

The Economic Impacts of Potential Illegal Phoenix Activity

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Australian Government
Australian Taxation Office



Fair Work
OMBUDSMAN



ASIC
Australian Securities & Investments Commission

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Executive summary

Over the four financial years of 2012-13 to 2015-16, more than a million Australian businesses ceased operating.¹ Of those, 36,532 were business failures resulting in insolvency with an external administrator appointed.² In most cases, these may have been legitimate and honest commercial failures; in other cases these failures may have been deliberate.

The deliberate and systematic liquidation of a corporate trading entity which occurs with the intention to avoid liabilities and continue the operation and profit taking of the business through other trading entities is known as illegal phoenix activity. Phoenix companies arise from the ‘ashes’ of a collapse of a commercial entity, leaving behind a trail of avoided outstanding payments to tax authorities, creditors, businesses, customers and employees.

The Inter-Agency Phoenix Taskforce has been established by Australian government authorities to address the actions of ‘potential illegal phoenix activities’³ in a nationally coordinated manner. The Inter-Agency Phoenix Taskforce is made up of all government agencies (29 agency members including State and Territory Revenue Offices as at June 2018) that have an interest or role in monitoring and addressing potential illegal phoenix activity. The Taskforce has two broad functions; intelligence sharing and strategic oversight of agencies activities. These roles have been established with a view to jointly identify, manage and monitor suspected illegal phoenix activity.

While Taskforce members have participated in compliance and monitoring activities to combat illegal phoenix activities for some time, for most of that time there has not been an intelligence tool to assist in defining the potential illegal phoenix population where Taskforce activities could be targeted. The establishment of the Australian Taxation Office (ATO) Phoenix Risk Model (PRM) has been a key progression in this area as it allows for the identification of the potential illegal phoenix population, including a better understanding of the incidence and cost associated with this activity.

Significant advancement in measuring potential illegal phoenix activity has been achieved through the development of the PRM and better information sharing through the establishment of the Taskforce. Despite this, there remains a broad range of the direct costs⁴ and total economy-wide impacts⁵, which suggests that more can be done to establish the true cost of potential illegal phoenix activity.

This report presents two separate groups of impacts resulting from the activity of potential phoenix organisations. These impacts are: direct costs and economy-wide

¹ Australian Bureau of Statistics (2017) *Counts of Australian Businesses, cat no 8165.0*. The count of business exits over those four years was 1,085,106

² Australian Securities & Investments Commission (2016) *Insolvency statistics: External administrators’ reports (July 2015 to June 2016)*, Report 507 and Australian Securities & Investments Commission (2014) *Insolvency statistics: External administrators’ reports (July 2013 to June 2014)*, Report 412

³ For the purposes of this report ‘potential illegal phoenix’ refers to all entities and activity that shows risk indications of amounting to illegal behaviour

⁴ The immediate cost to affected parties

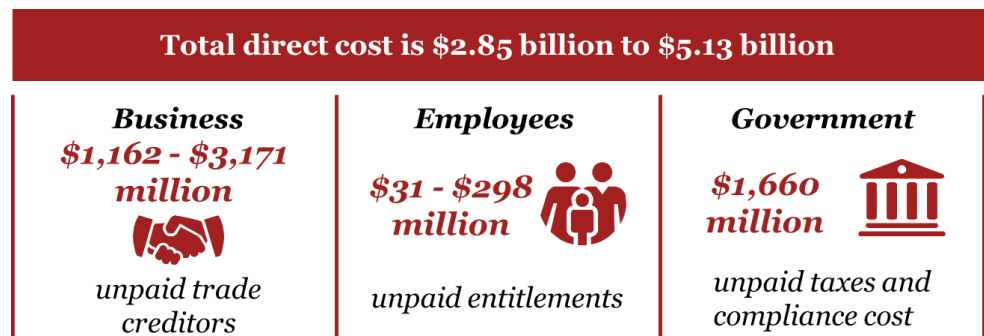
⁵ These impacts consider how the direct costs incrementally affect (or flow-on to) the whole economy

impacts. These groups of impacts are not interchangeable, consider differing types of costs to the economy and are not mutually exclusive. Therefore, these groups of impacts should be considered separately.

Direct costs

Direct costs refer to the immediate costs to the lawful affected parties as a result of potential illegal phoenix activity. The following diagram shows the direct impact on those that are bearing the brunt of this problematic behaviour.

Figure 1: Direct cost of potential illegal phoenix activity (annual impact in 2015-16)



Source: PwC analysis using data provided by the ATO

The direct costs of phoenix activity have been considered previously by PwC in a 2012 report. Since 2012, the work of Taskforce members has resulted in better available information which could be utilised for this study. This information allowed for tailored examination of known costs, requiring less need for extrapolating data. Hence, this updated report applies a new and more sophisticated data driven risk based model and extends the analysis to costs not previously considered.

Total economy-wide impacts

Total economy-wide impacts consider both sides of the exchange between a potential illegal phoenix entity and a lawful party. This recognises that where someone encounters a cost, another party may encounter a benefit. Therefore, the direct cost may have no net impact on the economy (but rather a private transfer from one party to other). However, these costs have distortionary impacts leading to inefficiencies which can result in a cost to the economy as whole.

The economy-wide estimation approach examines the incremental cost of this exchange and then examines the total effects to spending, investment, taxation and other behaviours using computable general equilibrium (CGE) modelling. This shows the net effect (of losses, gains and the flow-on effects of both) to the Australian economy of potential illegal phoenix activity is \$1.8 billion to \$3.5 billion lost gross domestic product (GDP). This represents approximately 0.11 per cent to 0.21 per cent of GDP in 2015-16.

Phoenix activity has a range of impacts on the Australian economy. Our analysis highlights the quantum of this problem and the importance of ongoing investment in monitoring and mitigating this problematic and illegal behaviour. By modelling the broader economy-wide impacts in this report, we can show that in addition to the direct costs incurred by employees, businesses and government, there are also flow-on losses through the supply chain. Successfully combating potential illegal phoenix activity in a cost-effective manner could provide a significant boost to the Australian economy.

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1 Introduction

PricewaterhouseCoopers Consulting (Australia) Pty Limited (PwC) was engaged by the Australian Taxation Office (ATO), the Fair Work Ombudsman (FWO) and the Australian Securities and Investments Commission (ASIC) as members of the Inter-Agency Phoenix Taskforce to build on previous work conducted by PwC. This was a three-part project examining phoenix activity which comprised a review of the ATO Phoenix Risk Model (PRM), development of an evaluation framework and economic impact analysis. This report represents the culmination of that work, and presents an assessment of the total impact of potential illegal phoenix activity on the Australian economy.

1.1 Overview of phoenix activity in Australia

It has historically been difficult to determine a single agreed definition of phoenix activity (and what constitutes illegal or fraudulent phoenix activity) in Australia. However, it broadly refers to the deliberate and systematic liquidation of a corporate trading entity which occurs with the intention to avoid tax and other liabilities, such as employee entitlements, and to continue the operation and profit taking of the business through other trading entities. It takes its name from the mythical creature, the phoenix, as the corporate form is used to incur costs that will not be paid as the intention is to liquidate the company and for the core of the business to start again in a new corporate form, debt free, rising like a phoenix from the ashes.

It is recognised not all behaviour involving liquidation or closure of a business is necessarily concerning or illegal. Corporate structures were created to encourage individuals to be entrepreneurs and take a chance on starting and operating a business without extreme personal consequences. Where a business has been responsibly managed, but genuinely fails, that business may continue after liquidation by using another corporate entity without necessarily being involved in illegal phoenix activity.

Because of this divide between behaviour that is concerning and that which is not, regulatory agencies have tried to define what behaviour they are actually affected by and want to target. Taskforce members all refer to this behaviour of concern as ‘illegal phoenix activity’ and define it as follows:

- ASIC defines illegal phoenix activity as involving ‘circumstances where: a company fails and is unable to pay its debts; directors of that company act in a manner which intentionally denies unsecured creditors (usually small business and employees) equal access to that company’s assets in order to meet unpaid debts; and within some period of time soon after the failure of the initial company (usually within 12 months), a new company commences using some or all of the assets of the former business, and is controlled by parties related to either the management or directors of the previous entity’⁶

⁶ ASIC (2016) *Illegal phoenix activity*, accessed at <http://asic.gov.au/regulatory-resources/corporate-governance/corporate-governance-articles/illegal-phoenix-activity/>

- ATO defines illegal phoenix activity as ‘when a new company is created to continue the business of a company that has been deliberately liquidated to avoid paying its debts, including taxes, creditors and employee entitlements’.⁷

In assessing whether a particular event constitutes illegality, definitions usually rely on intention or another specific state of mind of the perpetrator. As such, it can be very hard to objectively identify this intent for illegal phoenix behaviour on a large scale, as opposed to identifying phoenix type behaviour based on data indicators. Therefore, measuring the exact quantum of illegal phoenix behaviour with certainty is difficult. However, significant inroads have been made in data driven attempts to profile and identify behaviour which is more likely to constitute illegal phoenix activity, as discussed in the next section.

1.2 Taskforce agencies involved in mitigating illegal phoenix activity

Illegal phoenix activity can have a broad range of negative effects on society, with unpaid creditors (including employees) losing entitlements, lawful businesses not getting paid for goods or services delivered or never receiving goods or services they have paid for and governments missing out on taxation revenue. Because of this range of effects, a variety of government agencies are concerned by, and have an interest in mitigating, illegal phoenix activity:

- the ATO is an unsecured creditor and is therefore invested in mitigating the federal tax avoidance issues
- the FWO and Department of Jobs and Small Business have an interest in protecting the interests of employees who are not being paid their legal entitlements
- the ASIC, as the administrator of the *Corporations Act*, has responsibility for monitoring the abuse of the corporate form and any breaches of the legislation that is occurring from the illegal behaviour, particularly in regard to company directors breach of director duties provisions when they facilitate and participate in illegal phoenix activities and consideration of the role and responsibility of insolvency practitioners and pre-insolvency advisers in facilitating illegal phoenix activity and improper transactions in the face of insolvency
- state revenue offices (SROs) are, similar to the ATO, losing taxation revenue as an unsecured creditor of businesses, particularly in regards to payroll tax
- other agencies may also be responsible for monitoring associated illegal behaviour, such as the Australian Federal Police or the Australian Competition and Consumer Commission.

As all of these agencies have an interest or a responsibility in this area, a major development in mitigating and combating illegal phoenix activity has been to come

⁷ ATO (2017) *Illegal phoenix activity*, accessed at <https://www.ato.gov.au/General/The-fight-against-tax-crime/Our-focus/Illegal-phoenix-activity/>

together as an Inter-Agency Phoenix Taskforce to share information, collaborate and collectively respond to the threat of illegal phoenix activity.⁸

This focus on sharing information between Taskforce members has been a key strategy to mitigate illegal phoenix behaviour because, as previously mentioned, the ability to identify illegal behaviour and the true perpetrators has been an issue in the past. The Taskforce has been able to facilitate some important data driven projects including identifying significant potential illegal phoenix operators and Taskforce data feeding in to the PRM.⁹

1.3 Other studies on phoenix activity

Phoenix activity has been an ongoing concern for governments and regulators in Australia and overseas. There have been several important studies and inquiries in to the issue that inform this report and any ongoing work in to the issue. These studies are summarised in the following sections.

1.3.1 Australian Securities Commission research

The research published in 1996 by the Australian Securities Commission (ASC, the predecessor of ASIC) — *Phoenix activities and insolvent trading* — has long been the most significant primary research in to the impact of phoenix activity. The report sought to provide an evidence base on which ASC could make decisions in relation to this behaviour and its impact on small to medium enterprises.

Although the report considered many issues, the most important in terms of quantifying the impact of phoenix activity was the phone survey of businesses on their interaction with phoenix operators and the cost incurred to their lawful business. The reported results of this research were that approximately 1 per cent of all registered businesses are negatively impacted by phoenix activities each year and the quantum of that impact was estimated to be 0.13 per cent to 0.28 per cent of Australian gross domestic product (GDP).

1.3.2 Treasury proposals paper

In 2009, the Australian Treasury released a proposal paper titled *Action against fraudulent phoenix activity*. This paper included analysis of taxes avoided, consideration of high risk industries and reflection on existing measures to deter fraudulent phoenix activity. It also went on to present possible options to address fraudulent phoenix activity.

This paper did not deeply consider quantification of impact or present any new data on incidence or cost. Its main contribution was publicly stating the often presented figure of \$600 million estimate of risk to ATO revenue (in 2009-10 terms).

1.3.3 Previous PwC report

PwC's 2012 report — *Phoenix activity: Sizing the problem and matching solutions* — was the first major public estimate of the impact of phoenix activity on the whole economy, not just one particular group of creditors (although there was a focus on employees as the report was commissioned by the FWO). The report recognised the significant lack of data collection on phoenix activity and in the absence of better evidence took a 'risk-based' approach to quantifying the impact of phoenix activity on the Australian economy. This risk based approach used stakeholder

⁸ More information on the Taskforce can be found on the ATO website [here](#).

⁹ The PRM is discussed further in Section 2.2 and has been a major development since the last PwC report in 2012

feedback and literature review to identify a number of industries as being at risk of phoenix activity. Each industry was then ascribed a 'risk rating' (low risk, medium risk or high risk) and modelled. The result of this approach estimated the total cost of phoenix activity to be \$1.78 billion to \$3.19 billion per annum (in 2009-10 terms).

1.3.4 *University of Melbourne project*

A University of Melbourne team has recently conducted a Regulating Fraudulent Phoenix Project. The project had three reports: *Defining and Profiling Phoenix Activity* (published in December 2014), *Quantifying Phoenix Activity: Incidence, Cost, Enforcement* (published in October 2015) and *Phoenix Activity: Recommendations on Detection, Disruption and Enforcement* (published in February 2017).

The first report was particularly important due to its exploration of differentiating illegal phoenix activity from legal or more innocent activity. The report puts forward a spectrum of increasing harmful behaviour indicated by five categories.

- 1 **Legal phoenix or business rescue**, where liquidation and restart was to legitimately help the business and can be seen as the best outcome for creditors and employees.
- 2 **Problematic phoenix**, which has not yet amounted to illegal behaviour on intent to defraud, but is no longer behaviour which is the most beneficial option for creditors and employees.
- 3 **Illegal type 1**, which is behaviour where the perpetrator has an intention to illegally avoid debts, but this intention is only formed once the business is already in trouble. This is equated to a 'get out of jail free card'.
- 4 **Illegal type 2**, which is also behaviour where the perpetrator has then intention to illegally avoid debts, but this intent is held from the beginning of setting up the business. This represents phoenix behaviour being used as a business model.
- 5 **Complex illegal phoenix activity**, which is illegal type 2 behaviour with compounding factors such as the business being involved with more serious fraud or money laundering or the type 2 behaviour being more repeated and systematic.

A second report shares a purpose with the first report in that it also examines quantification of phoenix activity and the impacts. It contains an examination of all public data, as well as data provided to the University of Melbourne research team by Taskforce members.¹⁰ The second University of Melbourne report highlighted uncertainties and gaps in data on the incidence and impact of phoenix activity. However, much of this data has continued to evolve in the interim since that report was released. Due to the differing nature of the University of Melbourne reports, that work does not provide a consolidated quantification on the quantum of illegal phoenix activity and associated impacts on the economy.

The third University of Melbourne report looks at enforcement mechanisms and makes recommendations on detecting and reducing illegal phoenix activity.

¹⁰ Most of this data, with the exception of legal and media analysis, is also discussed later in this report. However, much of this data has been updated since the release of the second University of Melbourne report. For example, the report examined earlier versions of the PRM which did not yet contain additional Taskforce member data sets.

2 Modelling approach and direct costs

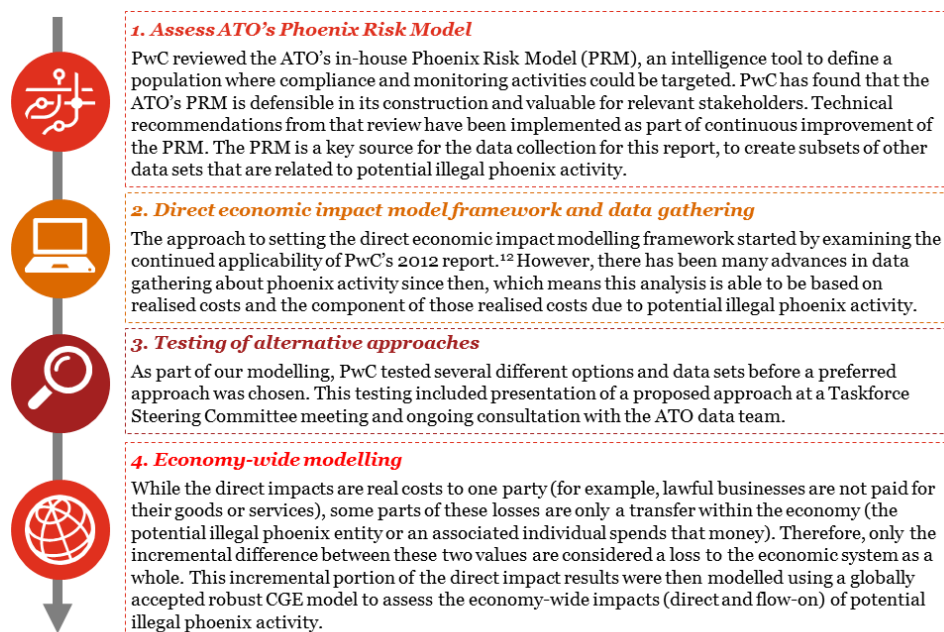
2.1 Modelling framework

It is widely understood that phoenix activity has a negative impact on employees, businesses and governments, and therefore, the whole Australian economy. To understand the quantum of these costs, the economic impact of potential illegal phoenix activity¹¹ is considered in two different ways in this report – the:

- first is a model framework to analyse the direct costs to employees, businesses and government
- second uses computable general equilibrium (CGE) modelling to examine the incremental portion of the direct impact results (excluding private transfers between lawful parties and potential illegal phoenix operators) and the resulting total economy-wide impacts.

Our approach for examining both these types of economic impact is described in the four steps described below.

Figure 2: Summary of approach framework



Source: PwC

¹¹ For the purposes of this report 'potential illegal phoenix' refers to all entities and activity that shows risk indications of amounting to illegal behaviour. This is broadly defined as all entities captured in the PRM and acknowledges that only a component of this activity may be reach the level of illegal phoenix behaviour.

¹² The approach to quantifying the impact of phoenix activity on the Australian economy in that 2012 report was to construct a 'risk-based' model. Based on stakeholder feedback and literature review, a number of industries were identified as being at risk of phoenix activity. Each industry was then ascribed a 'risk rating' (low risk, medium risk or high risk) and modelled.

2.2 Assessing ATO's Phoenix Risk Model

While the ATO (and other agencies) have participated in compliance and monitoring activities to combat phoenix activities for some time, for most of that time there has not been an intelligence tool to define the potential illegal phoenix population where these activities could be targeted.

The ATO's Phoenix Risk Model (PRM) defines the potential illegal phoenix population and risk rates that population through a series of business rules. This risk rating cannot definitively identify illegal phoenix entities, but rather identifies those that exhibit high risk and repetitive indicators. This is why, for the purposes of this report the term 'potential illegal phoenix' entities refers to all entities and activity that illustrate risk indications of illegal behaviour.

Once the population is defined and risk rated, the PRM is then used to inform appropriate strategies. Although the PRM will not capture every single phoenix entity (either due to good deceptive practices or because it is difficult to capture first time phoenix operators), it is logical and evidence-based, making it a robust intelligence tool that allows for detection of phoenix activity and enables more proactive and targeted treatment plans.

The PRM is based on data available to the ATO regarding previous liquidations, outstanding returns and debt, other details of registered entities, and is supplemented by additional intelligence from other areas of the ATO and external agencies, which include the Department of Jobs and Small Business and ASIC. The PRM does not currently link to other sources such as state and territory revenue collection for payroll tax or workers' compensation liabilities, which may be an avenue for future development.

The PRM is ATO-focused and is therefore based predominantly on available ATO data. More specifically, the initial population threshold test requires a debt or threat of debt to the ATO. However, establishing the population within the PRM can then be used to tailor other data sets (such as defining the subset of ASIC external administration reports related to entities within the PRM).

Our review of the PRM, in the context of it being an intelligence tool and not used for case selection, found that it is defensible in its construction and valuable for relevant stakeholders. The ATO has implemented technical recommendations from that review alongside continuous improvement activities before providing the PRM data used in the modelling in this report.

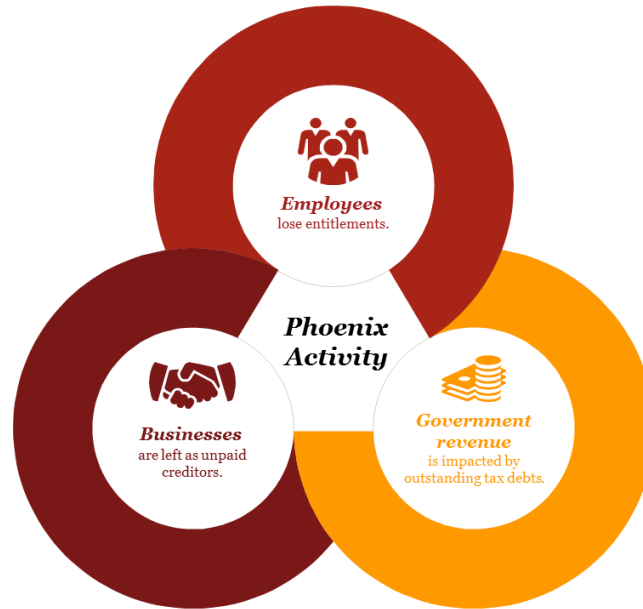
The establishment of the PRM has been a key success achieved by Taskforce members since the 2012 PwC report. The risk-based population used in the 2012 report had to be based on pockets of industry knowledge and anecdotal, rather than data driven evidence. Consequently, use of the PRM for this study is a considerable improvement in being able to understand the incidence and cost of potential illegal phoenix activity.

The PRM population was not, in and of itself, an input in to our direct cost modelling. Rather, it was used as a tool to define data collection from other sources. This allowed the subset of known and recorded costs which are attributed to an entity within the PRM population to be separated from costs of unrelated activity. See Appendix A for limitations around using the PRM for this purpose.

2.3 Approach to examining direct costs

As with our previous report, we took a three-pronged approach to examining the impact of potential illegal phoenix activity, looking separately at impacts to employees, lawful businesses and government, as shown in Figure 3.¹³

Figure 3: Direct costs of potential illegal phoenix activity



Overall, the approach to examining the impact of potential illegal phoenix activity started by looking at the cost of all business failures, across the spectrum of lawful to most problematic. This shows where costs are known and proven to be occurring, regardless of the intent or state of mind of the business operators. In essence, this sets an upper bound of the total cost of phoenix activity, if every business failure was problematic. The component of these known costs that are due to potential illegal phoenix behaviour is then estimated using data driven risk assessments.

This requires three key steps to the approach of estimating the direct costs of potential illegal phoenix activity:

1. **Identify sources of confirmed costs of business failure.** For each of the three components (employees, business and government) the most comprehensive and reliable data source of the cost of business failure was identified. These are the unpaid costs of all business failures, across the spectrum of innocent to the most problematic.
2. **Quarantine the components of those costs that relate to operators that show indication of potential illegal phoenix activity.** Using the PRM as a base, the component of these confirmed

¹³ These are the three key groups that are impacted by potential illegal phoenix activity and does not include the impact on shareholders for two reasons. Firstly, the expert opinion of Taskforce members is that the vast majority of potential phoenix incorporated companies are single shareholder (i.e. a director or related party holds the shares) so no lawful shareholder is impacted. Secondly, data on shareholder losses is not currently captured with losses for creditors which may be a future area of investigation.

costs that can be linked to potential illegal phoenix operators was then separated from the costs of non-problematic behaviour.¹⁴

- 3. Identify costs not captured and remove overlaps between data sources.** Each data source is examined for limitations so that, at a minimum, the costs not captured can be considered and documented. This also allowed any overlap between sources to be identified.

This approach focuses on the ‘known knowns’ and does not rely on the extrapolation of data. However, it does mean that the impact assessment does not capture ‘unknown unknowns’ (i.e. the costs that may be felt by a lawful party, but are not currently captured in the main mechanisms of recording the cost of business failure).

The one exception to this are costs to state government, which are ‘unknown’ in that they are not captured in a single major data set. However, they are deemed as very likely to occur and are therefore included through assumptions detailed below in Section 2.4.3.

As above, the PRM is used to define costs that have indications resulting from potential illegal phoenix activity. However, using the PRM in this way is not without limitations. Specifically, the threshold test reliance on taxation revenue risk means that the PRM population may exclude non-tax related phoenix operators (even if these operators have negative impact on other businesses or employees). Although it is important to recognise these limitations, it should similarly be acknowledged that the PRM is the most reliable source for identifying behaviour that is potential illegal phoenix activity that either currently exists or has previously existed in the Australian context.

How this approach is applied to each of the direct cost components, the data relied on and results from that analysis are detailed in the sections below.

2.4 Direct cost results

The direct cost modelling looks at per annum costs (consistent with the 2012 approach) and is calculated over four financial years (from 2012-13 to 2015-16). These years represent the time over which the current ATO enforcement efforts have been active, the data collection for the PRM has been occurring and for which a full year’s data was available.

The results for these four years are presented below, but caution should be taken when examining trends over this timeframe. This is because the costs are generally over time, the PRM data set that is used to define the potential illegal phoenix component of those cost is set at a point in time.¹⁵ Therefore, this timeseries may not be fully capturing potential illegal phoenix operators moving in and out the market and should not be seen as showing policy effects over the relatively short period examined.

¹⁴ PRM population throughout defers to the full population of entities linked to a risk rated controlling mind (company, partnership, individual and trust entities), run on PRM V2.1, as at 13 October 2017

¹⁵ The risk rating in the PRM is set at the controlling mind (director or similar) level, and then the full population is any entity (company, trust or partnership) that has been connected to that controlling mind. This risk rating is set for at the controlling mind level at a point in time in 2017. However, the linked entities are, in principle, any entity regardless of whether it is currently actively trading, or is insolvent, deregistered or otherwise inactive.

2.4.1 Cost to business

The direct cost to business is estimated to be between \$1,162 million and \$3,171 million in the 2015-16 financial year.

The direct costs to businesses were quantified through the following steps.

- **Identify confirmed costs:** Confirmed costs (here, the cost of business failure on other businesses) is sourced from ASIC external administration reports. The specific reports used are those made following the appointment of an external administrator, known as EXO1 reports, which capture an estimate of all debts left behind when a company goes through insolvency. This captures the cost of all failures (lawful through to most problematic), of a particular type of entity, corporations.
 - The particular information derived from these reports was the unsecured creditor deficiency, as that is the component most likely to remain unpaid, representing a real cost to the creditors.¹⁶
 - EXO1 reports collect only estimates from the external administrator, by indicating where costs fall within certain ranges. The uncertainty presented by this use of bands is reflected in the direct costs estimate.
- **Define the potential illegal phoenix component:** The component of total costs that can be attributed to potential illegal phoenix activity was defined by cross referencing each company with an EXO1 report to the total PRM population and collating the total costs of those companies that can be linked to an entity within the PRM.
- **Examine limitations:** The limitations of this approach for cost to business were examined and their impacts analysed as follows:
 - Secured creditor debt from EXO1 reports was not included as it may overstate impact to include secured debt that may be recovered from the underlying asset. However, asset transfer prior to insolvency is known to be a key phoenix strategy, so some secured debt may also not be recovered. In this way, the direct costs estimate can be seen as conservative.
 - The date used with EXO1 data is when the external administrator is appointed. Therefore, the costs associated with that report have been assumed to occur in that financial year. This may not be accurate as debt may accrue for longer than a year. However, this is assumed to be immaterial in total, as it relates to spreading a total known cost across years.
 - EXO1 data is reported in bands of which the highest is always unbounded at the top end (i.e. 'over \$10 million'). Therefore, there is no range information for reports in this highest band and the contribution to both the low and high scenarios must be the same. This results in a risk that the high estimate is understating the true

¹⁶ Unsecured creditor deficiency should include, in principle, any component of a secured debt that exceeds the value of the security. However, as listed in limitations, there may be exceptions to this.

highest cost if it is well above this range limit. This limitation cannot be addressed with current information.

- Using EXO1 data does not capture costs from potential illegal phoenix entities that are not corporations (i.e. individuals, trusts or partnerships). This exclusion has been made because although the PRM does include these types of entities, the potential illegal phoenix activity is likely to be executed through a corporation related to those entities. Illegal phoenix activity generally relies on the protection of the corporate form, as debts of other types of entities are recoverable from the individuals involved. Therefore, to include debts from other types of entities may overstate the cost borne by businesses (and not eventually recovered).
- Using EXO1 data does not capture costs from potential illegal phoenix entities that have not gone through insolvency. It is anecdotally known that some potential illegal phoenix operators go through deregistration or other mechanisms of ending their business without the appointment of an external administrator. However, this is assumed to be immaterial because if business creditors of these operators were owed any significant amount, it is expected they would trigger insolvency proceedings.

Table 1 shows the estimated direct cost to business of potential illegal phoenix behaviour over the four years evaluated. Note that, as above, this timeseries examines a set population, so cannot be necessarily seen as showing a policy effect.

Table 1: Estimate of direct cost to businesses (nominal)

Financial year	Low	High
2012-13	\$1,586 m	\$3,928 m
2013-14	\$1,162 m	\$3,377 m
2014-15	\$1,026 m	\$2,766 m
2015-16	\$1,162 m	\$3,171 m

Source: PwC analysis using ATO PRM and EXO1 data provided by the ATO.

Note: The range in these estimates represents the uncertainty within bands of costs from the EXO1 data. It does not reflect the uncertainty as to whether the costs are actually attributable to illegal phoenix operators, but rather this estimate includes all potential illegal phoenix costs.

2.4.2 Cost to employees

The direct cost to employees is estimated to be between \$31 million and \$298 million in the 2015-16 financial year.

The direct costs to employees were quantified through the following steps.

- **Identify confirmed costs:** As with business cost, confirmed costs (here, the cost of business failure on employees) is sourced from EXO1 reports.
 - The particular information derived from these reports was the deficiency in employee entitlements, specifically unpaid wages, leave, payment in lieu of notice, redundancy, long service leave and superannuation.
 - EXO1 reports collect only initial estimates from the external administrator, by indicating where costs fall within certain ranges. The uncertainty presented by this use of bands is reflected in the direct costs estimate.

- **Define the potential illegal phoenix component:** As with business cost, the component of total costs that can be attributed to potential illegal phoenix activity was defined by cross referencing each company with an EXO1 report to the total PRM population and collating the total costs of those that can be linked to an entity within the PRM.
- **Examine limitations:** The limitations of this approach for cost to employees were examined and their impacts analysed as follows:
 - Costs are assumed to be in the year that the external administrator is appointed. Therefore, the same limitation as for business cost is noted and assumed to have an immaterial overall effect.
 - The risk regarding unbounded upper estimates discussed in business cost also applies here, but is similarly unable to be addressed.
 - The limitation that EXO1 data only relates to corporation also applies here and is similarly deemed to be immaterial.
 - As with business costs, using EXO1 data does not capture costs from potential illegal phoenix entities that have not gone through insolvency. This is somewhat more problematic for employee cost than for businesses as, anecdotally, employees are less likely to know they are creditors (i.e. not notice missing super payments) or less likely to pursue individual actions to recover debts. However, as these risks are due to lack of information, they are an unknown that is not measurable.
 - Some employee entitlements are legislatively agreed and may be recovered by the employee through mechanisms not related to the potential illegal phoenix entity. Therefore, EXO1 data may overstate the costs to employees if they are eventually compensated by government. To correct for this, a component of employee costs was moved in to the government costs. The component to be moved is calculated as total claims paid¹⁷ under Fair Entitlement Guarantee (FEG) and General Employee Entitlements and Redundancy Scheme (GEERS) for entities that can be linked to both the PRM population and EXO1 reports.

Table 2 shows the estimated direct cost to employees of potential illegal phoenix behaviour over the four years evaluated. Note that, as above, this timeseries examines a set population, so cannot be necessarily seen as showing a policy effect.

¹⁷ Total claims paid is used as this is the amount that is a confirmed cost to government. It is acknowledged that some amounts currently claimed may eventually be paid, but the extent that this will happen is currently unknown.

Table 2: Estimate of direct cost to employees (nominal)

Financial year	Low	High
2012-13	\$129 m	\$483 m
2013-14	\$72 m	\$340 m
2014-15	\$103 m	\$380 m
2015-16	\$31 m	\$298 m

Source: PwC analysis using ATO PRM, FEG and EXO1 data provided by the ATO

Note: The range in these estimates represents the uncertainty within bands of costs from the EXO1 data. It does not reflect the uncertainty as to whether the costs are actually attributable to illegal phoenix operators, but rather this estimate includes all potential illegal phoenix costs

It should be noted that the estimate of direct cost to employees shows a larger variance between the low and high scenarios than for business costs. This variability is a result of the bands reported in the EXO1 data (as discussed above). Specifically, approximately half of the total variability is due to reported data on unpaid superannuation.

While all the other five employee deficiencies in the EXO1 reports (wages, annual leave, pay in lieu of notice, redundancy and long service leave) are reported across nine different bands, superannuation is reported across only four. This necessitates the bands for superannuation being wider resulting in a larger percentage of deficiencies present in the upper bands where the variation is higher.

For example, in publicly available external administration statistics, 19 per cent of superannuation deficiencies are in bands that are more than \$100,000 wide, whereas this is only 3 per cent for wages, annual leave, pay in lieu of notice and long service leave and 12 per cent for redundancy.¹⁸ Although this same analysis cannot be performed on the PRM matched EXO1 data (due to confidentiality, where each company fell in the bands was not provided), it is likely that a similar trend is contributing to the variance between the low and high scenario results for employee costs.

2.4.3 Cost to government

The direct cost to government is estimated to be \$1,660 million in the 2015-16 financial year.

The direct costs to government were quantified through the following steps.

- **Identify confirmed costs:** Confirmed costs (here, the cost of business failure on government) is sourced from three areas:
 - Confirmed unpaid taxes is known and recorded within ATO internal systems. Specifically, this cost of unpaid federal taxes is defined as all written off debt (excluding superannuation guarantee as to not double count the unpaid superannuation included in cost to employees), collectable current debt and insolvent current debt. Disputed current debt was not included as it was deemed too uncertain to be part of confirmed costs (as it is

¹⁸ ASIC (December 2017) *Series 3: External Administrators' reports, Series 3.1 – External administrators' reports for Australia, 1 July 2016-30 June 2017*

still to be determined if this is 'real' debt and the amount of that debt).¹⁹

- Confirmed cost to government of covering employee entitlements is known in total claims paid FEG and GEERS (as above, moved from employee component).
- Confirmed level and cost of staffing dedicated to monitoring and addressing potential illegal phoenix activity is recorded within the ATO and Taskforce members.²⁰
- **Define the potential illegal phoenix component:** As with both business and employees cost, the component of total costs that can be attributed to potential illegal phoenix activity was defined through reference to the total PRM population and collating the total costs of those entities that can be linked to an entity within the PRM.
 - For the ATO debts, this is done directly, as each PRM entity is matched to an ATO profile. For written off debt, all debt linked to a PRM entity is included as potential illegal phoenix cost. For current debt, only debt linked to an 'end dated' PRM entity is included.²¹ If a PRM entity does not have an end date, it is assumed that current debt may be eventually paid (if the entity is still active or through mitigation and policing strategies by the ATO), or that it may become written off debt to be included in future years and is therefore not included.
 - For the FEG and GEERS component, the potential illegal phoenix component is defined as those entities that are doubled linked, to both a PRM entity and an EXO1 report.
- **Examine limitations:** The limitations of this approach for cost to government were examined and their impacts analysed as follows:
 - The way that costs are attributed across years is slightly different for government costs than for business and employee. As government costs does not rely on EXO1 data, the date of appointment of external administrator is not applicable. Instead the ATO debt data was attributed to the year that the particular entity's 'end date' is recorded in ATO systems. For written off debt of entities with no end date, the debt was distributed in line with additional ATO analysis.²² Assigning costs to a single year may not be accurate as debt may accrue for longer than a year.

¹⁹ ATO debt data provided was split in to current (debt still owed) and written off (debt considered no longer to be collectable by being deemed to be uneconomical to pursue due to likelihood of recovery and cost required to recover) debt. Current debt is further divided in to collectable, insolvent and disputed.

²⁰ The costs for federal agencies to staff their phoenix activity monitoring and policing strategies in 2015 were reported by the ATO in both dollar cost and amount of full time equivalent (FTE). In consultation with the ATO, these figures are deemed representative of current activities after adjusting costs into current terms for each applicable year using a wage price index.

²¹ The 'end date' of an entity in ATO systems is manually assigned as when the entity is deemed to no longer be active. This could be an insolvency date, a deregistration date, or other data driven assessments within the ATO. Not all PRM entities will have an end date, which may imply they are still active, or it may imply that ATO systems are still assessing that entity.

²² A sample of 262 PRM entities (with no end date but with written off debt) was taken and additional ATO data collection and analysis attributed those written off debts to a particular year. This sample distribution was then used to assign all non-end dated written off debt.

Additionally, this may result in the government costs of a potential illegal phoenix operator being assigned to a different year than the business and employee costs. However, this is assumed to be immaterial in total, as it relates to spreading a total known cost across years.

- The coverage of the confirmed costs for ATO debt is wider than the EXO1 data used for business and employees. While EXO1 data covers only corporations, the ATO debt includes corporations, trusts and partnerships. This is not a limitation on the government estimate as this wider coverage makes it more accurate. However, this difference to the other direct costs is worth noting.
- The final limitation is that these data collections for government costs are all federally focused and do not cover the possibility of state and territory governments incurring costs. However, it is likely that potential illegal phoenix operators will avoid state based taxes as they do with federal taxes, and it is known that state based agencies also incur staffing costs and have phoenix monitoring programs. Therefore, this limitation was addressed by included estimates of taxes and staffing as follows:
 - For state based taxes, in absence of any state based information in the PRM, it is assumed that potential illegal phoenix entities avoid paying relevant state based taxes (namely payroll tax) at the same rate that they avoid paying federal taxes. The ATO debt is calculated as a percentage of total relevant federal tax revenues (company income tax and taxes on the provision of goods and services).²³ This percentage is then applied to total tax revenues for payroll taxes across all states and territories to estimate the revenue at risk for states and territories due to potential illegal phoenix activity.
 - This assumption covers the major state based tax, but does not provide an estimate of unpaid workers' compensation liabilities (as there is no proxy available in the PRM data). This is a limitation that cannot be addressed.
 - No data is available on state agencies' staff costs, so it was assumed that states and territories spend proportionally the same on staffing as the Commonwealth in context of their revenue at risk (i.e. staff costs as a percentage of tax revenue lost is the same). This assumption seems reasonable in the absence of any other data, as although states do not have the large staffing needs of the federal bodies (such as the ATO), there will also be many losses of efficiencies when running eight small tax compliance programs across all jurisdictions. Given that the state and territory tax estimate is small, this staffing estimate is similar minimal and so is included more for completeness, contributing only marginally to the total cost estimate.

²³ Using Australian Bureau of Statistics (2017) *Taxation revenue 2015-16, cat no 5506.0*

Table 3 shows the estimated direct cost to government of potential illegal phoenix behaviour over the four years evaluated. Note that, as above, this time series examines a set population, so cannot be necessarily seen as showing a policy effect.

Table 3: Estimate of direct cost to government (nominal)

Financial year	Low	High
2012-13	\$1,095 m	\$1,095 m
2013-14	\$1,621 m	\$1,621 m
2014-15	\$1,372 m	\$1,372 m
2015-16	\$1,660 m	\$1,660 m

Source: PwC analysis using ATO PRM and FEG data provided by the ATO, with ABS cat. no. 5506.0.
Note: There is no difference in the low and high scenarios for government as the range was design to reflect uncertainty in known costs which is not applicable in relation to ATO debt data.

2.4.4 Total direct costs

Figure 5 provides a summary of the estimated direct costs that potential illegal phoenix activity has on employees, businesses and governments.

Figure 5: Direct costs results (annual impact in 2015-16)



Source: PwC analysis as above using ATO PRM, FEG and EX01 data provided by the ATO.

Table 4 shows that over the four years examined, the total magnitude of these costs is similar. The dip in 2014-15 does not appear to be driven by a particular data set as it is reflected in both business and government costs that have different underlying confirmed cost sources. Anecdotally, it may be a response to new measures to support policing of illegal phoenix activity being introduced in 2014 resulting in more than average business failures occurring and costs being attributed to the 2013-14 year that might have otherwise been expected in 2014-15. However, this cannot be confirmed with the number of different factors influencing total direct costs.

Table 4: Direct costs estimate (nominal)

Financial year	Business		Employees		Government		Total	
	Low	High	Low	High	Low	High	Low	High
2012-13	\$1,586 m	\$3,928 m	\$129 m	\$483 m	\$1,095 m	\$1,095 m	\$2,810 m	\$5,510 m
2013-14	\$1,162 m	\$3,377 m	\$72 m	\$340 m	\$1,621 m	\$1,621 m	\$2,855 m	\$5,338 m
2014-15	\$1,026 m	\$2,766 m	\$103 m	\$380 m	\$1,372 m	\$1,372 m	\$2,500 m	\$4,518 m
2015-16	\$1,162 m	\$3,171 m	\$31 m	\$298 m	\$1,660 m	\$1,660 m	\$2,852 m	\$5,128 m

Source: PwC analysis as above using ATO PRM, FEG and EX01 data provided by the ATO.

As discussed above, the range in the direct cost estimates reflects uncertainty in the EXO1 data which is reported within certain bands. The Taskforce is currently working on improving the availability and accuracy of this data as it relates to potential illegal phoenix activity.

In general, the way that this direct cost estimate has been set up is that the three core drivers of the estimate (EXO1 data, the PRM population and ATO recorded debts) are mechanisms within the control of Taskforce members. This enables them to continually improve these data collections for measurement of the cost of phoenix activity going forward. It also means that these key measures that will show changes in cost, potentially in response to education, monitoring and enforcement activities, will be able to be examined by the parties engaging in those activities.

2.5 Costs not captured in the direct analysis

While this report includes new cost categories not previously examined, it is recognised that some costs are not currently able to be captured in the direct analysis. These costs include, for example:

- employee stress
- discouragement effect on labour supply
- social welfare burden through increased government transfers
- competition effects.

Although these costs are not able to be quantified as direct impacts, some of these will be captured to an extent indirectly in the economy-wide modelling discussed in the next chapter. This is discussed in each of the sections below and should be read in conjunction with the limitations of the CGE analysis explored in Appendix B).

2.5.1 Employee stress

This is the cost of stress on workers in potential illegal phoenix businesses arising from instability in their work environment or as a direct result of losing their job or outstanding entitlements. These costs are not reliably captured in the direct costs as the data is not readily available as it sits outside of traditional market forces. Similarly, although labour dynamics and productivity are captured in the CGE analysis, this does not capture the private cost to the individual of stress and without reliable direct costs inputs the economy-wide impacts will not capture the cost of employee stress.

Stress can have adverse effects on household finances as it has been shown to have adverse health effects,²⁴ and therefore is seen as an increase personal costs of 'impaired physical and mental functioning, more work days lost, increased impairment at work, and a high use of health care services'.²⁵

²⁴ Aneshensel, C. (1992) *Social Stress: Theory and Research*, School of Public Health, University of California: Los Angeles

²⁵ Kalia, M. (2002) *Assessing the economic impact of stress – the modern day hidden epidemic*. *Metabolism*, Vol 51, no. 6

Stressed workers can also impact the wider economy through lower labour productivity by:

- adding to the cost of doing business due to absenteeism
- errors of judgement and action
- conflict and interpersonal problems
- violence
- customer service problems
- resistance to change
- feelings of ‘no time to do it right’
- loss of intellectual capital.²⁶

A similar impact of stress may also be felt by people within the honest businesses that interact with potential illegal phoenix operators. As another kind of creditor, they will also bear stress of not being paid their full entitlements, which can have personal and professional impacts.

2.5.2 Discouragement effect

If workers are not receiving their full entitlements, they are effectively being paid a lower real wage than the market appears to be offering. This discourages workers from entering the labour force leading to a lower real participation rate, which results in a cost to the economy.

This discouragement effect will be partly captured in the economy-wide analysis, which allows the price of labour to change and for employees to change their supply of labour in comparative industries in reaction to these price changes. However, this captured amount is likely only a component of the full discouragement effect, as the economy-wide analysis cannot capture this effect within a single industry (see Appendix B).

Additionally, if workers are demanding a premium on their wages as compensation for the risk of uncertainty that they bear in certain illegal phoenix prevalent industries, this will lead workers to only accept a higher wage in those industries and create a potentially larger employment reduction.

2.5.3 Social welfare burden of increased government transfers

This social welfare burden is the cost of government transfers such as unemployment and other benefits. This burden must be borne by the government in the form of increased payments, and therefore the whole economy in turn, because of the need to support those employees that are not paid their legal entitlement from employers. This includes supplementing workers’ compensation payments for employees whose employers have not paid the required premiums.

²⁶ Ibid.

A small part of this social welfare burden is captured in the direct costs as unrecoverable FEG claims are included in the direct cost to government. However, it is expected that the government payments cost will be broader than just those earned but unpaid entitlements, as employees of potential illegal phoenix operators are expected to be out of work for some amount of time after their employer ceases operating. This artificial frictional unemployment will require social welfare payments in the short term before the labour market can effectively redistribute.

The CGE model used in the economy-wide analysis includes the costs to government of increased unemployment, with this impact essentially acting as a tax on all business and individuals to pay for these increased government costs due to the artificial labour market influences. However, the nuance that these workers may exhibit different behaviours when compared to an 'average' employee (such as the fact they may stay unemployed longer due to the discouragement effect) will not be captured so this cost may be understated in the economy-wide results.

2.5.4 Competition effect

This is the costs of distortionary competition effects on lawful businesses if their competitors are able to cut costs by not meeting their legal obligations to employees, government and other creditors.

By artificially and illegally being able to operate with lower costs, potential illegal phoenix operators can create a 'race to the bottom' in certain industries. Their lawful competitors will likely respond to this artificially created competitive advantage in one of two ways, either:

- as with the discouragement effect for employees, the cost of doing business may become too high for honest businesses, who will now choose to exit the industry, or costs act as a high enough barrier to entry that they do not enter the market in the first place
- phoenix activity becomes the accepted business model and previously lawful businesses begin to avoid payment of liabilities.

Both responses have the overall effect of particular industries being dominated by potential illegal phoenix operators and will have exponential effects. This disincentive to operate lawfully in certain industries could increase the overall size of the problem or distort the most productive mix of industries in the economy in to these industries with a prevalence of potential illegal phoenix operators and an artificial competitive advantage.

Similarly, if potential illegal phoenix operators become prevalent in particular industries, lawful business may find it more difficult to access credit, due to the perceived risk of the industry and credit providers' difficulty in differentiating potential illegal phoenix companies from legally operating businesses.

As the above mostly considers competition within an industry, this is not shown in the CGE results, as the model does not contain any intra-industry interactions. See Appendix B for further discussion of this limitation and how it has been mitigated.

3 *Total economic impacts*

This chapter presents the approach and results of the economy-wide modelling of the impact of potential illegal phoenix activity. This modelling uses some of the direct cost results from the previous chapter as inputs, but is a separate modelling exercise and should be viewed as such.

The two sets of results examine different impacts (as described below) and are therefore not interchangeable, though they are separately useful.

- Direct costs looks at the unpaid debts imposed on the lawful party interacting with a potential illegal phoenix entity. It looks at just one side of the equation and only measures the first round of effects. This allows us to examine the effect of those that are bearing the worst of this problematic behaviour.
- Total economy-wide impact considers both sides of that interaction, recognising that where someone encounters a cost, another party may encounter a benefit. It then looks at how both these costs and benefits flow onto spending, investment, taxation and other behaviours of the parties that are impacted. This shows the total net effect of the whole of the Australian economy and therefore examines the possible positive effects in eliminating potential illegal phoenix activity.

As the estimation of these two different impacts share data sources as inputs, they are not mutually exclusive and therefore should not be summed together. However, they are both insightful measures when examining the impact potential illegal phoenix activity has on specific parties (i.e. employees, businesses and government) and the broader economy.

3.1 *CGE modelling*

Economy-wide assessments are undertaken to quantify the economic total (direct and indirect) effects of a proposed activity or policy. A common method to undertake economy-wide assessments is using inter-industry models, such as input-output analysis and CGE modelling.

Comprehensive economic impact analysis generally makes use of sophisticated models to represent an entire economy and simulates the effect a change has on that economy. It incorporates detailed representations of industry production, consumption, government, trade, prices and the behaviours that link the economy together.

For example, a \$1 spent directly in the Australian economy in the construction industry may stimulate a further 50 cents of spending by that sector in the Australian manufacturing industry, which would then lead to 25 cents of spending in the Australian extractive resources industry. In this simple example, we would say that the indirect effect was equal to 75 cents for every \$1 spent, for a total expenditure effect of 1.75.

From these expenditure impacts, the most commonly used measures are gross domestic product (GDP), household consumption and government revenue. Each of the impact measures used to report our economy-wide results are described below:

- **GDP** — the ‘value added’ to the economy through spending patterns. Since the GDP figure captures the difference between the value of output and the value of intermediate inputs, it represents the unduplicated total value of economic activity that has taken place.
- **Household consumption** — the amount spent by all households on final consumer goods in the economy. This measure can be used as representative of community wellbeing (or standard of living) as it is indicative of both the income of a household and their ability and propensity to consume what they desire for optimal consumption.
- **Government revenue** — the income of governments as measured in government finance statistics. This is the total impact to government income including taxation, grants and subsidies, sales of goods and services and interest income. In the absence of change in tax rates or other policies, this will move with business activity, consumption and income. It represents the amount that will flow back to the government due to any change in the economy.

Economic impacts are typically measured at the direct and indirect levels which are described below:

- **Direct impacts** — direct costs to the Australian economy through non-payment of employee entitlement, taxation obligations and other creditors. There are also direct benefits to the potential illegal phoenix operators of increased profits or personal wealth by not paying those obligations.
- **Indirect impacts** — the direct losses will flow through the Australian economy and affect other industries. These flow-on impacts arise from changes in activity for suppliers through the various industries’ supply chains and through additional losses in spending that occur by people employed by potential illegal phoenix operators. Competition for resources and other economy-wide constraints could also restrict other parts of the economy.

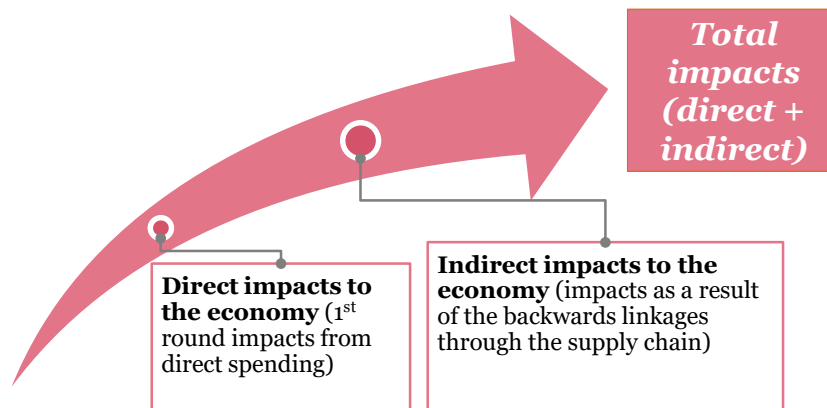
This section of the report examines how the direct impacts translate to affect the economy as a whole. Whilst some of the direct impacts are real costs to one party (e.g. lawful businesses are not paid for their goods or services or never receive goods or services paid for) some parts of these losses act only as a private transfer within the economy (e.g. another phoenix operating business or related individual spends that money). Therefore, only the incremental difference between these two values are considered a loss to the economic system as a whole.

To understand the economy-wide impact (direct and flow-on) of potential illegal phoenix activity, we used CGE modelling, a robust economic modelling technique

developed based on widely accepted economic theory and is consistent with structures used in CGE models around the world.²⁷

CGE models recognise the complex macroeconomic mechanisms and inter-industry interactions that exist in the economy. The CGE model results will provide the direct impact of potential illegal phoenix activity to the Australian economy and also the indirect impacts to other industries, households and the government (see Figure 6). However, CGE modelling is not without limitations, including that it cannot model the impact of intra-industry interactions. More detailed information on the CGE modelling framework and how limitations were considered can be found in Appendix B.

Figure 6: Concept of total economic impacts



3.2 Approach for converting direct costs to CGE inputs

Three possible approaches were considered for how direct costs should be translated for consideration in the CGE model. This was a complex task as, while all direct costs are real impacts on a particular party (individual, government or business), often another party gains from that cost (such as a business having lower labour cost by not having to pay superannuation). This is what is regarded as a private transfer where the financial cost is not actually the net cost to the economy, but represents a reallocation of resources or redistribution between two groups in society. When considering total economic impact, private transfers are usually disregarded and can only be regarded as enhancing or detracting from community wellbeing if a decision is made that one group derives more value from the resources than the other.

Most of the direct impacts of potential illegal phoenix behaviour can be regarded as private transfers. However, because taxes and employee entitlements are legislatively guaranteed, it is assumed that they are transfers which have been decided to increase community wellbeing.

²⁷ PwC uses the models developed by the Centre of Policy Studies (CoPS) at Victoria University. These models are preferred because they have been peer reviewed, and therefore, the inputs and assumptions are fully and publicly documented. CGE modelling techniques are the preferred approach of the Treasury departments in Australia - Department of Treasury and Finance (2013) *Economic Evaluation for Business Cases Technical Guidelines* (p. 11) - and are also globally accepted.

Considering this, three approaches were examined for the CGE analysis:

- **Approach 1** – All direct impacts are considered private transfers so there are zero inputs to the CGE.
- **Approach 2** – All direct impacts are considered to be a loss to the ‘legal’ economy as they move in to the ‘illegal economy’ and so the full direct impacts are inputs to the CGE.
- **Approach 3** – Only the incremental or marginal impact of the direct impacts is considered, which is the ‘deadweight’ losses resulting from the unfair distributions and inefficiencies caused by potential illegal phoenix behaviour.

The first approach was not considered appropriate as it did not consider any of the equity impacts of the transfers. It does also not sit logically with the expert understanding of the Taskforce members of the impact that this activity has on society.

The second approach is preferred over the first and has been used in some Australian and international papers considering the economic cost of particular crimes. However, we also believe that it is not appropriate because it will cancel out any legitimate and positive supply chain effects. For example, even if the unpaid employee entitlement may be lost to the ‘legal economy’, if the entity or person who benefits from that private transfer then goes and spends that money in the ‘legal economy’, there should be positive flow on impacts. To disregard this fact that much of the private transfer may actually make its way back in to the ‘legal economy’ will overstate the size of the problem and possibly undermine the credibility of this analysis.

The third approach is the preferred approach over both the first and the second. It recognises that there are real losses to the economy (caused by distributional inefficiencies), but also does not discount that private transfers are likely to be spent or invested within the economy.

To determine the size of the deadweight loss of the direct impacts, we relied upon expert modelling presented in a Treasury Working Paper.²⁸ That modelling shows the deadweight loss of imposing taxes on various transactions. This is useful in this context as the potential illegal phoenix behaviour can be seen as a tax on transactions in the following ways:

- Loss of employee entitlements acts like a tax on labour income by effectively reducing the compensation to employees for the same work.
- Losses to lawful businesses act like a tax on corporate income by reducing the payments received for the same goods or services delivered or reducing the amount of goods or services received for the same payment.
- Loss of government revenue acts like a mix of all taxes as, all else being equal, it means that governments are required to increase taxes in general therefore adversely affecting lawful parties to achieve the same revenue.

²⁸ The Treasury (2015) *Understanding the economy-wide efficiency and incidence of major Australian taxes, Working Paper 2015-01*, analysis conducted for Australian Government (2015) *Re:think tax discussion paper*

As such, this modelling applied the deadweight loss percentages of taxes on labour and corporate incomes from the Treasury Working Paper on the total direct impacts.

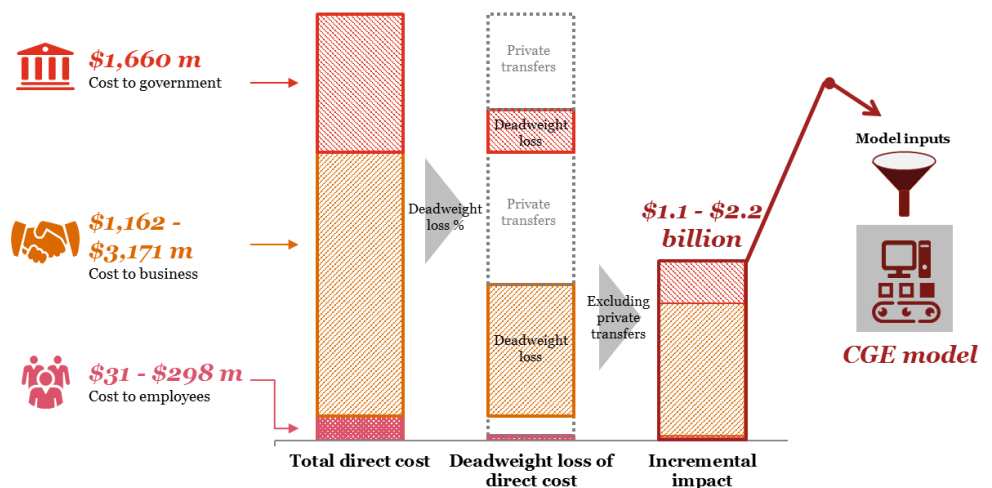
Although the analogy of potential illegal phoenix activity acting like a tax helps with understanding the order of magnitude of the deadweight loss, it should be noted that it is not a perfect comparison. Specifically, taxes are publicly known and responded to by economic actors accordingly. In comparison, those impacted by potential illegal phoenix activity do not have complete information and will generally not know until after the fact that this cost has been imposed on them.

These deadweight losses are then split by industry based on the industry distribution of the PRM population provided by the ATO. This is not a perfect representation of the industry where the direct impacts are felt (as some supply chain impacts are on lawful businesses which may be in other industries) but is regarded as the best available (and better than applying the impacts uniformly across industries) for the following reasons:

- It is known that this is where the employee losses are so is most appropriate for those impacts (employee losses are also the only loss where it is confirmed which industry the impact is in, all others will be based on assumptions whether industry split or uniform).
- Business losses may be across industries according to supply chain interactions between potential illegal phoenix businesses in the identified industry and lawful businesses in industries that interact with them. However, the competition effects are felt within the same industry (i.e. lawful businesses find it difficult to compete in that industry with the potential illegal phoenix operator because they are driving down profits through problematic behaviour).
- Government losses may again be across industries, but it is known that high risk industries will be targets of stronger compliance activities, which are likely to raise collection on all behaviour in that industry.

This deadweight loss across industries is then regarded as a productivity shock in a long run simulation in the CGE model, replicating an inefficient use of resources as these areas are less productive because of the distortionary effects of potential illegal phoenix activity. This methodology is illustrated conceptually in Figure 7 and explained further in Appendix B.

Figure 7: CGE model inputs methodology



3.3 Economy-wide results

Using the inputs discussed above, the CGE model can provide the impact on a number of key variables. These variables can be used to illustrate the distributional economy-wide impacts, but GDP should be seen as the headline economic value lost, with household consumption and government revenue considered as subsets of GDP (though not mutually exclusive as they are defined by different factors).

3.3.1 GDP

The estimated total impact to GDP as a result of potential illegal phoenix activity is between \$1.76 billion and \$3.46 billion.

This represents between 0.11 per cent and 0.21 per cent of real GDP for 2015-16. The impact to GDP in this report represent the 'value lost' to the economy as a result of the inefficient use of resources and the reduction of spending patterns as a result of phoenix activity in Australia. Potential illegal phoenix behaviour can act like a 'tax' on victims because money is spent, however, goods and services are not always delivered. In addition, if an employee misses out on entitlements, they have less money for consumption and therefore there are supply chain losses of the goods and services they would usually consume.

3.3.2 Household consumption

The estimated total impact to household consumption as a result of potential illegal phoenix activity is between \$1.20 billion and \$2.36 billion.

Household consumption can be used as a measure of economic wellbeing (a proxy for the standard of living). It indicates real household income, willingness to spend and how much of the goods that households desire for good outcomes they are actually able to consume. As described above, losses to employee entitlements means there is less money allocated for the consumption of goods and services households would normally consume.

3.3.3 Government revenue

The estimated total impact to government revenue as a result of potential illegal phoenix activity is between \$760 million and \$1,500 million.

Losses to government revenue move with GDP because most sources of government revenue are either effected by the economic environment (such as sales income) or are directly related to economic activity (such as taxes on income and consumption). The impact to government revenue considers all levels of government (federal, state and local) and all sources of revenue (taxation, grants, sales of goods and services, interest and other income, as usually considered in government finance statistics). As a, income, rather than an economic, measure this is generally reported nominally as an increase on current collections.

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Appendix A Direct cost sensitivity tests, sources and limitations

A.1 Testing of alternative approaches

Before the preferred approaches presented in the body of this report were chosen, other options were considered and other data sets were examined. For each impacted group, all the approaches from 2012 were updated at a minimum and then more data was sought out as necessary.

A.1.1 Business

All alternative approaches for cost to business involved either inflating a previous point cost estimate or estimating an average cost per potential illegal phoenix entity and implying it on the total PRM population. The former has no capability to reflect changes in data collection or show any response to policy changes or external factors, so is not preferred. The latter was not preferred as it relied on many unknowns as to whether these businesses were actually incurring costs and in many tested scenarios the result was much larger than the magnitude of confirmed costs of all business failures.

These tested scenarios included the following, all of which did not fit in to the overarching preferred approach of refining confirmed costs.

- Updating the 1996 ASC result with consumer price index (CPI) growth. This was not preferred as it is relying on very old data without attempting to update for the size of the economy or likely quantum of the behaviour. CPI is likely to underestimate the inflation in the cost impact as it will reduce the impact in terms of total business activity. This approach was tested because it was the approach used in our 2012 report so is useful for comparison but over a longer period of time is not preferred.
- Updating the 1996 ASC result with growth in GDP instead of CPI to take into account the time value of money of the 1996 estimate. This is a better approach than using CPI as it recognises most of the change in purchasing power of money as well as the increase in the economy and the amount of business activity. However, it is still not preferred as there are more direct ways of updating for the level of business activity.
- Updating as much as the underlying data in the 1996 ASC result as possible, which means breaking down to a cost per lawful business which indexed and then applied on the current level of lawful businesses. While this is deemed the best way to update the 1996 report, it still does not allow any incorporation of an updated risk base, population or intervening policies, so this approach was not preferred.
- Calculating the average unsecured deficiency per entity in EX01 reports (for general population and for refined potential illegal phoenix population) and implying this on the PRM population. This was not preferred due to ability to infer potential illegal phoenix activity costs as greater than the known cost of all business failures.

A.1.2 Employees

All alternative approaches for cost to employees involved setting the population of effected employees (or employing entities) using the PRM, then assigning an average cost per employee (or per employing entity). This approach was not preferred as it relied on many unknowns as to whether these employees were actually incurring costs and in many tested scenarios the result was much larger than the magnitude of confirmed costs of all business failures.

These tested scenarios included the following, all of which did not fit in to the overarching preferred approach of refining confirmed costs.

- Calculating the average of all FEG payments per employee, imposed on total estimated employees using the risk profile from the 2012 PwC report. This approach was tested because it was the approach used in our 2012 report so is useful for comparison but is not preferred as much more tailored data is available.
- Calculating the average of all FEG payments (for general population and for refined potential illegal phoenix population) per employee, imposed on total estimated employees in the PRM population. This is broadly similar with the 2012 approach (with an updated population) and is therefore useful for comparison without mixing in a new data set. However, it is not preferred due to the exclusion of superannuation, which is known to be a cost to employees from this behaviour. Additionally, FEG is known to include caps on payments which may understate costs.
- Calculating the average cost to employees per EXO1 report (for general population and for refined phoenix population) imposed on total number of entities in the PRM population.

A.1.3 Government

The first approach for estimating impact to government was to replicate the 2012 report approach. This uses a previous public ATO estimate of \$600 million lost taxes to phoenix activity and includes the cost to government of FEG type payments that are never recovered. To update for this report, the \$600 million figure was inflated with GDP growth, which is a more appropriate inflator for tax than CPI as most taxes are on income/profits. However, this approach was not preferred because there is new data available on revenue at risk (owing to the work establishing the PRM) and because the previous approach is missing a few key costs (namely government staffing costs and state based taxes).

A.2 Sensitivity comparisons to the 2012 PwC report

There are a few key differences to note in comparing the results in this report to the 2012 results (which were presented in 2009-10 terms). To show these differences, in Table 5 we present results in the following order from left to right:

- estimated low and high costs from this year's study, presented in 2015-16 dollar terms
- estimated low and high impacts from our 2012 report, presented in 2009-10 dollar terms they were originally reported in
- estimated low and high impacts from our 2012 report, presented in 2015-16 dollar terms

- estimated low and high impacts using the same approach as our 2012 report, includes the same 2012 risk based population approach and is updated with data for the 2015-16 releases of original sources where available, presented in 2015-16 dollar terms.

Table 5: Comparison of results (all values presented in 2015-16 dollars unless otherwise stated)

	Current results (low)	Current results (high)	2012 report (low) as reported *	2012 report (high) as reported *	2012 report (low)	2012 report (high)	2012 report (low) data refresh	2012 report (high) data refresh
Employees	\$31 m	\$298 m	\$191 m	\$655 m	\$247 m	\$845 m	\$506 m	\$1,826 m
Business	\$1,162 m	\$3,171 m	\$992 m	\$1,925 m	\$1,326 m	\$2,573 m	\$1,090 m	\$2,116 m
Government	\$1,660 m	\$1,660m	\$600 m	\$610 m	\$774 m	\$791 m	\$784 m	\$801 m
Total	\$2.852 b	\$5.128 b	\$1.784 b	\$3.191 b	\$2.346 b	\$4.209 b	\$2.380 b	\$4.743 b

* Values are in 2009-10 dollar terms

It is important to note that even the 2012 data refresh in Table 5 has the same underlying risk profile as the 2012 report (i.e. no reliance on the PRM population), so the comparison to this report should not be taken as showing the effect of policies implemented in the meantime. The structure of the methodology in this report allows it to be replicated in to the future to establish a time series that has the potential to track policy effects.

Although the results in this report are broadly in the same order of magnitude as those from 2012 (when they are both examined in 2015-16 terms) they are methodologically different and should not be directly compared. Specifically:

- The ranges present different uncertainties. In 2012, the largest uncertainty was the prevalence of phoenix activity and the range represented a risk based approach estimating the industries where employees felt the impact of phoenix activity. However, due to the extensive work the ATO has done in the interim to establish an evidence-based data driven population in the PRM, such an approach was no longer required. The range in this report presents the uncertainties is level of recorded costs, specifically from EX01 collections, but includes the cost of all potential illegal phoenix entities.
- The construction of the estimates are reversed. The 2012 report starts with a risk based population and extrapolates an average cost per entity figure using that population. This report starts with total known business failure costs and refined them down to those that relate to potential illegal business.
- This report includes some costs not previously covered, namely unpaid superannuation in the employee estimate and state and territory based unpaid taxes, as well as the cost of staffing, in the government estimate. It also includes the redistributed of compensation employee entitlements in to government costs. Table 6 illustrates the current report results splitting out the cost categories previously considered and those that are new for this report.

Table 6: 2015-16 results split between previously considered and new cost categories

	Previously considered		New cost categories		Total	
	Low	High	Low	High	Low	High
Employees	\$117 m	\$233 m	(\$86 m)*	\$64 m	\$31 m	\$298 m
Business	\$1,162 m	\$3,171 m	-	-	\$1,162 m	\$3,171 m
Government	\$1,475 m	\$1,475 m	\$185 m	\$185 m	\$1,660 m	\$1,660m
Total	\$1.279 b	\$4,879 b	\$99 m	\$249 m	\$2.852 b	\$5.128 b

* The new categories considered is negative in the low employee estimate due to the compensated employee costs being removed from employee costs and placed in to government costs for this report.

A.3 Data sources and limitations

Table 7 shows all data sources used in the above preferred and tested approaches.

Table 7: Data sources

Data used	Source
Potential illegal phoenix operators	ATO's PRM as explained throughout. The population used was defined through PRM v2.1 on 13 October 2017
FEG and GEERS payments	Unpublished FEG and GEERS claims data matched to the PRM and EXO1 populations provided from the ATO, using underlying data from the Department of Jobs and Small Business
Deficiency left by insolvent corporations	Unpublished EXO1 data matched to the PRM population, provided from the ATO, using underlying data from ASIC Provided split in to wages, annual leave, pay in lieu of notice, redundancy, long service leave, super and unsecured creditors
Wage price index inflator	ABS 6345.0, Wage Price Index, Australia, March 2017
Total impact on lawful businesses (1996 estimate) and average impact per lawful business	Australian Securities Commission, ASC Research Paper 95/01, Phoenix Activities and Insolvent Trading
Federal government tax debt cost	Current and written off debt for PRM population provided by the ATO
Total taxation revenue collected for relevant federal and state taxes	ABS 5506.0, Taxation revenue, 2015-16
Total federal agencies staffing costs in 2015	ATO provided document, Phoenix Criminal Element
Marginal deadweight loss for relevant taxes	Treasury Working Paper 2015-01, Understanding the economy-wide efficiency and incidence of major Australian taxes

As explained throughout this report, the sources chosen were the best available data, in a policy area where data collection is still being developed. However, this does not mean these data sources are without limitations. Table 8 below sets out

the key limitations of the three core data sources used for the direct cost estimations.

Table 8: Limitations of core direct cost data sources

Data used	Key limitations
<p>ATO PRM Potential illegal phoenix operators</p>	<ul style="list-style-type: none"> As most risk factors around potential illegal phoenix activity relate to cyclical or repetitive behaviours, the construction of the PRM is unlikely to catch ‘first time’ phoenix operators. The quantum of this limitation cannot be determined as these operators are ‘unknown unknowns’ as nothing defines them distinctively from lawful business failures except intent or future action. Due to its construction, the PRM might exclude potential illegal phoenix operators who do not have a federal tax debt. It is assumed that most, if not all, potential illegal phoenix behaviour will have a tax impact, as this is a key intention of the illegal behaviour. However, this is an unknown not captured so the impact of this limitation cannot be quantified. The PRM does not capture risk indicators based on workers’ compensation or payroll liabilities. As with those operators without a federal tax debt above, this may exclude some operators, but it seems unlikely the potential illegal phoenix behaviour would be used to avoid state but not federal taxes. The PRM does not have an exact threshold of illegality. This limitation has been addressed by using the PRM population to quantify only the impact of ‘potential illegal’ phoenix behaviour.
<p>EXO1 data Deficiency left by insolvent corporations</p>	<ul style="list-style-type: none"> The date used with EXO1 data is appointment of the external administrator. This will affect the ability to conduct year on year analysis, but does not affect the total quantum of costs. Upper bound EXO1 data is reported in bands of which the upper end of the highest range is unbound (i.e. ‘over \$10 million’). This results in a risk that the high estimate is understating the true highest cost if it is well above this range limit but cannot be addressed with current information or the quantum of the limitation estimated. Using EXO1 data does not capture costs from potential illegal phoenix entities that are not corporations (i.e. individuals, trusts or partnerships). However, the impact on this limitation is likely to be minor as potential illegal phoenix activity generally relies on the protection of the corporate form and debts of other types of entities are recoverable from the individuals involved. Using EXO1 data does not capture costs from potential illegal phoenix entities that have not gone through insolvency. However, the impact on this limitation is likely to be minor as if the cost to any party was significant, that party would be expected to trigger insolvency proceedings. Costs to shareholders (or other investors not deemed as creditors) are not included in EXO1 data. The impact of this limitation is likely to be minor because the majority of potential illegal phoenix incorporated companies are single shareholder (i.e. a director or related party holds the shares) so no lawful shareholder is impacted.
<p>ATO debt</p>	<ul style="list-style-type: none"> The reference date associated with ATO debt data is the ‘end

Federal government tax debt cost	<p>date' of each entity as recorded in ATO systems. Assigning costs to a single year using this end date may not be accurate as debt may accrue for longer than a year. Additionally, this may result in the government costs of a potential illegal phoenix operator being assigned to a different year than the business and employee costs.</p> <ul style="list-style-type: none">• ATO debt do not cover the possibility of state and territory governments incurring costs, particularly payroll tax and workers compensation. This limitation has been addressed by adding a component to cover this as per assumptions in the body of the report.
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Appendix B CGE modelling approach

B.1 CGE overview

A CGE model is a mathematical model of an economy that is capable of capturing economy-wide impacts and inter-sectoral reallocation of resources that may result from a ‘shock’ (that is, change in the status quo) to the economy. CGE models are widely used in economic analysis of policies and projects around the world including in Australia by both government and the private sector.

Both input-output (I-O) modelling and CGE modelling have been used previously in the preparation of economic impact assessments. However, we prefer to use CGE analysis as it provides a more robust assessment that is used and accepted by government departments, particularly the Australian Treasury department. Using CGE modelling to measure economy-wide impacts is superior to simply using input-output analysis. For example, I-O models can only scale up or down industries, with no regard for economic interactions and constraints, while CGE models include these features. This means CGE models are able to more realistically capture indirect impacts such as the impact on prices through increased demand for a finite product, or the impact on cost structures of additional demand for finite labour and capital.

The core data of a CGE model is an input-output table. An input-output table is a system of accounts which shows, in value terms, the supply and disposal of goods and services within the economy in a particular year. An input-output table captures sales of products to other industries for further processing (intermediate usage) or to the various categories of final demand. It also captures the inputs used in an industry’s production, whether they are intermediate or primary inputs (such as labour and capital). The table is balanced such that total inputs to each industry are equal to total outputs from each industry. Essentially, an input-output table is a snapshot of an economy (whether it is a region, state, territory or country) in a particular year.

A CGE model attempts to ‘push forward’ the base input-output table through time by utilising a set of equations that capture neoclassical microeconomic theory to determine behaviour of economic agents (such as households, governments, industries) when they are faced with changes in key economic variables, especially relative prices. The equations are solved simultaneously, where some variables are determined by the model (endogenous variables) and some are determined outside the model (exogenous variables). The classification of endogenous and exogenous variables is determined by the user based on the set of assumptions derived for the specific modelling exercise. CGE modelling is a widely used economic impact analysis tool for simulating the economy-wide effects of projects or policies, often involving large expenditures and revenues, which represent ‘shocks’ to the economy. CGE models recognise that complex macroeconomic mechanisms and inter-industry interactions exist in the economy and, in light of this, replicate how the economy will adjust to ‘shocks’ from significant projects and policies.

B.2 Victoria University Regional Model

The potential total economic impacts from potential illegal phoenix activity were conducted using PwC’s version of the VURM model. It is a CGE model of the Australian economy initially developed at Monash University and updated by PwC that models short and long-run equilibrium of the Australian economy.

This CGE model is widely used by the Australian Government, the Productivity Commission and the Australian Treasury to quantify the total impacts of a policy change.

The VURM model is highly detailed, with production split in to more than 60 industries. The high level of product detail means that many policy changes can be analysed without the need for further disaggregation of the product detail. The model treats each of the six states and two territories as a separate economy, linked by inter-regional trade matrixes. It is a bottom-up model, which includes a range of industries, commodities and labour types, aggregated to produce macroeconomic results. The model includes a representative household and government in each region, as well as the Australian government. Foreign demands are represented by downward sloping export demand curves, and import prices are given. VURM also accounts for state and territory taxes, including income and payroll taxes, fringe benefit taxes, the GST, excise and other commodity specific taxes and tariffs.

More detail can be found at <https://www.vu.edu.au/centre-of-policy-studies-cops/cge-model-sales/victoria-university-regional-model-vurm>.

B.3 Limitations of CGE approach

The most important limitation of any economic modelling, including CGE, is that a model must be a simplification of real world interactions and will not definitively address all uncertainties. It is therefore important to understand both the general limitations of any model approach used, as well as those associated with the particular applications. These are both discussed below.

General limitations with CGE modelling include:

- Any economic model must necessarily adopt simplifying assumptions to abstract from the overwhelming detail of the real economy, and these abstractions may affect the results of any given application of the economic model. Simplifying assumptions, such as those describe in the closure chosen below, must be adopted in translating the specific details of any particular economic issue into a set of tractable model shocks. The economic modelling undertaken in this study is no different in this regard, and the model results might be different under alternative model assumptions governing simulation design, economic theory, economic structure, values for parameters governing behavioural responses, public policy responses, and model closure.
- The results of CGE modelling should be viewed as only as robust as their inputs. Therefore, all limitations that apply to the direct costs estimates (as outlined in Appendix A) should be considered in the context of the economy-wide results.
- CGE modelling is generally viewed as more appropriate for shocks that are large in size and broadly applicable (rather than smaller finessed shocks). The magnitude of the shocks for this report are large enough to effectively shock the economy and results are reported as main macro-economic indicators, rounded to tens of millions, to illustrate this level accuracy.

A key limitation of CGE that is especially applicable for this modelling exercise, as stated through this report, is that an industry acts as a single economic player, rather than illustrating any intra-industry interactions. This is why the number of industries in any CGE model is important, as the more industry disaggregation that occurs, the more likely it is that all the real world organisations within that industry will act as a single homogenous player.

However, in this particular policy context, it is understood that potential illegal phoenix behaviour can have distortionary effects within an industry, not just between them. When a particular operator engages in potentially illegal phoenix activities, the businesses directly impacted (creditors) might be in the same industry or they might be in a different industry, but the businesses impacted indirectly (through an artificial and potentially illegally gained competitive disadvantage) will be in the same industry.

One of the key indirect impacts for consideration in this report, therefore, relates to intra-industry interactions, which will always be a limitation of CGE analysis. While this limitation is not able to be removed, the design of the shocks aimed to simulate the distortionary effects within industries in the following ways:

- Instead of imposing the CGE shock on industries that interact with high prevalence potential illegal phoenix industries, the shock is imposed on the industry that contains potential illegal phoenix operators themselves.
- This means that rather than only capturing the direct cost interaction, the shocks makes the industry with the potential illegal phoenix operators less efficient, acknowledging that that is where the competition effect is found, where employee receive effectively lower wages and where government is able to collect less tax.
- It is acknowledged that imposing the shocks on the industries that contain the potential illegal behaviour is not a perfect representation of the real world scenario, but it enables the CGE model to impose the supply chain (i.e. creditor) impacts which it is constructed to simulate, while using the calibration of the shocks outside of the CGE model to simulate the intra-industry competition effect that the CGE model itself cannot.

As acknowledged above, the specific assumptions chosen for any CGE modelling exercise should be explained to be able to full establish all limitations. Therefore, the following section sets out the inputs used for this report.

B.4 Assumptions and inputs used for this report

Key assumptions for each CGE modelling exercise are:

- intertemporal considerations (comparative static compared to dynamic)
- the simplifying assumptions chosen to set the macro environment (the 'closure' of the model)
- the economic variable(s) chosen to be shocked and the calibration of the level of that shock.

These are each dealt with in turn below.

Comparative static model

CGE models can be developed as either 'comparative static' or 'recursive dynamic', depending on the treatment of time in the modelling exercise. While recursive dynamic modelling can account for how the economy changes over time to move from one equilibrium position to another, comparative static modelling presents a static viewpoint, comparing the economy with and without the impact of the shock at a particular point in time.

For this report, we employed a comparative static CGE model to estimate the flow-on and total impacts of potential illegal phoenix activity. This was chosen as the purpose of this modelling was not to show the intermediate effects of potential illegal phoenix behaviour, but rather to quantify the total effects at a point in time.

Closure

As above, even when using an established model like VURM, a number of simplifying assumptions need to be made as to how the model is 'closed'. For this report, this primarily involved setting the model to a long run simulation by:

- National CPI is set as the model numeraire, the price that all other prices are relative to.
- Regional populations and participation rates are held constant.
- Employment is considered fixed in the long run. This assumption is appropriate as it is assumed that long-run employment will be determined by demographic, policy and sociological factors which are independent of increased tourism or associated activities.
- Capital has the ability to accumulate in the long run, with the average rate of return on that capital held constant.
- Consumer preferences and industry technologies are fixed.

Calibration of shocks

In this long run simulation, the chosen shocked variable is productivity. As discussed in section B.3, productivity falls in the industries where potential illegal phoenix activity is prevalent to simulate the inefficiencies created by this distortionary behaviour.

The productivity shock is calibrated at the deadweight loss across industries, replicating an inefficient use of resources as these areas are less productive because of the distortionary effects of potential illegal phoenix activity. The calculation of this deadweight loss from the direct costs (as discussed in Section 3.2) uses proxies from expert modelling presented in a Treasury Working Paper.²⁹

The spread of these shocks across industries was made using information from the PRM as to which industries potential illegal phoenix operators are present. Given the size of that data set, there are operators in almost all industries (with expected exceptions in utilities and energy production).

Based on the percentage of the total deadweight loss modelled, the main industries shocked included:

- personal and administrative services (encompassing a variety of services such as cleaning and security) – 28 per cent
- construction – 22 per cent.

²⁹ The Treasury (2015) *Understanding the economy-wide efficiency and incidence of major Australian taxes, Working Paper 2015-01*, analysis conducted for Australian Government (2015) *Re:think tax discussion paper*

Appendix C Acronyms and definitions

Acronym	Meaning
ABS	Australian Bureau of Statistics
ASC	Australian Securities Commission (former name of ASIC)
ASIC	Australian Securities and Investments Commission
ATO	Australian Taxation Office
CGE	Computable General Equilibrium
CPI	Consumer Price Index
DPN	Director Penalty Notice
EX01	The first External Administration Form lodged with ASIC which contains the external administrator's estimate of total deficiencies at the time of their appointment
FEG	Fair Entitlement Guarantee
FTE	Full Time Equivalent
FWO	Fair Work Ombudsman
GDP	Gross Domestic Product
IO	Input-Output
PEIS	Phoenix Early Intervention Strategy
PRM	Phoenix Risk Model
PwC	PricewaterhouseCoopers
SRO	State Revenue Office
Taskforce	Inter-Agency Phoenix Taskforce
VURM	Victoria University Regional Model
WPI	Wage Price Index

