

A photograph showing a person from the waist down, wearing dark shorts, walking through a field of rows of green vegetable plants. The plants are in the foreground and middle ground, with a dirt path between them. The background shows more rows of plants stretching into the distance under a bright sky.

# Analysing Australian vegetable growers' financial performance by farm size

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## Introduction

Australia's vegetable growing industry generated approximately \$3.5 billion in gross value of production in 2013-14, with 5,300 agricultural businesses<sup>1</sup> that produced vegetables for human consumption. The industry is represented by a large proportion of smaller-sized growers and fewer larger-sized growers. This has inevitably caused the number of vegetable growing businesses to vary each year, with some smaller growers dropping out of the industry and re-entering when business conditions are more favourable.

This discussion paper will analyse the financial performance of vegetable growing farms by farm size (in hectares), for the period 2011-12 through to 2013-14. It will break down key financial indicators such as profits, cash costs and cash receipts and compare these indicators in order to present a detailed analysis on farm profitability.

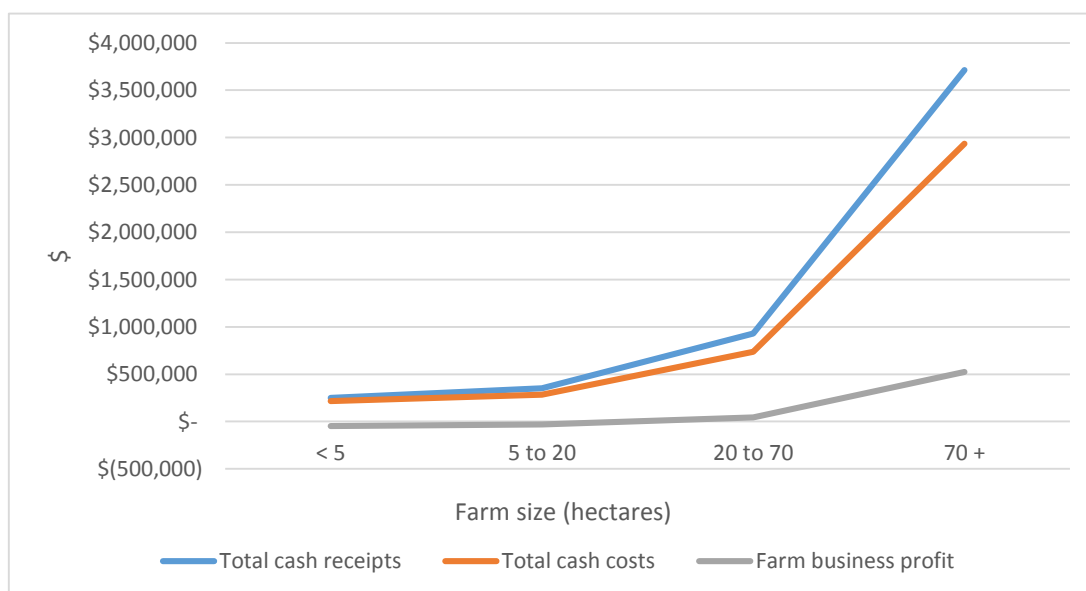
This research is valuable to farm owners as it presents some of the strengths and challenges faced by Australian farms of various sizes. Furthermore, the analysis amalgamates financial data across years and can be used as a benchmark for growers to compare their own business statistics to the industry averages.

## Comparison of all farm size categories

The four categories of farm size to be analysed within this report are farms: less than 5 hectares, between 5 and 20 hectares, between 20 and 70 hectares and greater than 70 hectares. These categories are consistent with those used in Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) Vegetable Growing Farms Survey reports.

It is clear that vegetable growers with a larger farm size (and thus larger scale of production) are seen to be more profitable in the industry than smaller-sized farms, as shown by Figure 1 below.

**Figure 1:** Key financial indicators for different sized farms, on average in 2013-14



*Source: ABARES Australian vegetable growing farms: An economic survey 2012-13 and 2013-14*

<sup>1</sup> ABS. A minimum cut-off value of \$5,000 was used to determine whether an agricultural business operation was in-scope.

As farm size increases, both cash costs and cash receipts continue to increase; however, cash receipts increase at a faster rate, which leads to a net increase in farm business profits. Farms less than 5 hectares and 5 to 20 hectares in size actually registered average losses of \$49,000 and \$30,000 with farms that have 20 to 70 hectares and greater than 70 hectares earning profits of \$42,000 and \$525,000 respectively. Figure 1 supports the idea that smaller farms face greater challenges in terms of profitability than larger farms.

The reason why farms that are greater than 70 hectares earn much more profit on average than smaller sized farms may be due to the category definition. Vegetable farms are known to be as large as 10,000 hectares, which can naturally skew average estimates in this category. The relationship between cash costs and farm size is explored in detail within this discussion paper in order to better understand the variation in profit levels between the four categories of farm size.

**Figure 2:** Key financial indicators for different sized farms (hectares) on average and costs to receipts ratio in 2013-14

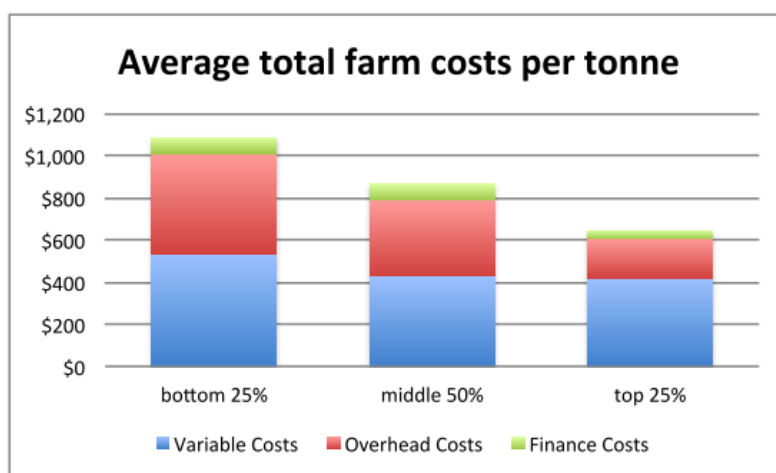
	Less than 5	5 to 20	20 to 70	Greater than 70
<b>Total Cash Costs</b>	\$ 216,000	\$ 283,000	\$ 738,000	\$ 2,935,000
<b>Total Cash Receipts</b>	\$ 249,000	\$ 351,000	\$ 930,000	\$ 3,713,000
<b>Costs to Receipts Ratio</b>	86.75%	80.63%	79.35%	79.05%
<b>Profit</b>	- \$49,000	- \$30,000	\$42,000	\$525,000

*Source: ABARES Australian vegetable growing farms: An economic survey 2012-13 and 2013-14*

The costs to receipts ratio shows cash costs as a proportion of cash receipts, which accounts for large discrepancies in absolute numbers for varying farm sizes. Farms that are less than 5 hectares in size have a cost to receipts ratio of 86.75%, which is much higher than that of the other farm size categories. There is a minimal decrease in the cost to receipts ratio for the higher categories, which fluctuate around 80%.

Figure 2 demonstrates that the cost to receipts ratio decreases as farm size increases. This is due to costs per tonne of production decreasing as farm financial performance increases (leading to a relative increase in farm output), as shown by Figure 3 below.

**Figure 3:** Average total costs per tonne relative to farm financial performance in 2010-11



*Source: RMCG: Investigating the Costs Associated with the Production, Sale and Distribution of Vegetables (VG12086)*

The bottom 25%, middle 50% and top 25% categories are based on ABARES profiles of vegetable growing farms which consider area grown, production and financial indicators. Thus, the bottom 25% category incorporates the smallest farm sizes with the lowest output as well as the lowest financial performance.

A key piece of information conveyed in Figure 3 is that variable costs for the middle 50% and top 25% of vegetable farms are roughly the same per tonne, however the bottom 25% have a considerably higher variable cost per tonne. This evidence aligns with the costs to receipts ratio in Figure 2, which shows that the ratio for farms less than 5 hectares is around 86.75%, with the remainder of the categories approximately around 80%.

Figure 3 not only illustrates that total costs decrease as farm financial performance (or farm size) increases, but it also shows a level of production where variable costs per tonne (e.g growing, harvesting and packaging costs) actually decreases. This finding is important for smaller vegetable growers who are considering expanding their scale of operations. It provides evidence to suggest that both fixed costs (e.g. rates and interest payments) and variable costs (per unit costs) can both decrease as farm size increases, up to a particular level of production. Grower's should factor in these decreasing costs when considering farm expansion as it can be an important cost saving in the planning phases of development and expansion.

**Figure 4:** Key financial indicators for all vegetable growing farms on average and costs to receipts ratio across time

	2010-11	2011-12	2012-13	2013-14
<b>Total cash costs</b>	\$ 623,170	\$ 568,860	\$ 614,100	\$ 622,000
<b>Total cash receipts</b>	\$ 786,090	\$ 733,730	\$ 775,900	\$ 778,000
<b>Costs to Receipts Ratio</b>	79.27%	77.53%	79.15%	79.95%
<b>Profit</b>	\$50,510	\$58,790	\$48,200	\$39,000

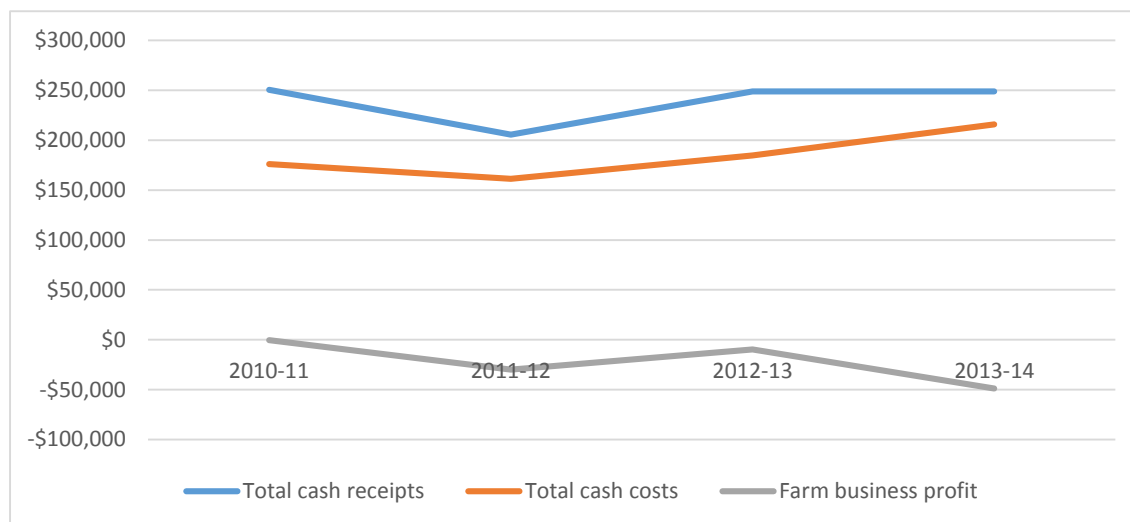
The costs to receipts ratio when measured across all vegetable growers is approximately equal to 80% throughout the past four years, as shown in figure 4 (above). Interestingly, the year in which the ratio was at its lowest, 2011-12, coincided with the highest profit over the same time period. Figures 2 and 4 further show that an average-sized farm will tend to earn over three times the total cash receipts as a farm that is less than 5 hectares in size.

The next four sections of this discussion paper go into greater detail on each of the categories of farm size. These industry statistics provide an important benchmark for farm owners to compare and contrast their own cost structures against the industry averages.

## Category of farms less than 5 hectares in size

In 2013-14, ABARES estimated that there were 1,133 vegetable growing businesses with an estimated value of agricultural operations (EVAO) greater than \$40,000. In 2007-08 there were 1,498 vegetable growing businesses, and 776 in 2010-11, showing a relative decline in the number of small growers over time.

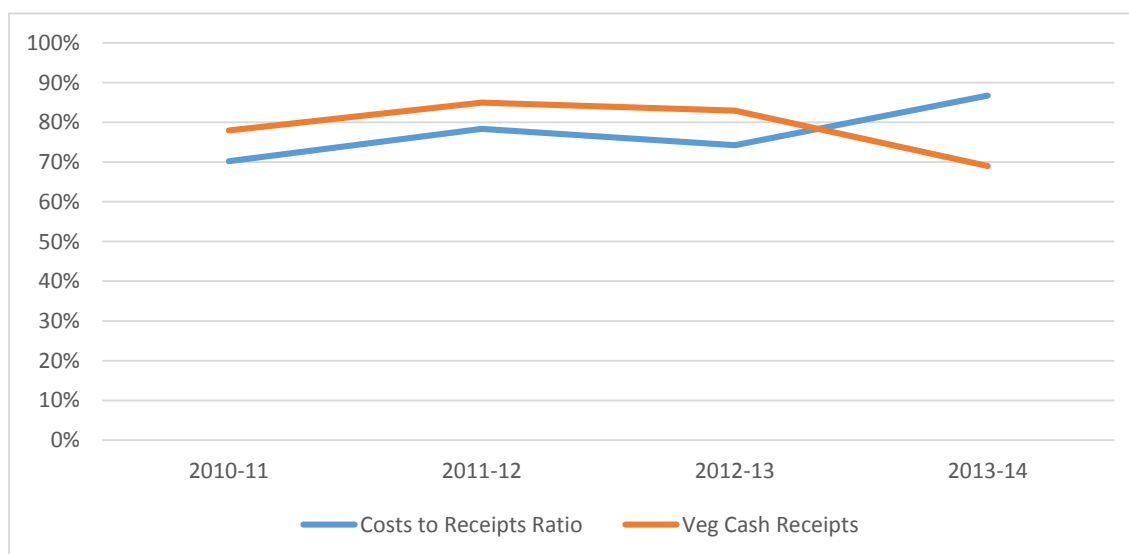
**Figure 5:** Key financial indicators for farms less than 5 hectares on average over time



**Source:** ABARES Australian vegetable growing farms: An economic survey 2012-13 and 2013-14

Figure 5 shows that business profit for farms less than 5 hectares have remained negative since 2010-11. This does not necessarily translate to the growers making losses every year, as it includes imputed labour (i.e. payments to the owner, partners and family members). Total cash costs have slowly increased since 2011-12, closing the gap on total cash receipts and therefore causing profit to decrease.

**Figure 6:** Costs to Receipts Ratio and Vegetable Cash Receipts for farms less than 5 hectares on average over time



*Source: ABARES Australian vegetable growing farms: An economic survey 2012-13 and 2013-14*

Figure 6 shows the costs to receipts ratio and vegetable cash receipts (expressed as a percentage of total cash receipts) following a similar trend up until 2012-13; however, the proportion of vegetable cash receipts drops sharply in 2013-14 with the cost to receipts ratio also increasing sharply

The costs to receipts ratio for farms less than 5 hectares has increased over the same time period, moving from approximately 70% in 2010-11 to an estimated 87% in 2013-14. The reason for the increase in the cost to receipts ratio can be explained in Figure 5, which shows total cash costs increasing from 2012-13 to 2013-14, while total cash receipts remain stabilised over the same period.

It could be concluded that vegetable cash receipts are a better source of profits than other farm cash receipts, as the percentage decrease in vegetable cash receipts coincided with total cash costs to increase. The data shows that growers less than 5 hectares in size should focus primarily on vegetables as a source of cash receipts in order to support their competitiveness within the market.

**Figure 7: Average costs of production for farms less than 5 hectares over time**

Cash costs	2011–12	% Share	2012–13	% Share	2013–14	% Share
Hired labour	\$26,300	16.32%	\$39,000	21.09%	\$45,000	20.83%
Fertiliser	\$12,140	7.53%	\$10,800	5.84%	\$16,000	7.41%
Contracts paid	\$3,590	2.23%	\$5,900	3.19%	\$8,000	3.70%
Seed	\$14,770	9.16%	\$13,500	7.30%	\$15,000	6.94%
Fuel, oil and grease	\$8,870	5.50%	\$11,300	6.11%	\$13,000	6.02%
Crop and pasture chemicals	\$5,370	3.33%	\$4,400	2.38%	\$6,000	2.78%
Repairs and maintenance - buildings	\$3,750	2.33%	\$5,000	2.70%	\$5,000	2.31%
Interest	\$11,540	7.16%	\$12,400	6.71%	\$18,000	8.33%
Electricity	\$5,810	3.60%	\$11,300	6.11%	\$13,000	6.02%
Administration	\$5,370	3.33%	\$6,000	3.24%	\$8,000	3.70%
Land rent	\$1,170	0.73%	\$900	0.49%	\$1,000	0.46%
Packing charges and materials	\$13,690	8.49%	\$13,800	7.46%	\$12,000	5.56%
Rates	\$3,520	2.18%	\$5,500	2.97%	\$7,000	3.24%
Freight	\$3,210	1.99%	\$4,100	2.22%	\$5,000	2.31%
Vehicles, plant & equipment maintenance	\$6,340	3.93%	\$6,500	3.52%	\$8,000	3.70%
Other cash costs	\$35,740	22.17%	\$34,500	18.66%	\$36,000	16.67%
Total cash costs	\$161,180	100%	\$184,900	100%	\$216,000	100%

*Source: ABARES Australian vegetable growing farms: An economic survey 2012-13 and 2013-14*

It can be seen in Figure 7 that hired labour is the largest cost of production for vegetable farms less 5 hectares in size, accounting for an almost 21% share of total cash costs in 2013-14 - an increase of approximately 71% in absolute terms since 2011-12.

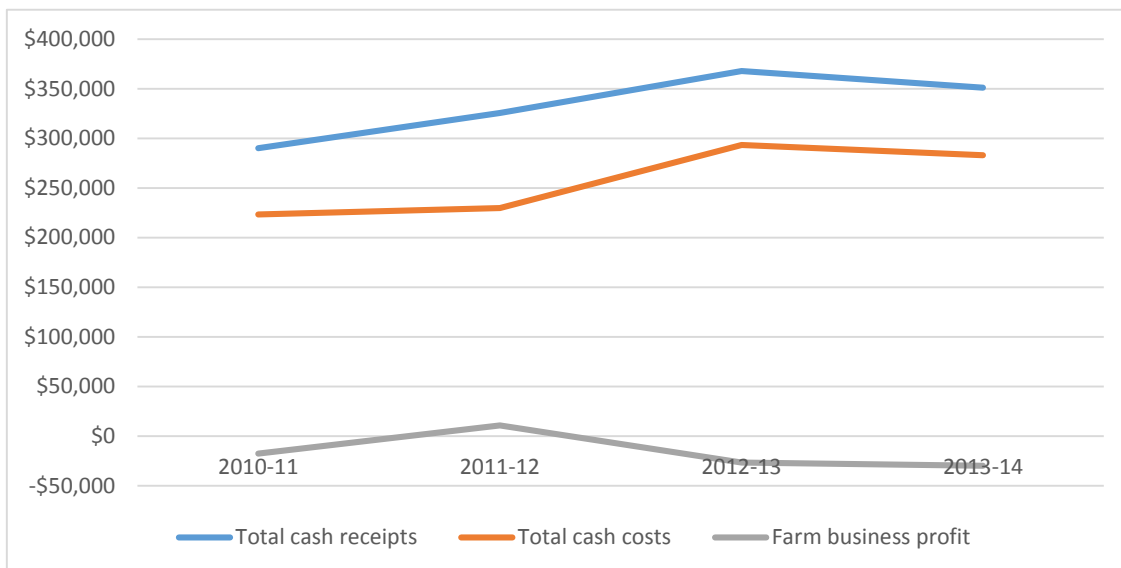
A significant feature of the data presented above is that interest payments increased in absolute terms over the time period covered – and particularly so in 2013-14, where they comprised over 8% of total cash costs. This shows that interest payments are becoming increasingly burdensome to small growers, which can stifle investment in business.

The data presented in this section demonstrate a few of the significant financial challenges and strengths faced by smaller farms in the industry. Smaller farms have a cost side incentive to expand due to the reduction in both fixed and variable costs, however they face difficulties in the funding of expansions because they tend to have less cash on hand and face a perceived additional risk premium associated with the lending of funds by financial institutions.

## Category of farms 5 to 20 hectares in size

In 2013-14, ABARES estimated there to be 777 vegetable growing businesses with an estimated value of agricultural operations (EVAO) greater than \$40,000. This is the lowest number of 5 to 20 hectare vegetable growing businesses in the last 10 years.

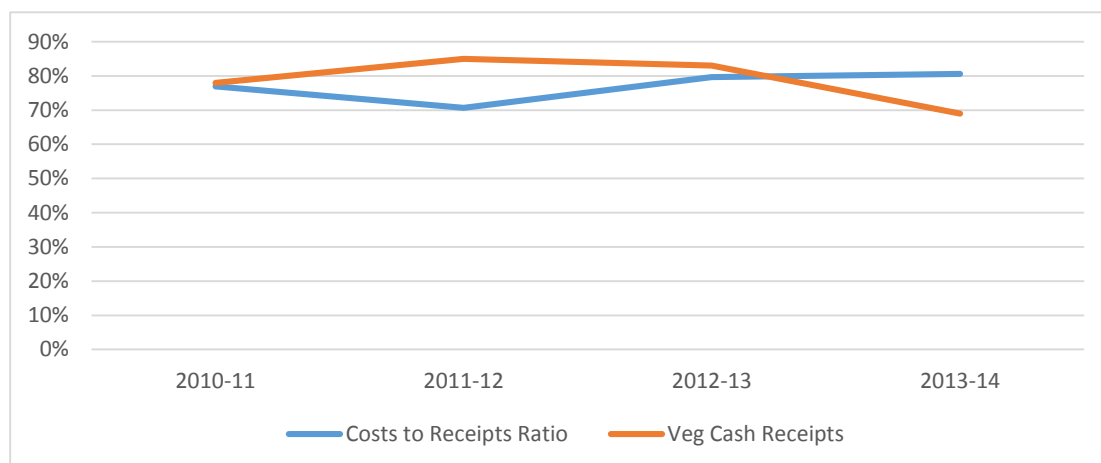
**Figure 8:** Key financial indicators on average for farms 5 to 20 hectares on average over time



**Source:** ABARES Australian vegetable growing farms: An economic survey 2012-13 and 2013-14

Figure 8 above shows that total cash receipts and total cash costs have remained mostly in parallel since 2010-11, even more so than for farm sizes less than 5 hectares. It can be seen that business profit was negative every year except 2011-12, which coincides with the largest gap between cash receipts and cash costs.

**Figure 9:** Costs to Receipts Ratio and Vegetable Cash Receipts for farms 5 to 20 hectares on average over time



**Source:** ABARES Australian vegetable growing farms: An economic survey 2012-13 and 2013-14

The costs to receipts ratio for farms 5 to 20 hectares in size was lowest in 2011-12 at 71%. Vegetable cash receipts were also the highest at the same time at 85%. In 2013-14, the costs to receipts ratio was at its highest at 81% which coincided with vegetable cash receipts being at their lowest (69%). This reaffirms the significance of vegetable cash receipts as a revenue source for vegetable farms.



Interestingly, vegetable cash receipts also dropped significantly for farms less than 5 hectares in 2013-14, as can be seen by Figure 6.

**Figure 10:** Costs of production on average for farms 5 to 20 hectares over time

Cash costs	2011–12	% Share	2012–13	% Share	2013–14	% Share
Hired labour	\$34,120	14.84%	\$42,300	14.43%	\$47,000	16.61%
Fertiliser	\$23,600	10.26%	\$27,600	9.41%	\$24,000	8.48%
Contracts paid	\$19,110	8.31%	\$20,100	6.86%	\$25,000	8.83%
Seed	\$11,680	5.08%	\$16,100	5.49%	\$19,000	6.71%
Fuel, oil and grease	\$15,730	6.84%	\$21,600	7.37%	\$22,000	7.77%
Crop and pasture chemicals	\$11,910	5.18%	\$13,700	4.67%	\$13,000	4.59%
Repairs and maintenance - buildings	\$5,400	2.35%	\$9,300	3.17%	\$7,000	2.47%
Interest	\$14,500	6.31%	\$19,300	6.58%	\$13,000	4.59%
Electricity	\$5,240	2.28%	\$9,000	3.07%	\$9,000	3.18%
Administration	\$8,580	3.73%	\$11,700	3.99%	\$10,000	3.53%
Land rent	\$1,640	0.71%	\$4,200	1.43%	\$4,000	1.41%
Packing charges and materials	\$12,440	5.41%	\$16,600	5.66%	\$15,000	5.30%
Rates	\$3,850	1.67%	\$6,100	2.08%	\$7,000	2.47%
Freight	\$12,300	5.35%	\$15,400	5.25%	\$17,000	6.01%
Vehicles, plant & equipment maintenance	\$13,450	5.85%	\$16,800	5.73%	\$14,000	4.95%
Other costs	\$36,360	15.81%	\$43,400	14.80%	\$37,000	13.07%
Total cash costs	\$229,910	100.00%	\$293,200	100.00%	\$283,000	100.00%

*Source: ABARES Australian vegetable growing farms: An economic survey 2012-13 and 2013-14*

Hired labour remains the largest cost over the time period, although at a lower share relative to total costs in comparison with farms less than 5 hectares. It also can be seen that the percentage of expenditure spent on fertiliser has decreased every year.

Interest payments decreased substantially from 2012-13 to 2013-14, which is somewhat contrary to the increasing average debt faced by the vegetable industry. However, in comparison to farms less than 5 hectares, interest payments take up a much lower share of total cash costs (4.59% in 2013-14, compared to 8.33% over the same period for farms less than 5 hectares). Labour costs have a much lower share of total costs when compared to farms less than 5 hectares, as well as electricity costs.

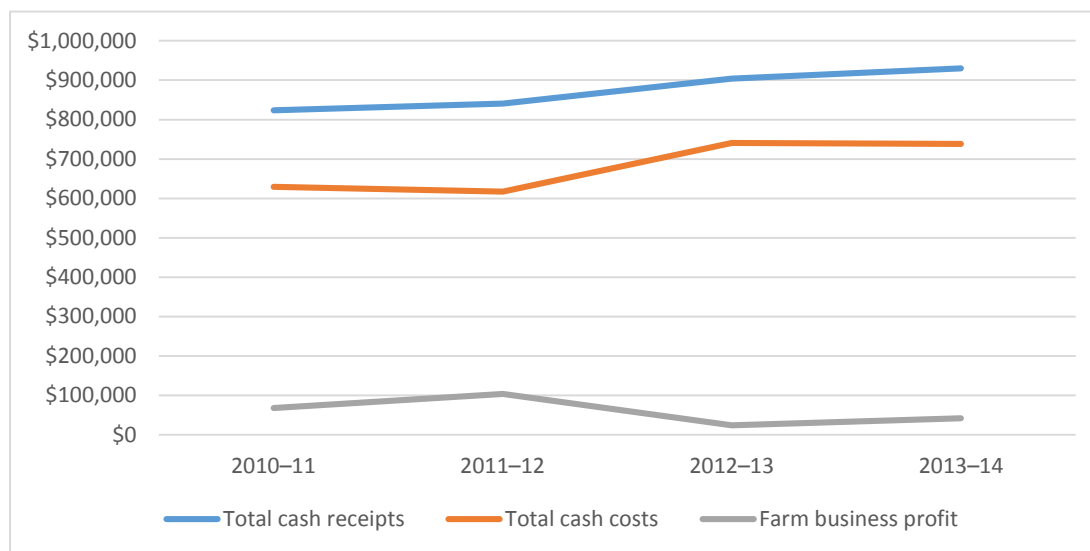
The lower share of interest payments for farms in this category compared to farms less than 5 hectares can be attributed to a lower dependence on the need to borrow money, as well as lower interest rates provided by banks as these businesses present a lower risk for debt default.

It is important for vegetable growing businesses to be able to generate enough capital not only to maintain business operations, but also to ensure investments can be made to improve business operations, such as through upgrading machinery and tools. A dependence on using borrowed funds can stifle investment, as mentioned previously, but can also increase the debt burden which is becoming a larger issue for the industry. This could create a 'downward spiral' of debt as more and more revenue is being used to pay off existing debt, which can then accumulate and grow over time.

## Category of farms 20 to 70 hectares in size

In 2013-14, ABARES estimated there to be 475 vegetable growing businesses with an estimated value of agricultural operations (EVAO) greater than \$40,000. This is the lowest number of 20 to 70 hectare vegetable growing businesses in the last 10 years; the same long term trend to vegetable growing businesses from 5 to 20 hectares.

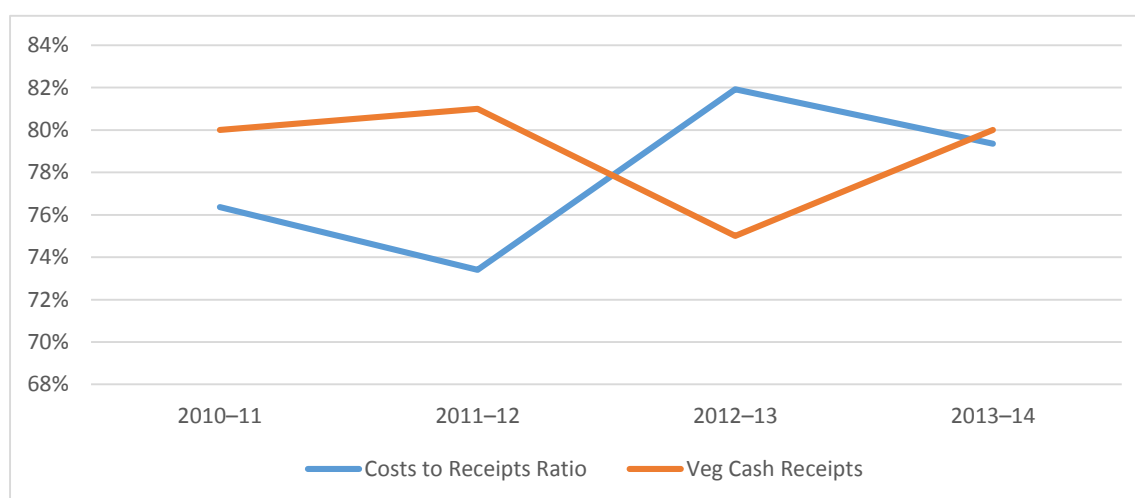
**Figure 11:** Key financial indicators farms 20 to 70 hectares on average over time



**Source:** ABARES Australian vegetable growing farms: An economic survey 2012-13 and 2013-14

Figure 11 shows total cash receipts to be more stable over time than total cash costs. Farm business profits were highest in 2011-12, which coincided with total cash costs being the lowest. From 2012-13 to 2013-14, cash costs actually decreased marginally whilst cash receipts increased, which explains why farm business profits has increased slightly.

**Figure 12:** Costs to Receipts Ratio and Vegetable Cash Receipts for farms 20 to 70 hectares over time



**Source:** ABARES Australian vegetable growing farms: An economic survey 2012-13 and 2013-14

It can be seen by Figure 12 that the costs to receipts ratio and vegetable cash receipts exhibit an inverse relationship. The costs to receipts ratio was lowest in 2011-12, which coincided with vegetable cash receipts being at their highest.

**Figure 13:** Costs of production on average for farms 20 to 70 hectares over time

Cash costs	2011-12	% Share	2012-13	% Share	2013-14	% Share
Hired labour	\$109,010	17.67%	\$128,200	17.31%	\$143,000	19.38%
Fertiliser	\$65,140	10.56%	\$69,900	9.44%	\$70,000	9.49%
Contracts paid	\$56,520	9.16%	\$79,400	10.72%	\$74,000	10.03%
Seed	\$44,830	7.27%	\$56,300	7.60%	\$48,000	6.50%
Fuel, oil and grease	\$38,140	6.18%	\$49,400	6.67%	\$51,000	6.91%
Crop and pasture chemicals	\$41,770	6.77%	\$40,200	5.43%	\$44,000	5.96%
Repairs and maintenance - buildings	\$15,360	2.49%	\$19,300	2.61%	\$17,000	2.30%
Interest	\$37,260	6.04%	\$50,400	6.80%	\$43,000	5.83%
Electricity	\$15,670	2.54%	\$20,400	2.75%	\$20,000	2.71%
Administration	\$16,630	2.70%	\$17,700	2.39%	\$18,000	2.44%
Land rent	\$14,390	2.33%	\$7,000	0.95%	\$7,000	0.95%
Packing charges and materials	\$30,690	4.97%	\$31,100	4.20%	\$34,000	4.61%
Rates	\$12,740	2.07%	\$10,400	1.40%	\$11,000	1.49%
Freight	\$22,670	3.67%	\$42,500	5.74%	\$40,000	5.42%
Vehicles, plant & equipment maintenance	\$32,310	5.24%	\$38,500	5.20%	\$34,000	4.61%
Other costs	\$63,810	10.34%	\$80,000	10.80%	\$84,000	11.38%
Total cash costs	\$616,940	100.00%	\$740,700	100.00%	\$738,000	100.00%

*Source: ABARES Australian vegetable growing farms: An economic survey 2012-13 and 2013-14*

Similar to vegetable farms 5 to 20 hectares in size, farms 20 to 70 hectares experienced a slight decrease in their total costs from 2012-13 to 2013-14. Despite this, hired labour increased considerably over the same period of time. Expenditure on seed, interest payments and electricity have also decreased, among other costs. This data highlights the burden of labour costs on vegetable growers, which has increased every year for vegetable farms 20 to 70 hectares in size.

An opportunity for vegetable growers to lower costs and to make investments in their business has come out of the 2015 Federal Budget, which not only provides drought assistance to growers, but include infrastructure support and deductions on asset expenditure. The Government will allow all primary producers to be able to immediately deduct expenditure on fencing and water facilities, such as dams, tanks, pumps and windmills. Growers will also now be able to depreciate fodder storage assets, such as silos and tanks used to store animal feed, over three years. Additionally, any farm that runs a small business (i.e. one with an annual turnover of under \$2 million) will be able to immediately deduct asset expenditure (in addition to fencing, water facilities and fodder storage), provided the asset costs less than \$20,000 and aids in business operations.

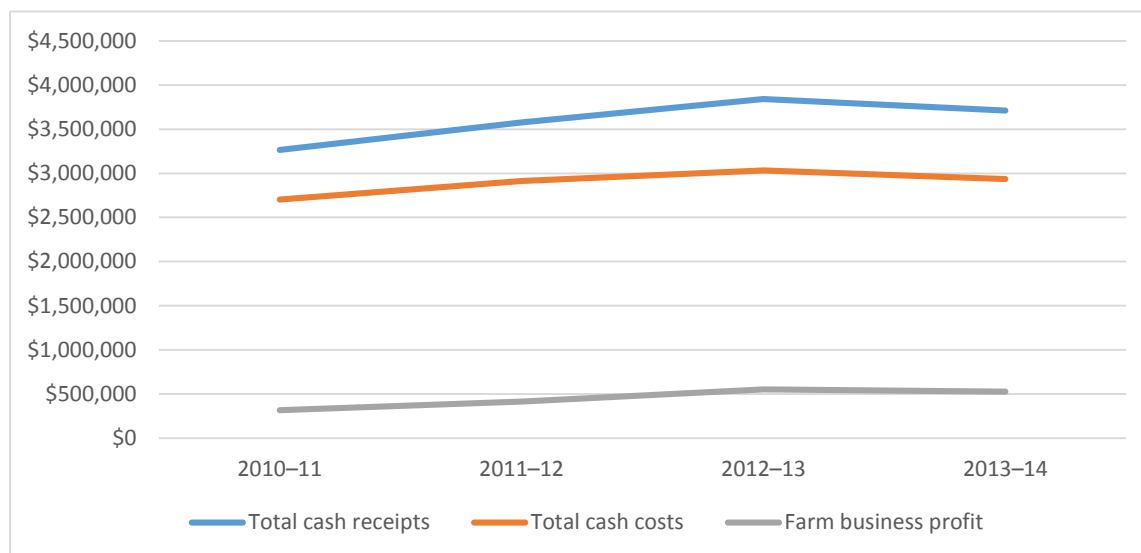
These measures should inject some much need confidence to the vegetable industry, which is made up of a large number of small farms who do not benefit from economies of scale. Growers who are unsure of investing in a new piece of equipment, for example, should now have the incentive to go ahead with the investment, as they will now be able to claim the expense back on their tax return.

These budget measures can not only spur on investment, but also reduce the debt burden on small businesses, as it could shift asset expenditure from being funded by borrowed money. These measures, coupled with low interest rates in Australia create an opportunity for vegetable growers to be able to further develop their businesses model.

## Category of farms greater than 70 hectares in size

In 2013-14, ABARES estimated there to be 292 vegetable growing businesses with an estimated value of agricultural operations (EVAO) greater than \$40,000 for farm sizes greater than 70 hectares.

**Figure 14:** Key financial indicators for farms greater than 70 hectares on average over time



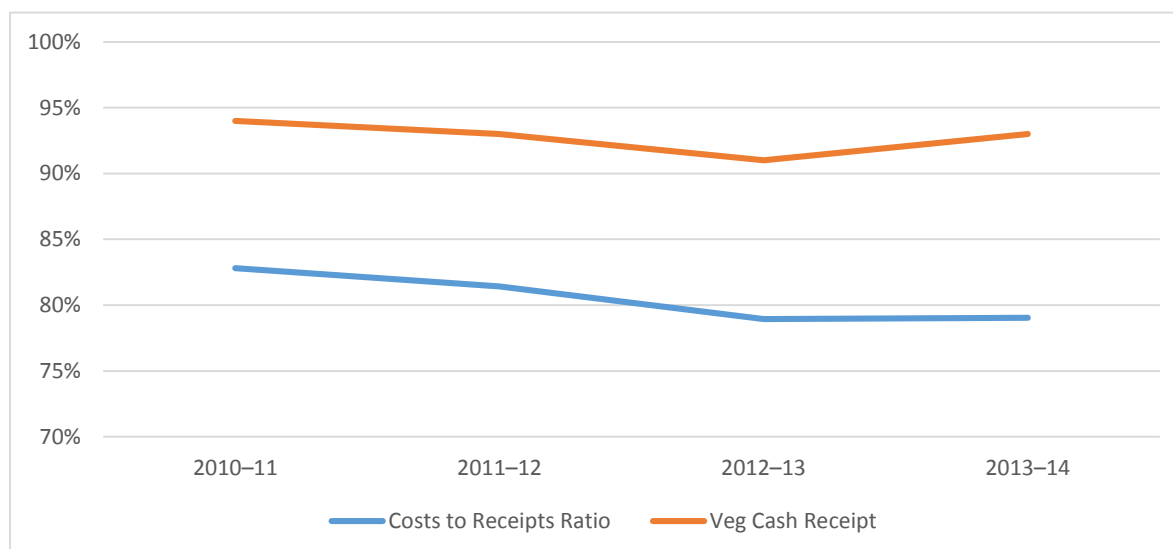
**Source:** ABARES *Australian vegetable growing farms: An economic survey 2012-13 and 2013-14*

It can be seen in Figure 14 that key financial indicators for farms greater than 70 hectares have remained relatively stable over time, more so than for smaller farm sizes shown in previous sections. This can be attributed to larger farms having less volatility over time in their financial indicators. The reason for this is because larger farms tend to produce multiple commodities, diversifying risk in the case of an extreme event such as weather damage, a pest outbreak or a sudden drop in demand. Additionally, it tends to be the larger farms that export vegetables, which can provide an additional source of revenue.

As farm size increases, the absolute values of the gap between total cash receipts and total cash costs increases, being approximately \$500,000 in 2013-14 in Figure 14. This is due to lower costs per tonne of production, which arise from larger farms being able to purchase in bulk, as well as specialise.

Larger vegetable farms also tend to have the ability to split up the complex stages of the production process through specialising in particular stages of the process. This increases overall efficiency by having specialised workers in each stage of the production process (for example, having separate workers dedicated to picking, cleaning and packaging).

**Figure 15:** Costs to Receipts Ratio and Vegetable Cash Receipts for farms greater than 70 hectares on average over time



*Source: ABARES Australian vegetable growing farms: An economic survey 2012-13 and 2013-14*

The costs to receipts ratio for farms greater than 70 hectares was lowest in 2012-13, which coincided with vegetable cash receipts being the lowest over the same time period. Both lines almost run in parallel until 2013-14, where vegetable cash receipts increase and the costs to receipts ratio decrease.

**Figure 16:** Costs of production on average for greater than 70 hectares over time

Cash costs	2011-12	% Share	2012-13	% Share	2013-14	% Share
Hired labour	\$498,070	17.10%	\$516,400	17.03%	\$587,000	20.00%
Fertiliser	\$239,430	8.22%	\$242,000	7.98%	\$226,000	7.70%
Contracts paid	\$338,220	11.61%	\$351,800	11.60%	\$307,000	10.46%
Seed	\$205,210	7.05%	\$218,500	7.20%	\$205,000	6.98%
Fuel, oil and grease	\$148,280	5.09%	\$175,800	5.80%	\$172,000	5.86%
Crop and pasture chemicals	\$154,260	5.30%	\$168,900	5.57%	\$155,000	5.28%
Repairs and maintenance - buildings	\$69,540	2.39%	\$63,000	2.08%	\$54,000	1.84%
Interest	\$154,880	5.32%	\$171,300	5.65%	\$161,000	5.49%
Electricity	\$65,540	2.25%	\$97,900	3.23%	\$97,000	3.30%
Administration	\$54,980	1.89%	\$55,600	1.83%	\$55,000	1.87%
Land rent	\$61,690	2.12%	\$36,200	1.19%	\$36,000	1.23%
Packing charges and materials	\$187,470	6.44%	\$261,900	8.64%	\$246,000	8.38%
Rates	\$30,150	1.04%	\$38,800	1.28%	\$39,000	1.33%
Freight	\$191,370	6.57%	\$221,800	7.31%	\$209,000	7.12%
Vehicles, plant & equipment maintenance	\$140,370	4.82%	\$174,800	5.76%	\$159,000	5.42%
Other costs	\$372,650	12.80%	\$238,100	7.85%	\$227,000	7.73%
Total cash costs	\$2,912,110	100.00%	\$3,032,800	100.00%	\$2,935,000	100.00%

*Source: ABARES Australian vegetable growing farms: An economic survey 2012-13 and 2013-14*

The percentage shares in Figure 16 for particular cost categories for farms greater than 70 hectares is strikingly similar to farms between 20 to 70 hectares. Farms greater than 70 hectares also saw a decrease in their total costs from 2012-13 to 2013-14.

Again, labour was the biggest cost over the time period, accounting for 20% of total costs in 2013-14. Labour also increased by the largest amount over the time period.

Looking at the costs of production for different sized farms, the contracts paid category clearly increases as farm size increases. This category represents labour traditionally used for specific tasks, such as picking, labour needed during particular months and consulting. Combining hired labour with contracts paid for farms greater than 70 hectares, these labour costs account for over 30% of total cash costs in 2013-14.

A key development in the vegetable industry is mechanisation, which is the long-term transition from labour to technology. This trend could help to combat the burden of increasing labour costs for farms of all sizes. However, larger vegetable farms in particular have the opportunity to sustain their long-term viability through uptake of modern technologies, which can reduce labour costs and increase productivity further.

More investment into the research and development of new technologies can only lead to better outcomes, which will eventually reduce the costs of these technologies. In turn, this will increase their long-term viability for on-farm application.

## Conclusion

The analysis presented in this discussion paper on the financial performance of vegetable farms by farm size shows that the larger a farm, the more profitable that farm is likely to be. This is due to cash receipts increasing by a higher proportion than cash costs as farm size increases, which is exemplified by the costs to receipts ratio.

However, the relative expenditure on particular cash costs as a share of total cash costs stays relatively the same for all farm sizes. For example, labour costs tend to constitute approximately a 17-20% share of total cash costs for all farm sizes.

Smaller sized farms incur greater cash costs per tonne of output, which they are able to dilute by increasing their scale of operations. Recent economic developments, such as low interest rates and the 2015 Federal Budget's favourable measures for small businesses, should encourage investment for smaller growers.

However, there are risks associated with expanding farming operations which need to be considered. It is important to assess the return on investments from any substantial increase in scale of operations. Any farm looking to remain financially viable, or increase their productivity and profitability, will require a long term investment strategy to ensure they can effectively reduce costs and increase revenue sources.

There are clear benefits for vegetable growers who have larger farms, as they are better equipped to dilute their cash costs with the extra revenue received. Export markets can produce other sources of revenue, which mitigates risks through diversification. It also tends to be the larger growers that export.

However, there is still scope to improve. Larger sized growers should invest in research and development to decrease labour costs, such as by increasing the efficacy of the technology available to them, and increasing their uptake of that technology.

Australian vegetable growers have been facing a challenging business environment for many years now, with increasing production costs and low retail prices adversely impacting on grower margins. However, by embracing emerging technologies, exploring new avenues for revenue raising and having a forward outlook on business viability, vegetable growers should be able to improve upon their business outcomes.

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