

Market failure guide

A guide to categorising market failures for government policy development and evaluation

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Executive summary

'Market failure' refers to a situation where a market, in the absence of intervention, fails to allocate resources efficiently. Where market failures exist, there is a potential role for government to intervene to improve outcomes for the community, the environment, businesses and the economy.

There are three major classifications of market failures (or conditions of either markets or goods that can lead to market failure). These include the nature of the market, the nature of the good and the availability of information.

The nature of the market

The 'nature of the market' refers to the degree of market power and the potential ability to use that power to manipulate the market. Market power arises when a single firm, or a group of firms, has captured enough market share to influence prices, quantity, quality, or the provision of key information relating to goods and services within the market. Market power may also be used to inhibit the entry of other firms into the market. Firms have a strong interest to use their market power to maximise profits at the expense of achieving market efficiency. This results in a deadweight loss to society and is considered a form of market failure.

Market failures in this category manifest most prominently as forms of 'market concentration', which include monopoly, monopsony, oligopoly, and oligopsony.

The nature of the good

The 'nature of the good' refers to the characteristics of a good or service that distinguish it from most other market goods and services and causes an under or over-provision, relative to what an efficient market would expect to provide. The main forms of market failures in this category are public goods and externalities.

Public goods exist where provision of a good (product, service or resource) for one person means it is available to all people at no extra cost and consumption of the good by one person does not affect the good's availability to others. This makes it impossible to recoup the costs of provision by extracting payment from users. Public goods can be 'pure public goods' (that is, non-excludable *and* non-rival) or 'impure public goods' (that is, non-excludable *or* non-rival).

Externalities are unanticipated costs or benefits that are imposed on others (for example, an external third party) by the actions of one party (or two parties involved in a transaction). In a market, parties typically don't fully factor in the externalities that they cause, meaning that their actions may have an economic effect on another party that is not taken into account in the decision making process (or transaction). Externalities exist most prominently as 'negative externalities', however, they can also exist as 'positive externalities'.

The availability of information

Information educates a decision-maker on the costs and benefits of a transaction within the market. The availability and quality of information is important because when information is either lacking or imbalanced, these transactions can result in sub-optimal outcomes where allocative efficiency is not achieved. The under-provision of key information can be observed as a market failure. The main forms of market failures in this category are 'information asymmetry' and 'information failure'.

Information asymmetry is a market failure phenomenon where some parties in a market have possession of more (or better) information than others and they use this information to their own advantage. This imbalance distorts the actions of both the informed and uninformed parties, resulting in inefficient market outcomes. Information asymmetry can occur in the market in several ways, including adverse selection, moral hazard, principal-agent problem, and lack of disclosure.

Information failure is a market failure phenomenon when neither party has sufficient information to facilitate a more efficient market outcome. This leads parties to undertake actions that are not optimal, leading to market inefficiencies. Information failure can manifest itself in four different ways, including information deficiencies, information bias, coordination failure, and incomplete contracts.

About this report

This report is designed to be used as a reference to help categorise and explain all likely manifestations of market failure. It is not expected that this report will be read sequentially in its entirety, but rather that policy practitioners (primarily in government) would identify prevalent market issues that result in specific market failures and refer to the relevant sections of this guide to inform and advise as to both the nature of the underlying problem, and whether a government response may be required to help ameliorate the problem.

About market failure

A market is a 'place' where goods and services are voluntarily exchanged. We encounter markets every day when we purchase basic necessities, sell our labour, purchase goods and services, and perhaps enter into investment markets to buy or sell property or shares. Australia has a market-based economy.

Because markets are voluntary, goods and services are only bought if the value to the buyer is greater than or equal to the price offered by the seller. Likewise, goods and services would only be sold into the market if the price is greater than or equal to the value of the exchange to the seller.

Competitive markets automatically coordinate individually motivated decisions across all goods and services to provide the greatest value from production or consumption. This has been referred to as the 'invisible hand'. The unseen forces of competitive markets produce socially efficient outcomes and improved living standards.

Properly functioning markets can theoretically reach an optimal point that enables land, labour and capital to flow to their highest value use. This is known as 'allocative efficiency' and maximises the social economic value of the market. At this theoretical optimal point, a reallocation of resources within the market cannot make one person better off without making someone else worse off (called 'pareto optimality'). In other words, trading will occur up to the point where the marginal benefit of any further trade is equal to its marginal cost.

When markets are functioning properly, the role of government intervention should be limited to providing the minimal state services required to support such markets. These include:

- consumer, labour, property and contract law and enforcement
- macroeconomic management to ensure full employment and stable growth
- the settings of policy instruments, such as tax and transfer systems, that determine endowments of wealth and income.

Raising public funds is costly, both directly in terms of administration and also indirectly from potential market distortions created when government policies interfere with the market's ability to allocate resources efficiently. Therefore, government intervention in markets beyond the minimum requirements to establish functioning markets can only be justified, on economic efficiency grounds, by the existence of a market failure or, on social equity grounds, to redistribute income.

A market failure refers to a movement away from the economically efficient outcome (that is, where mutually beneficial trades could be made). This occurs because private incentives may not perfectly align with the broader interests of society and/or there are information problems that mean all relevant information for decision-making cannot be, or is not, revealed truthfully at negligible cost.

Although a market may display the characteristics of market failure, this is not in itself an entirely sufficient justification for government intervention. For government intervention to be warranted, the following conditions must also be met:

- it must be technically feasible to address and overcome the market failure
- the benefits of intervention must outweigh the costs

- non-government means are unable to resolve the market failure in an equally effective manner (that is, the least distortionary solutions should be preferred).

Therefore, discovering a market failure can be seen as a necessary but not sufficient step to justify government intervention in markets on economic efficiency grounds. Alternative solutions to a market failure should be subject to rigorous cost-benefit analysis to ensure they deliver the greatest improvement in economic value of the market, in the least distortionary manner.

Market failure categories

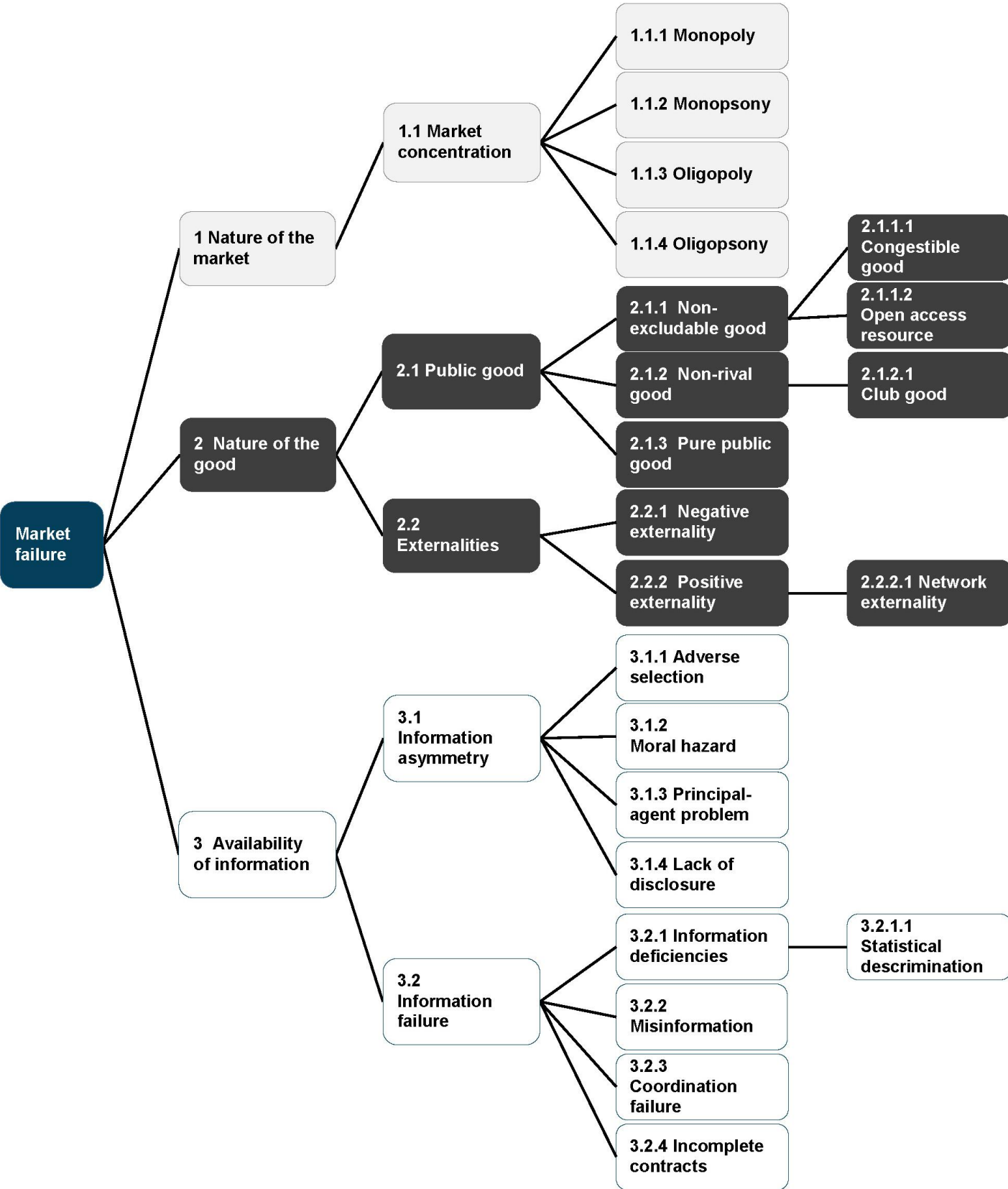


Figure 1. Market failure categories

1. Nature of the market

Definition: The ‘nature of the market’ refers most prominently to the degree of market power and the potential ability to use that power to manipulate the market. Market power arises when a single firm or a group of firms has captured enough market share to influence prices, quantity, quality or the provision of key information relating to goods and services within the market. Market power may also be used to inhibit the entry of other firms into the market. Firms have a strong interest to use their market power to maximise profits, at the expense of achieving market efficiency. This results in a deadweight loss to society and is considered a form of market failure.

Deadweight loss: A deadweight loss occurs when prices or quantities are distorted such that more or fewer goods and services are produced than what an efficient market outcome would provide. As the market clearing equilibrium is not reached, there is a loss of value to both the consumer and the producer as they cannot gain the benefits inherent in the free trade of goods or services. This loss of value is the deadweight loss.

Subcategories: The market failures caused by the ‘nature of the market’ primarily result from market concentration.

Although the degree of vertical integration of individual firms also has the potential to achieve certain anti-competitive effects, any market power exerted by these integrated firms is similar in nature to the effects of market concentration, and is thus detailed in the following sections.

1.1 Market concentration

Definition: Market concentration is the measure of the distribution of market share between the various firms within a given market. The more concentrated a market is the more market share is dominated by a few firms or a single firm. Concentrated markets are separated into a variety of categories based on differing composition and circumstances.

Subcategories: The categories of concentrated markets that can cause market failure include:

- monopoly
- monopsony
- oligopoly
- oligopsony.

1.1.1 Monopoly

Definition: A monopoly occurs where a single seller has a dominant market share. The firm may then have the potential to use their dominant position to distort the market in terms of price, quantity, quality, the provision of key information, or establishing barriers to entry, in order to increase their profits. This distortion reduces efficiency, resulting in a deadweight loss to society.

Examples of monopolies can include rail networks, Australia Post and previously Telecom Australia.

Private solutions: If new firms are able to enter the market, this will increase competition. Increased competition reduces market concentration and hence the respective market power of any one firm.

Government response: A government can address a monopoly through the following actions:

- establishing government ownership
- enforcing antitrust regulation
- enforcing price, quantity, quality and information controls
- encouraging a positive business environment that promotes competition.

Extenuating forms of monopoly market failure: Certain forms of monopoly can exist that provide either a conditionally efficient market outcome or a solution to other market failure problems. These include natural monopolies and monopolies established through patents.

A **natural monopoly** is a type of monopoly that arises when there are extremely high fixed costs, such as when large-scale infrastructure is required to ensure supply. In such circumstances, it is more efficient for one firm to provide the good or service than multiple firms via separate proprietary infrastructure. The most common examples of natural monopolies are utility providers such as water supply and waste services. In such circumstances, the additional costs of new firms providing their own (additional) infrastructure (for example, multiple pipes to a single house) would be prohibitively large and would act to decrease allocative efficiency. Natural monopolies are not always considered a market failure that justifies government intervention. However, where the good or service is deemed to be essential or contains important welfare considerations (such as the supply of water, waste and/or telecommunications) the government may be obliged to intervene through government ownership, antitrust regulation, or controls on price, quantity, quality or information.

A **monopoly through a patent** occurs when a firm has a patent on a good or service, and is therefore given the right to produce this good or service exclusively and/or to prevent others from joining the market for this good or service. This is a sanctioned method of ensuring intellectual property rights, and is generally seen as an efficient solution as it rewards innovation. Patents assist in overcoming free-rider problems that are experienced in certain areas, including research and development (see section 2.1, public good). Monopolies through patent are not always considered a market failure that justifies government intervention, especially when the distortionary costs are determined to be less than the benefits produced to society. However, monopolies through patent may still require government price, quantity, quality or information controls.

1.1.2 Monopsony

Definition: A monopsony is similar to a monopoly, except a single buyer dominates the market (rather than a single seller). A single buyer may have the capacity to set their price lower than that which achieves market efficiency in order to increase their own profits. Here the cost savings realised by the firm are typically less than the reduction in efficiency imposed on society as a whole. This distorts the market and creates a deadweight loss to society.

An example of a monopsony could include a firm that is the only buyer of labour in an isolated town.

Private solutions: The market can reduce the effects of a monopsony through the numerous sellers coming together to co-ordinate prices via a seller co-operative. Under normal circumstances, sellers concentrating their part of the market would itself create a market failure. However, in this situation, the concentration by sellers may counteract the price distortion of the monopsonist, therefore lessening market failure on the whole.

If new firms are able to enter the market, this will increase competition. Increased competition reduces market concentration and hence the respective market power of any one firm.

Government response: A government can address a monopsony through the following actions:

- enforcing antitrust regulation
- enforcing price, quantity, quality and information controls
- encouraging a positive business environment that promotes competition.

1.1.3 Oligopoly

Definition: An oligopolistic market occurs when a small number of dominant sellers (for example, two to 10) hold a majority of the market share. The firms may then have the potential to collude (overtly or covertly) to distort the market in terms of price, quantity, quality or the provision of key information, in order to increase their profits. Colluding firms in an oligopoly are called a cartel. Here the cartel acts like a single firm, extracting profits or influence like a monopoly. This distortion increases each firm's productive efficiency at the expense of society's allocative efficiency, resulting in a deadweight loss to society.

Examples of where oligopolies could occur include supermarket chains, airlines and international brand-based firms like tobacco companies.

Private solutions: If new firms are able to enter the market, this will increase competition. Increased competition reduces market concentration and hence the respective market power of any one firm.

Government response: A government can address an oligopoly through the following actions:

- enforcing antitrust regulation
- enforcing price, quantity, quality and information controls
- enforcing legislation that aims to prevent collusion
- encouraging a positive business environment that promotes competition.

Not only is cartel behaviour a form of market failure, more often than not it is also illegal by government regulation (such as those enforced by the Australian Competition and Consumer Commission). Cartels are therefore often resolved through legal action when discovered.

1.1.4 Oligopsony

Definition: An oligopsonistic market is a market in which a small number of dominant buyers (for example, two to 10) hold a majority of the market share. They have the potential to create market failure by setting their price lower than that which achieves market efficiency in order to increase their own profits. Here the cost savings realised by the firms are typically less than the reduction in efficiency imposed on society as a whole. This distorts the market, causing less than the efficient output level to be made available in the market, and creates a deadweight loss to society.

An example of where an oligopsony could occur includes in markets for perishable farm produce like fresh milk or eggs.

Private solutions: The market can reduce the effects of an oligopsony through the numerous sellers coming together to co-ordinate prices via a seller co-operative. Under normal circumstances, sellers concentrating their part of the market would itself create a market failure. However, in this situation, the concentration by sellers may actually counteract the price distortion of the oligopsony, therefore lessening market failure on the whole.

If new firms are able to enter the market, this will increase competition. Increased competition reduces market concentration and hence the respective market power of any one firm.

Government response: A government can address an oligopsony through the following actions:

- enforcing antitrust regulation
- enforcing price, quantity, quality and information controls
- encouraging a positive business environment that promotes competition.

2. Nature of the good

Definition: Market failure can arise when goods or services are over-provided or under-provided relative to what an efficient market would expect to provide. This can be due to certain characteristics of the good or service that distinguishes it from most other market goods and services.

Subcategories: The market failure caused by the nature of the good can be divided into two categories, including:

- public good
- externalities.

2.1 Public good

Definition: A public good is a good or service which exhibits the following two distinct qualities:

1. non-excludability: meaning that people cannot be prevented from consuming the good or service
2. non-rivalry: meaning that the consumption of the good or service does not reduce the quantity to be consumed by other people.

With public goods there is little incentive for producers to provide the good or service, as they are unable to set the price above \$0. Similarly, there is no incentive for consumers to pay for the good or service when they can access it for free. Public goods are often underprovided, and sometimes markets for public goods fail to form altogether. This market failure makes coordinating the provision of public goods difficult (particularly in private markets).

Subcategories: Public goods can exist in the following forms:

- non-excludable good (an 'impure' public good, where only one of the two public good qualities hold)
- non-rival good (an 'impure' public good, where only one of the two public good qualities hold)
- a pure public good (where both of the public good qualities hold).

This is demonstrated in the following matrix:

Table 1. Pure and Impure Public goods

Characteristics	Excludable	Non-excludable
Rivalrous	Private good	Non-excludable good (impure public good)
Non-rivalrous	Non-rivalrous good (impure public good)	Public good (pure public good)

2.1.1 Non-excludable good

Definition: A non-excludable good is an 'impure' public good that exhibits the quality of non-excludability (meaning that people cannot be prevented from consuming the good or service), but these goods are concurrently partially (or fully) rivalrous (meaning that quantity is reduced through consumption).

This non-excludability gives rise to the free-rider problem, where those who benefit from the good or service do not contribute to its provision. The ability of consumers to access the goods or services for free ensures that prices can only be set at \$0. This is a market failure that results in an under-provision of those goods or services as firms are unable or unwilling to provide the goods at price \$0.

Examples of non-excludable goods include public parks, roads, public infrastructure and open-access resources.

Private solutions: Non-excludable goods can only be privately provided if the private sector can identify a way to make the provision excludable.

Government response: Non-excludable goods can often (but not always) be converted to excludable goods by government action such as:

- defining and enforcing private property rights
- creating tradeable permits.

Alternatively, the government can address this market failure by:

- providing the good or service directly
- providing the good or service indirectly through a subsidy to private providers.

Subcategories: Non-excludable goods can also exist in/as the following forms:

- congestible good
- open-access resources.

2.1.1.1 Congestible good

Definition: A congestible ('impure') public good is a non-excludable good or service that is typically non-rival when only being used by a few people, but becomes rival (or congested) when used by many people at once.

Examples of congestible goods include roads and public parking.

What makes congestible goods unique is that individuals can use them up until a certain volume without affecting each other in a rivalrous way. After this volume is exceeded, the congestible good becomes congested and each new entry of a user will have a negative effect on all other users creating negative outcomes, such as traffic jams. Market failure therefore occurs when the market either fails to provide a congestible good or when the congestible good becomes over-congested.

Private solutions: A privately provided congestible good, or one provided through a partnership with the private and public sector, can enforce excludability and manage use through pricing (such as toll roads and congestion charges).

Government response: The government can address this market failure by either:

- increasing capacity
- facilitating conditions where the community generates its own (excludable) congestible good solutions
- introducing measures to decrease or manage the frequency of use (congestion charges, providing public transport alternatives, etc.).

2.1.1.2 Open access resource

Definition: Open access resources are another example of an 'impure' public good. Open access resources are non-excludable, however, these resources are limited and are therefore rivalrous (or partially rivalrous) and vulnerable to depletion if overused.

Depletion of open access resources is difficult to prevent as these resources are naturally non-excludable and therefore available to the public free of charge (or at low cost). As such, they are vulnerable to the 'tragedy of the commons', a phenomenon where individuals over-utilise a publicly available resource until it is fully depleted.

Common examples of open access resources are wild fish stocks, timber on public land and clean air.

Private solutions: It is also possible to empower stakeholders to protect the resource by providing property rights to a party that would ensure its continued maintenance. This can be done either through the government becoming a stakeholder, or selling/ transferring ownership to a private or community groups to manage, or a combination of both.

By empowering stakeholders, the private market can subsequently resolve the issue of common property resources with minimal further government intervention. This is because ownership creates an inherent incentive to maintain productive capacity, so as to enjoy the benefits of continued use.

Government response: The government can address this market failure by:

- discouraging the over-use of the resource, through providing information, defining and enforcing private property rights (for example, permits or quotas), or encouraging co-ordination between firms
- encouraging sustainable use of the resource through positive incentives (subsidies, tax breaks) or negative incentives (user charges), or by restricting/controlling use (quotas, fencing off vulnerable areas)
- facilitating conditions where the community generates its own (excludable) open-access resource solutions.

2.1.2 Non-rival good

Definition: A non-rival good is an 'impure' public good that exhibits the quality of being non-rivalrous (meaning that quantity is not reduced through consumption), but these goods are concurrently partially (or fully) excludable (meaning that people can be prevented from consuming the good or service).

Market failure occurs because the non-rival quality of these goods results in a firm's marginal cost for each additional (marginal) consumer, being equal to \$0. Efficient pricing dictates that the price of a good should be set equivalent to its marginal cost. So in this case, the price for non-rival goods would be set at \$0, which would result in private firms operating below the shutdown point, losing money, and being unwilling or unable to provide the good.

While a non-excludable good can often (but not always) be converted into an excludable good through government action, non-rivalry is an intrinsic characteristic of a good that cannot be altered by government intervention.

Examples of non-rival goods can include national parks, and radio and television broadcasts.

Private solutions: Non-rival goods can only be privately provided if the private sector can identify a way to make the provision rival.

Government response: The government can address this market failure by:

- providing the good or service directly
- providing the good or service indirectly through a subsidy to private providers.

Subcategories: Non-rival goods can also exist in/as club goods.

2.1.2.1 Club good

Definition: A club good is a good or service that has a high degree of excludability, but its use or consumption does not impact the use of others in a negative way, meaning that it is also non-rivalrous (or partially non-rivalrous).

Examples include tennis and other fitness clubs, satellite television and online journal subscriptions.

A club good is generally not seen to be an example of market failure unless the good or service would otherwise confer a significant positive externality on the community. Here, the formation of the 'club' is a private solution to the problem of non-rivalry.

Government response: The government can address this market failure by facilitating and supporting the establishment of the private club, where prices are permitted to be set above the efficient marginal cost level (of \$0). Here efficiency is traded off in return for the club providing the good that would not be provided otherwise. The establishment of the private club may avoid the need for government to provide the good or service.

2.1.3 Pure public good

Definition: A pure public good is a good or service where both of the public good qualities hold simultaneously. That is, pure public goods are entirely non-excludable and entirely non-rivalrous. An example of this is the provision of new information and knowledge (in the absence of intellectual property law that renders the information excludable). Information is considered a pure public good as it can be easily accessed and replicated at virtually no cost to previous, current or future users. Pure public goods are, therefore, most vulnerable to the free-rider problem and/or the inability of producers to provide the good or service at a price greater than \$0. This leads to under-provision of the good or service relative to what an efficient market would otherwise provide.

Private solutions: The private sector can resolve this problem by making the good or service excludable and rival, thus transforming the public good into a private good. Another private solution to public goods is philanthropy, where private individuals fund the provision of public goods to promote the welfare of others.

Government response: The government can address this market failure through the following actions:

- providing the good or service directly
- providing the good or service indirectly through a subsidy to private providers.

Industry good: Industry good refers to a form of public good where benefits of the provision of the good or service accrue to a much narrower referent group than the whole community. Here the conditions of non-excludability and non-rivalry still hold, but the implications of the provision can be clearly attributed to a specific industry (or similar narrow group of stakeholders).

There are often sufficient incentives for the private sector to address industry goods without government intervention (such as, through voluntary industry contributions to peak industry bodies). However, when industry is unable to coordinate voluntary corporate contribution, the government may establish a head of power that effectively forces all beneficiaries to contribute to the provision of the good. Specific industries often establish industry levies and charges that are administered by the government and used to fund the provision of the good. For example, agricultural levies and charges are imposed on primary producers by government at the request of industry to collectively fund research and development, marketing, biosecurity and residue testing programs.

2.2 Externalities

Definition: An externality is another form of market failure caused by the 'nature of the good'. Externalities result in an over-provision (or under-provision) of the good or service, relative to what an efficient market would provide. Externalities occur where the actions of one party (or two parties in a transaction) has an unanticipated effect on a third party (or a party outside of the transaction). In a market, parties typically don't fully factor in the externalities that they cause, meaning that their actions may have an economic effect on another party that is not taken into account in the decision making process (or transaction).

Externalities only persist as an ongoing market failure when the goods exhibit the public good qualities of non-excludability and/or non-rivalry. Otherwise, the externality is likely to self-rectify as the affected parties seek available gains from trade. If externalities are not associated with either non-rivalry or non-exclusiveness, then they are not pareto-relevant, meaning that there is no way to increase efficiency by resolving the externality, and hence it is unlikely to be recognised as a market failure.

Subcategories: There are two main forms of externalities:

- negative externality (external costs)
- positive externality (external benefits).

2.2.1 Negative externality

Definition: A negative externality is caused by an action (or market transaction) that affects a third party in a negative way. These are sometimes referred to as negative spill-overs or external costs. When a good or service has a negative externality, it is generally over-provided (relative to what an efficient market would provide), as the producer (and consumer) of the good or service seldom fully take into consideration the externality that they cause.

Examples of negative externalities can include air and water pollution, and the spread of pests and diseases.

Private solutions: Awareness and avoidance of potential negative impacts has the potential to reduce the magnitude of the negative externality. Once adequate property rights are established, the affected and affecting parties can bargain between each other and negotiate a solution in which one of the parties is compensated for their loss. In some cases, firms may choose to internalise the externality by buying out the property rights of affected areas. Advocacy groups can also raise awareness of the negative effects of the transaction, or advocate on behalf of the affected parties, which would also potentially reduce the effect of the negative externality.

Government response: A negative externality can be addressed by the government through the following mechanisms:

- defining and enforcing property rights
- imposing taxes
- imposing quotas (and the ability to trade those quotas through a cap and trade scheme)
- enforcing regulatory constraint (with penalties for non-compliance)
- raising awareness via advertising campaigns
- creating institutions that reduce transaction costs involved in parties negotiating solutions to externality problems.

2.2.2 Positive externality

Definition: A positive externality is caused by an action (or market transaction) that affects an unrelated third party in a positive way. These are sometimes referred to as positive spill-overs or external benefits. Provided the internal participants generate sufficient benefits to undertake the action (called the 'sufficiency principle'), then there is no market failure and all spill-overs are over and above the efficient level of provision. However, when an action (e.g. provision of a good or service) has a positive externality and the sufficiency principle is not met, it is generally under-provided (relative to what an efficient market would provide). This is considered a form of market failure, as the internal participants cannot generate sufficient benefits alone to undertake the action (without coordinated contribution from other beneficiaries). As with negative externalities, the producer (and consumer) of the good or service seldom fully takes into consideration the externality that they cause.

Examples of positive externalities can include higher education, vaccinations, and research and development.

Private solutions: Advocacy groups may be able to promote awareness and use in the market. Also, producers may also wish to advertise the positive externality that they create in order to enhance their brand.

With property rights established, private firms are in a better position to capture some of the positive externalities they are generating (that is, internalise some of the externality). The property rights create an inherent incentive for the firms to continue providing the good or service.

Government response: The government can address this market failure through the following actions:

- public provision
- subsidised provision
- defining and enforcing property rights
- raising awareness via positive advertising campaigns
- facilitating collective funding, such as through an industry levy

- creating institutions that reduce transaction costs involved in parties negotiating solutions to externality problems.

Subcategories: Positive externalities can also exist in the form of network externality.

2.2.2.1 Network externality

Definition: A network externality (also known as ‘network effect’ or ‘demand-side economies of scale’) is a form of positive externality that arises when the value of a certain good or service is determined by how many other people use it. Typically, the value of network externalities (as realised by an individual) increase as more people use the good or service.

Examples of situations where network externalities arise include telephone and internet networks and social media services.

Network externalities can often be considered a form of market failure when newly introduced. This is because the good or service (with its corresponding positive externalities) are typically under-provided due to what is called the ‘bandwagon effect’. The bandwagon effect explains how people typically only adopt a new good or service once its value has been proven and it is already popular. This particularly applies when switching costs are high and parties do not wish to adopt the new product until other parties have adopted it first (see also co-ordination failure, section 3.2.3).

Private solutions: The private market can also address this issue by instigating a privately led initiative to co-ordinate firms into providing a good or service with a network externality.

Government response: The government can address network externalities by:

- supporting provision of the good or service in question until sufficient subscribers allow for viable private provision
- encouraging co-ordination between potential private providers.

3 The availability of information

Definition: Information educates a decision maker on the costs and benefits of a transaction within the market. The availability and quality of information is important because when information is either lacking or imbalanced, these transactions can result in sub-optimal outcomes where allocative efficiency is not achieved. The under-provision of key information can be observed as a market failure.

Subcategories: This form of market failure can emerge in the market in two ways:

- information asymmetry
- information failure.

3.1 Information asymmetry

Definition: Information asymmetry is a market failure phenomenon where some parties in a market have possession of more (or better) information than others and they use this information to their own advantage. This imbalance distorts the actions of both the informed and uninformed parties, resulting in inefficient market outcomes.

Subcategories: Information asymmetry can occur in the market in several ways, including:

- adverse selection
- moral hazard
- principal-agent problem
- lack of disclosure.

3.1.1 Adverse selection

Definition: Adverse selection occurs most prominently when buyers have more (or better) information about the good or service than sellers. With this discrepancy in information, the sellers can only rely on proxy measures to estimate value, or offer the good or service at average prices. This inability to identify value (or screen customers) causes the seller to be 'adversely selected' by high-risk or high-cost buyers.

By way of example, when a firm offering life insurance is unable to differentiate between high-risk customers and low-risk customers, premiums will be set at the 'average' price. This 'average' price is seen as good value for high-risk customers, so the insurance company is soon over-subscribed with (or adversely selected by) high-risk customers. This makes it unlikely that the insurance company will remain viable in the long run.

Adverse selection can be significant enough that the market eventually becomes non-existent or the market fails to form in the first place. Adverse selection can also occur when sellers have more (or better) information than buyers.

Private solutions: When there are sufficient legal systems in place, the parties themselves can address this issue through the creation of effective contracts. However, not all parties have the expertise or resources to create and enforce contracts. There may be grounds for governments to intervene to provide legal services if the outcome is efficient (where benefits outweigh the costs) or for equity reasons (such as helping vulnerable socio-economic groups).

The private sector may also be able to address adverse selection through signalling. For example, a safe driver may be able to signal quality to an insurance company by showing that they have made little to no claims over a long period of time. This allows insurance companies to determine their policy based on claim history. This would be a much more efficient method than purely basing insurance premiums on average quality (see section 3.2.1.1).

Government response: The government can address this market failure by increasing the ability of parties to signal the quality or value of the good or service, for example, quality control and certification. The government

can also create and enforce regulations which prevent low-quality goods or services from entering the market, thereby giving assurances to affected parties.

3.1.2 Moral hazard

Definition: Moral hazard occurs when people behave more riskily than they otherwise should or would, either because they believe that their carelessness will not be found out, or because they are encouraged to behave carelessly through poor incentive structures that over-reward them for risk-taking. This increased risky behaviour leads to inefficient market outcomes and is thus considered a market failure.

Moral hazard can occur in situations where individuals (or firms) with insurance (either explicitly provided by the private sector or implicitly by government) can pursue risky behaviour (or decisions) knowing that their actions will not result in financial loss to themselves.

Government response: To counter this form of market failure, the government should first identify if the implementation of its policies is currently creating any moral hazards. If so, then the government can minimise the market failure by introducing consequences for engaging in risky or reckless behaviour.

3.1.3 Principal-agent problem

Definition: The principal-agent problem (also known as agency dilemma or the agency problem) occurs when a hiring or paying party (called a 'principal') wishes the hired or payed party (called an 'agent') to perform a task, but cannot observe some aspect of the agent's performance. If the interests of the principal and the agent diverge, there is an incentive for the agent to pursue their own interest at the expense of the principal. This can lead to inefficient outcomes that can be referred to as a form of market failure.

Principal-agent problems often (but not always) result in the presence of a moral hazard. As such, the two forms of market failure are linked, but not exclusively, and so should be described as distinct issues. An example of a principal-agent problem (without moral hazard elements) is where labour is hired by the hour. The principal wishes the job to be done in the fastest time (to reduce costs) but labourer wishes to take extra time (to increase revenue).

Private solutions: For the most part, the private sector seeks to resolve this issue by creating their own observability structures, such as managerial oversight, independent audits, etc., whilst including accountability measures through contractual arrangements.

Government response: The government can address this market failure by increasing oversight within the market. The government can also endeavour to create incentive structures which discourage the principal agent problem such as fines or a suspension of certification for substandard performance or breeches of contract.

3.1.4 Lack of disclosure

Definition: Market failure from a lack of disclosure occurs when a firm or individual intentionally and in full knowledge fails to disclose information that reveals the true value or cost of a good or service. This most often leads to consumers over-purchasing the good due to over-estimating its true value.

An example of lack of disclosure is the potential unwillingness of producers to disclose all ingredients (or country of origin) details on product labelling.

Private solutions: Consumer advocacy groups as well as informed consumers are able to demand disclosure of this information. Consumer advocacy groups can further enhance this process by then informing consumers of this knowledge discrepancy.

Government response: The government can resolve this market failure by:

- requiring firms to disclose information through consultation; regulation co-ordination; or incentives, both positive (inducements) and negative (penalties)

- assisting the disclosure of information through government programs that ascertain, and subsequently disclose, undisclosed information
- informing consumers of the lack of disclosure, or assist consumer advocacy groups.

3.2 Information failure

Definition: Information failure occurs when parties within the market fail to discover or communicate information that may facilitate a more efficient market outcome. This leads parties to undertake actions that are not optimal, leading to market inefficiencies and therefore market failure.

Subcategories: Information failure can manifest itself in four different ways, including:

- information deficiencies
- information bias
- co-ordination failure
- incomplete contracts.

3.2.1 Information deficiencies

Definition: Information deficiencies occur when all parties to a transaction lack sufficient information on key aspects of the transaction and are forced to use proxy information as a substitute. This often leads to an inefficient allocation of resources and is regarded as a form of market failure. In this case, all parties are aware that there is an information deficiency.

An example of information deficiencies can include determining whether an agricultural product contains an essential chemical compound, which would otherwise require technical expertise of both the buyer and seller.

Private solutions: Private industry groups, being aware of this deficiency, can co-ordinate provision of the expertise, knowledge or technology (through training) required to overcome the deficiency.

Government response: The government can address this market failure by:

- providing information services or increasing the scale or scope of existing information services
- providing training to key groups within an industry to help overcome this issue
- undertaking, purchasing or subsidising research.

Subcategories: Information deficiencies can also exist as statistical discrimination.

3.2.1.1 Statistical discrimination

Definition: Statistical discrimination occurs when a contract maker cannot determine true value due to limited information. Instead, the contract maker, such as an employer during the hiring process, might rely on broad statistical averages between groups which correlate with characteristics that are valuable to them. This can be on socio-economic status, race, age or gender as well other characteristics such as previous employment and whether the candidate is currently employed.

By relying on these correlations a contract maker may not be fully effective in maximising value, leading to higher costs for the contract maker and therefore causing them to under-provide within the market. It also creates disincentives for individuals within the groups which are statistically discriminated against, causing them to participate less in the market or pursue preparatory actions, such as training or education. This also leads to under-provision within the market and can result in a self-reinforcing cycle over time as statistically discriminated groups signal a lower average quality the more discouraged they are.

Private solutions: It is also possible for private groups to improve outcomes by creating and offering systems that would allow affected groups to improve their signalling, for example, charitable job skills training programs for young unemployed people.

Another way is to form privately led resolutions, or advocacy, that can help affected groups overcome forms of statistical discrimination.

It is also possible for private contracting parties to take measures to address this issue, as they are generally penalised for undertaking statistical discrimination. For example, a firm capable and willing to test its job applicants on relevant metrics is expected to do better than one that relies only on group averages for employment decisions.

Government response: To counter this market failure, the government may be able to improve the ability for individuals within affected groups to signal their value, for example, evidence of education and training.

3.2.2 Misinformation

Definition: Misinformation occurs when some or all parties have flawed information, including incorrect risk perceptions, due to the use of an inaccurate proxy as a substitute for the correct information. In this case, the market is generally not aware that the information is deficient. This leads to inefficient market outcomes that are considered a form of market failure.

An example of this is misinformation distributed through spam emails.

Private solutions: Specialised bodies in the private sector, such as research organisations, may be able to distribute knowledge of this deficiency to those involved in the market through the media or industry or consumer advocacy groups.

Government response: The government can resolve this market failure through:

- awareness campaigns
- certification or information disclosure
- undertaking, purchasing or subsidising research to demonstrate (or refute) the suspected negative effects of products.

3.2.3 Co-ordination failure

Definition: Co-ordination failure occurs when parties in a market do not achieve efficient transaction outcomes because they do not coordinate their decision making. This can be shown when one party decides that they will only act if/when a second party has acted, and vice versa. This can lead to situations where neither party acts, based on a mutual belief that the other won't act, creating a self-fulfilling cycle. This concept is closely, but not completely, tied with the concept of network externalities (see section 2.2.2.1).

Coordination failure can also contribute to exacerbating economic downturns, where the 'expectation' of downturn from one party may cause them to downsize (labour or production), which then artificially influences the 'actual' demand, causing a real downturn and the requirement of other parties to downsize.

Private solutions: The private sector can resolve co-ordination failure through privately led co-ordination activities, such as industry conventions. This works best when the industry is interconnected and can easily communicate within and between firms in a productive way.

Government response: The government can resolve this market failure through:

- government-led co-ordination activities
- co-operative measures (such as engaging in conferences or implementing legislation)
- creating institutions that build social capital
- providing the co-ordination service directly.

3.2.4 Incomplete contracts

Definition: Incomplete contracts is a market failure that occurs when parties encounter difficulties in forming contracts due to the complexity of unknown and unforeseen permutations and combinations of future events

and/or the contractually insecure investments that may be required prior to a contract being formed. This often leads to a general unwillingness by parties to form contracts, thereby resulting in an under-provision within the market.

When dealing with complex situations, parties generally cannot account for every possible future contingency as it might simply be too complex or resource-consuming to account for these in a binding contract. Typically, contractual agreements remain incomplete and require ex-post (after the fact) negotiation, or formal dispute to resolve.

An example of situations that may give rise to incomplete contracts is that of medical insurance. It is unlikely that an insurance company will offer medical insurance that covers any or every possible medical test or procedure, as the risks of contracting each medical condition and the costs of conducting each test (particularly with changing technology) cannot be easily calculated.

Incomplete contracts also have the potential to result in the 'hold-up' problem, whereby the incomplete contract potentially empower one party to 'hold-up' the other party with ex-post negotiations favourable to one party but not the other.

Private solutions: The private sector can resolve this issue by using common law to uphold contractual obligations. They also can use proxy measures, like perceived reliability and reputation, in order to create an incentive for individuals to act in a co-operative manner.

Government response: The government can intervene to reduce the impact of this market failure through the following activities:

- the provision of effective business practice legislation
- providing information and legal services.

Merit (and demerit) goods: A merit (and demerit) good is a term used to describe the good or service provided (or the good or service avoided) as a solution to the problem of information failure. It is generally assumed that merit goods are better for the consumer than the consumer perceives. Thus, when consumers are faced with information failure and are unable to perceive the full value of these merit goods, they are generally under-consumed (relative to an efficient market).

The concept of a merit good is closely related to the concept of positive externalities (see section 2.2.2). (Likewise, a demerit good is closely related to the concept of negative externalities – see section 2.2.1).

Despite the positive benefits that would likely accrue to the consumer and society as a whole from the adoption of merit goods, the provision of such goods would be subject to meeting the conditions for government intervention as addressed in the appropriate sections on Information Failure (section 3.2) and Externalities (section 2.2) above.

Examples of merit goods might include vaccinations, education and some health services.

Appendix A: Market failure categories

The three broad categories

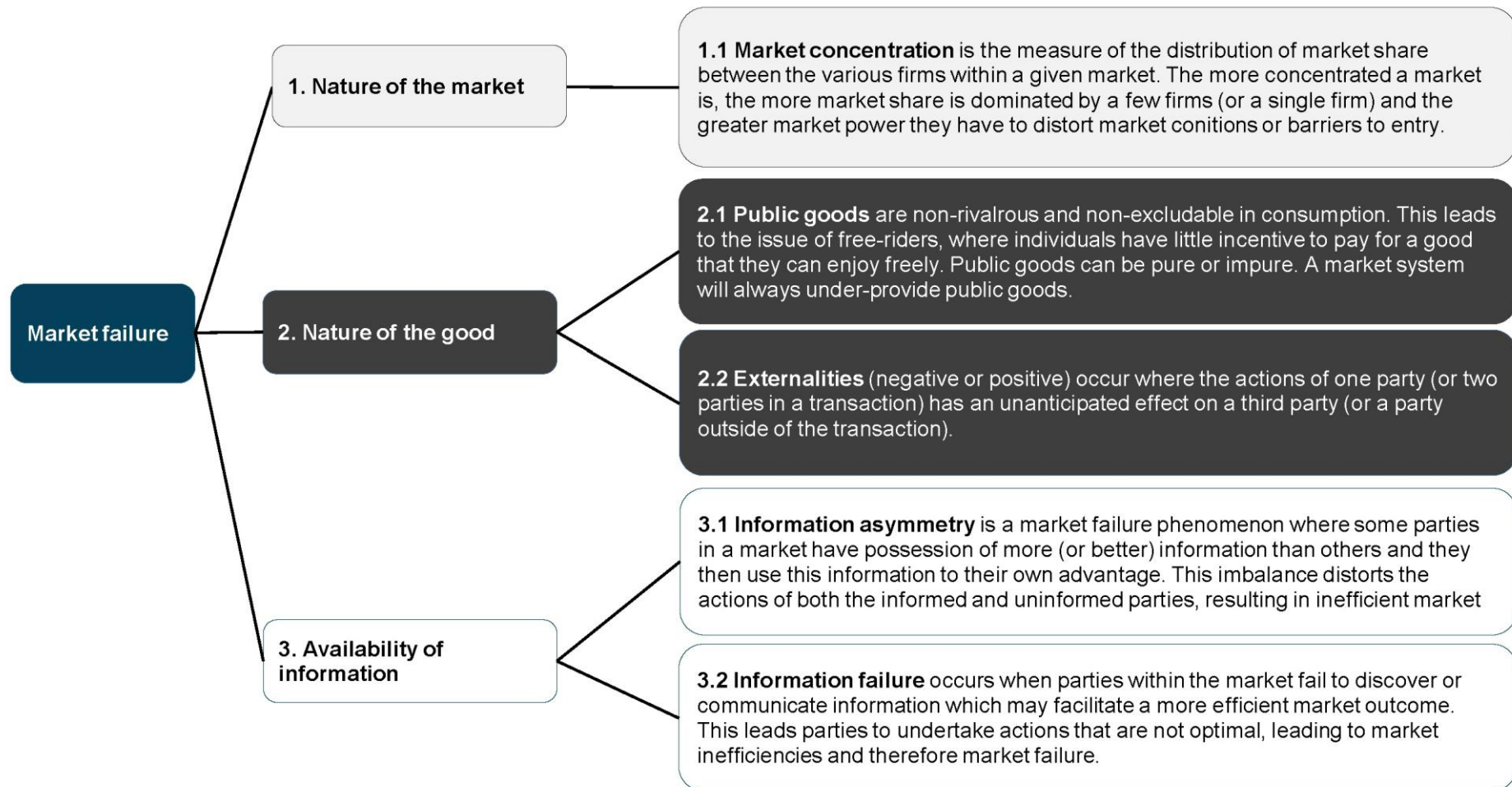


Figure 2. The three market failure categories: 1. Nature of the market, 2. Nature of the good and 3. Availability of information

Category 1: Nature of the market



Figure 3. The nature of the market

Category 2: Nature of the good

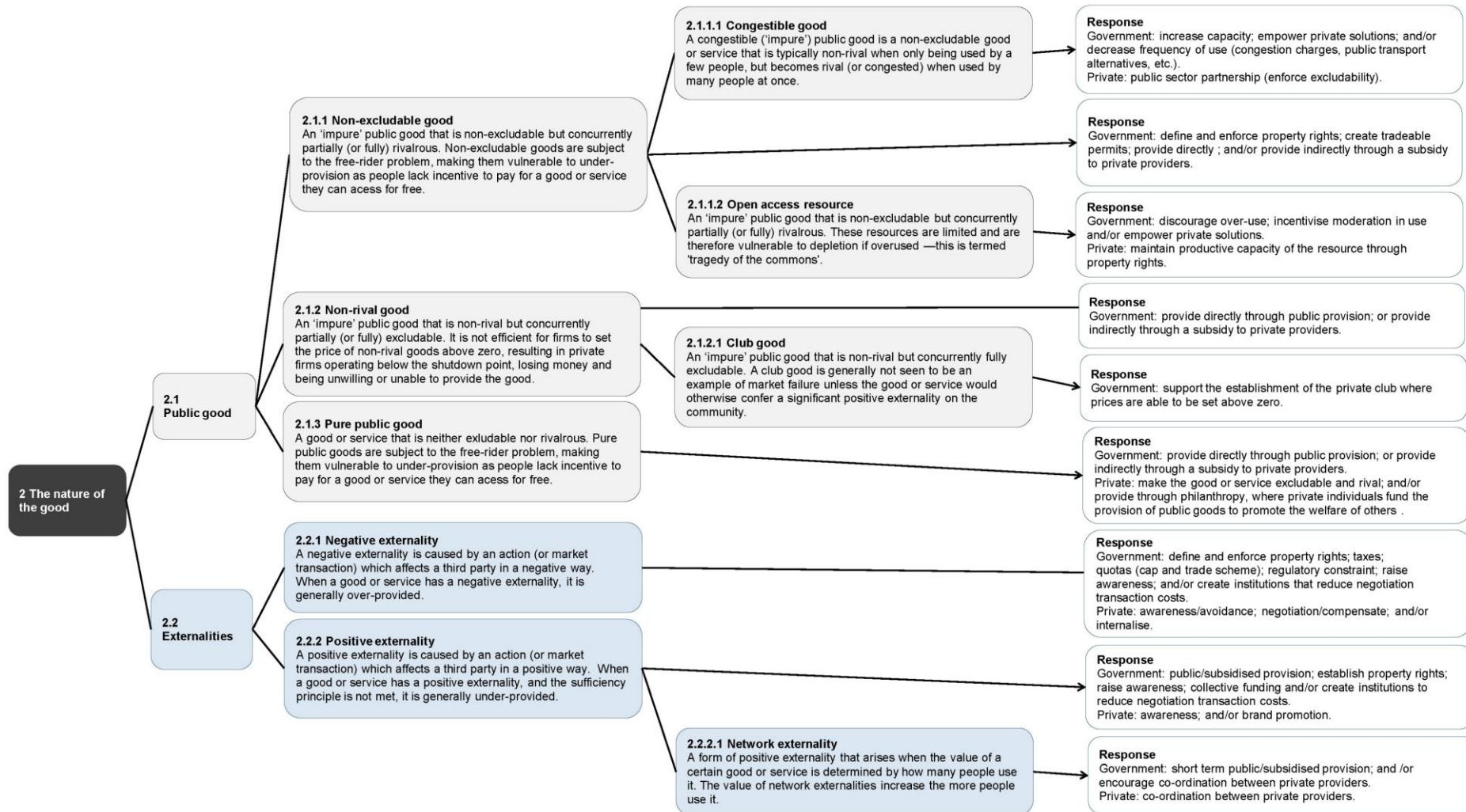


Figure 4. The nature of the good

Category 3: Availability of information

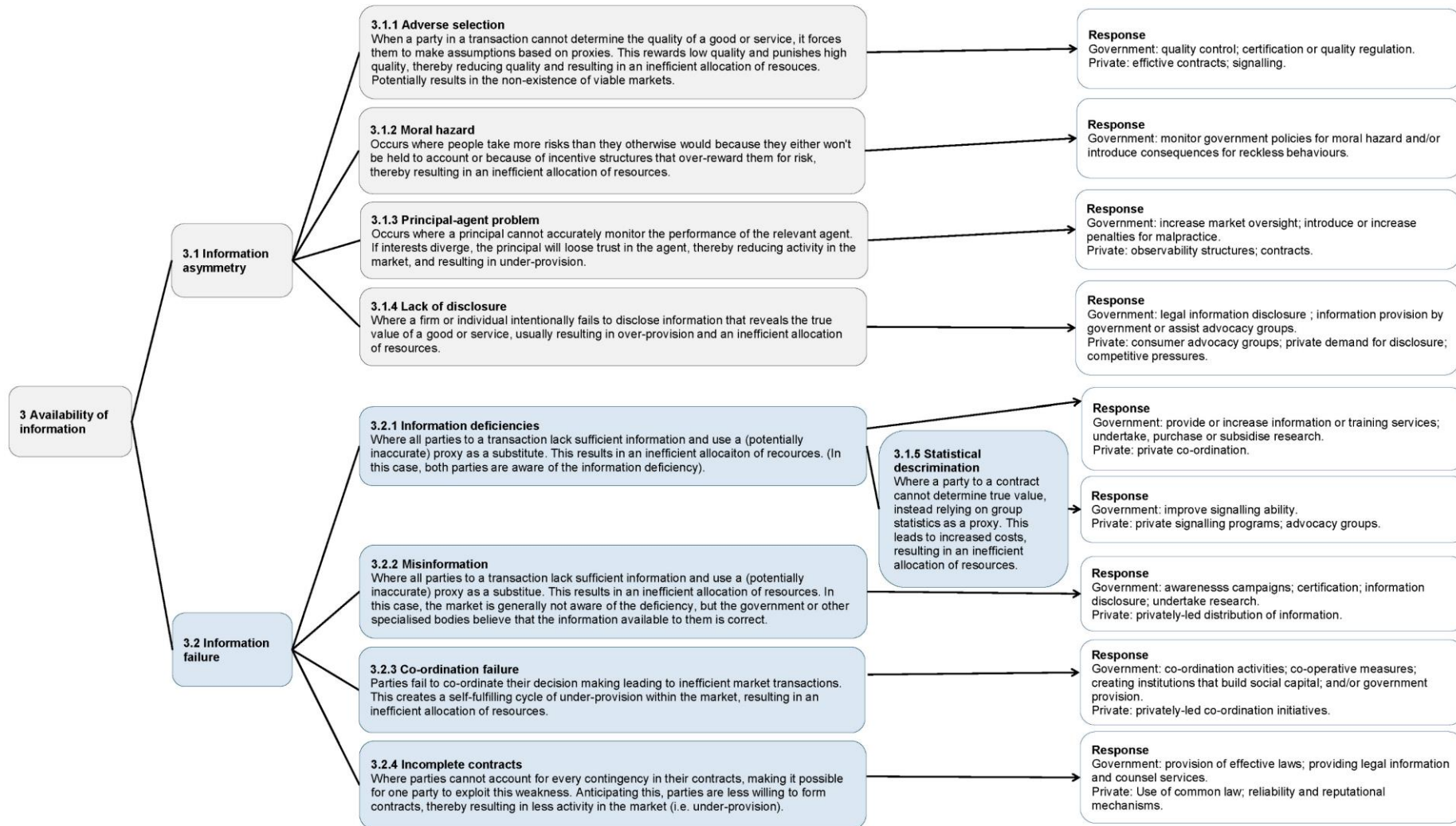


Figure 5. The availability of information