. Fire brigades developed not as an independent entity, but as a business necessity for those in the insurance business.

As explained above, the popular perception that insurance companies intentionally allowed buildings to burn appears to be a myth. Historical records confirm that insurance companies were in the practice of using fire marks, and that the original purpose was to denote a house 'secure'. It is even suggested that plaques were designed to serve as a directive to brigades. However, in practice this probably never occurred. First, the entire system of using fire marks broke down, rendering it impossible for insurance brigades to use a fire mark as a directive. Second, accounts suggest that insurance

brigades were directed to provide service to all in need. Fire marks were considered 'superfluous appendages' and remained on buildings only as a form of advertisement. Third, records show fire brigades cooperated with each other both in the detection and extinction of fire. It would be counterintuitive to suggest they also worked against each other. Finally, fire protection was developed by the insurance companies as a means to reduce the payouts associated with fire damage. To allow a fire to burn would only increase the likelihood an insured neighbouring property would catch fire, increasing the very costs fire protection was designed to reduce.

It is understandable why such a caricature of early private fire brigades developed and has been perpetuated, despite the evidence to the contrary. Great rivalry existed between the private companies. Presumably, insurance companies would have wanted to limit costs by extinguishing only those fires that offered some financial return. However, what we must not forget is that fire spreads. It would have been in the best interest of all companies to extinguish all fires before they engulfed insured property as expressed so clearly by Drummond in the Committee Review. Insurance companies were in the business of providing against lost property first, and as a function of this, in the business of extinguishing fires. Quenching fires – insured or otherwise – would have most likely limited the cost of payouts on insured properties. It therefore makes sense that private insurance companies would have made every effort to douse any fire that erupted. From the historical records it seems that the popular perception of early insurance brigades is inaccurate. While the caricature makes for a good story, it is probably fiction not fact.

Historical records also reveal the business model used by the insurance companies was deficient. Insurance companies were in a dire financial situation and the fire protection born and developed in central London was not adequate for the expanding metropolis. It is no wonder that these difficulties ensued; the insurance companies were not in the business of providing fire protection. Insurance companies offered insurance, and as a function of this supplied fire protection better to protect insured property. They employed brigades only because no other form of organised fire fighting existed. Insurance companies charged premiums for insurance that included fire protection; fire protection was not sold as a separate service. Yet the nature of fire prevented insurance companies from discriminating

between the insured and the uninsured. Therefore, a significant free-rider problem existed. No incentive existed for those who wanted only fire protection to pay for insurance. Further, because insurance companies were interested only in protecting insured property, no incentive existed for the companies to expand their fire services into the outskirts of London where a majority of property was uninsured.

Textbooks describe fire protection as a good that possesses attributes of both public and private goods. Public goods are thought to need government intervention if supply is to be efficient. The free rider problem creates inefficiencies in private provision of a public good. Textbooks note the government involvement in the provision of fire protection, and history reveals the free-rider problem was paramount for the insurance companies. In London the government intervened to rectify the inefficiencies in fire protection and certainly improved the situation for the ailing insurance companies. However, at least initially, the government offered no better supply (and possibly worse) of fire protection to its citizens.

Textbooks do mention the possibility of privatisation with respect to fire protection, but these suggestions tend to be very cautious. Levy even perpetuates the idea that buildings would be allowed to burn in a fee-based system. What textbooks do not note is that fire protection emerged in the private sector because the public sector failed to offer the service. Despite the difficulties encountered by the insurance companies in offering fire protection, as a result of fire service not being their core business, insurance companies provided the only form of organised fire-fighting in London for close to exactly 200 years.

Modern day examples of privatisation suggest that fire protection may be provided by the private market successfully. Unlike the insurance companies in the 1800s, private companies offering fire protection today are in the business of supplying that good. Therefore, the appropriate incentives exist. Various models of privatisation have been implemented successfully, including volunteers, subscription-fee based systems, and contracting.

Volunteers provide the majority of fire protection in the United States, both historically and today. At present over 90 per cent of America's

firemen are volunteers. The majority of American communities do not have municipal provision; however, the majority of the population is protected. Volunteers are motivated by, among other things, camaraderie, adventure, as well as civic pride and a sense of duty. Many US communities report waiting lists to join the Volunteer Fire Department (Blundell, 2002; McChesney, 2002; Privatization.org, 2004).

Contracting is an alternative form of fire protection in which the public sector and the private sector work together. The government outsources fire protection to a private firm, typically using the tax base to pay for the service. Rural/Metro, the largest private firm offering fire protection in the United States, uses this model in some locations. In Denmark, the government has been contracting out services to the private company, Falck, since 1926 (Moore, 1998; Privatization.org, 2002).

Subscription-fees are another way that privatisation has worked, typically when there is no government tax base to cover fire protection. The private firm offering the service will charge property owners a fee directly, usually annually, for fire protection. Property owners have an incentive to purchase such fire protection as it nearly always reduces the cost of their insurance. In those instances where fire protection is not purchased, the private firm and the individual usually agree on a higher hourly rate should the services of the former be needed. Rural/Metro also uses this model in some parts of the States (Moore, 1998; Poole, 1991).

The private sector uses three main practices which differentiate it from the public sector, according to Guardiano, Haarmeyer, and Poole. The distinctions are: 'First, the use of a mixed force of full-time and reservist firefighters (so that fewer full-time salaries need to be paid). Second, cross-training and multi-service provision, so that the same emergency-service personnel, equipment, and stations can provide more than one type of service, thereby spreading costs among all the offered services. Third, a clear focus on fire prevention using both technology and public education approaches' (Guardiano, Haarmeyer, and Poole, 1992, p. 1).

We may observe these variances in practice. Rural/Metro employs staff on both full and part-time bases. Even the early insurance

companies offering private fire protection offered flexible employment to the watermen. Cross-training is prevalent in both the US and Denmark. Firemen are engaged in activities that range from ambulance services to fire salvage to assisting in road-side emergencies. Not only does cross-training spread out costs, it minimises downtime (Moore, 1998; Rural/Metro, 2002).

Private companies offering fire service view reduction in the number of fires as good business, therefore fire prevention is a crucial component of their business plans. Firemen of private firms are engaged in activities such as training industrial brigades and volunteer fire fighters, operating alarm monitoring and installation services, and engaging in a host of educational services. Rural/Metro was actively involved in a residential and fire sprinkler ordinance that was passed in Scottsdale, Arizona improving the safety of the community. After a national study in the US found that lime green was more visible than red in conditions of bad weather, Rural/Metro painted its equipment lime green. Not only does it improve safety, it reduces costs as the colour needs less maintenance. Several public authorities followed suit, but the majority of public equipment remains red (Moore, 1998; Poole, 1991; Rural/Metro, 2002).

The benefits of privatisation are notable. According to Rural/Metro, in Scottsdale, Arizona, where Rural/Metro provides fire service, taxpayers pay less than 46 per cent of the national average for their fire protection but the fire loss rate is far better than the national average and Rural/Metro's focus on prevention has also contributed to a very big decrease in structure fires (Rural/Metro, 2002). In Denmark, fire service costs less than half of the service in Britain as a percentage of GDP, according to Thornton in *Privatize the Fire Service*. Further, property loss to fire is equivalent to that of the median for industrial nations, while the likelihood of dying in a fire is significantly lower (Moore, 1998). These statistics demonstrate that fire protection may be provided privately if the right business model is employed.

Conclusion

London enjoyed a unique form of fire protection for nearly 200 years. Following the Great Fire of London in 1666 the private market

recognised a need for a mechanism to protect individuals from the loss experienced by fire. Insurance companies emerged to answer this call, charging individuals a premium to protect the agreed-upon property. Each insurance company employed its own fire brigade because no other form of organised fire-fighting existed in London. Brigades developed as a business necessity for the insurance industry. Insurance companies did their best to provide protection to London, including providing assistance to those uninsured. However, the right incentive structure was not in place for fire-fighting to be a profitable endeavour for the insurance companies. The government relieved the ailing insurance companies in the mid-1800s, and continues to provide service today. Outside London, privatisation has proved successful today, offering both cost and safety advantages. Privatisation works when the business model employed provides the appropriate incentives.

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