A NEW INTERNATIONAL MARKET FOR GAAP

GWU MSBA Consulting Team 5

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Foreground

Gyrfalcon Ventures (GV) recently received ownership of international rights to GAAP. GV wants to exploit it.

Trigger

However, the value of GAAP is believed to diminish rapidly due to 1. GV wishes to make limited investment in R&D and 2. actively innovating competitors.

Central Question

What country (outside of the US and Canada) offers the best conditions for GV to sell GAAP for the highest ROI?

GYRFALCON VENTURES SHOULD ENTER AUSTRALIA.

01 Australian agricultural market possesses the most desirable characteristics regarding size, growth and farm scale.

02 Australian farmers are well equipped with financial and infrastructure resources as well as the knowledge to support GAAP technology.

03 Australia offers the ease to do business within an uncorrupted environment.

04 There is a good chance that selling GAAP in Australia will generate one of the highest amount of revenue.

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Overall Agricultural Market Size in sq-km

China
5,145,530 sq-km

1st

2nd

Australia
3,966,153 sq-km

Brazil
2,788,081 sq-km

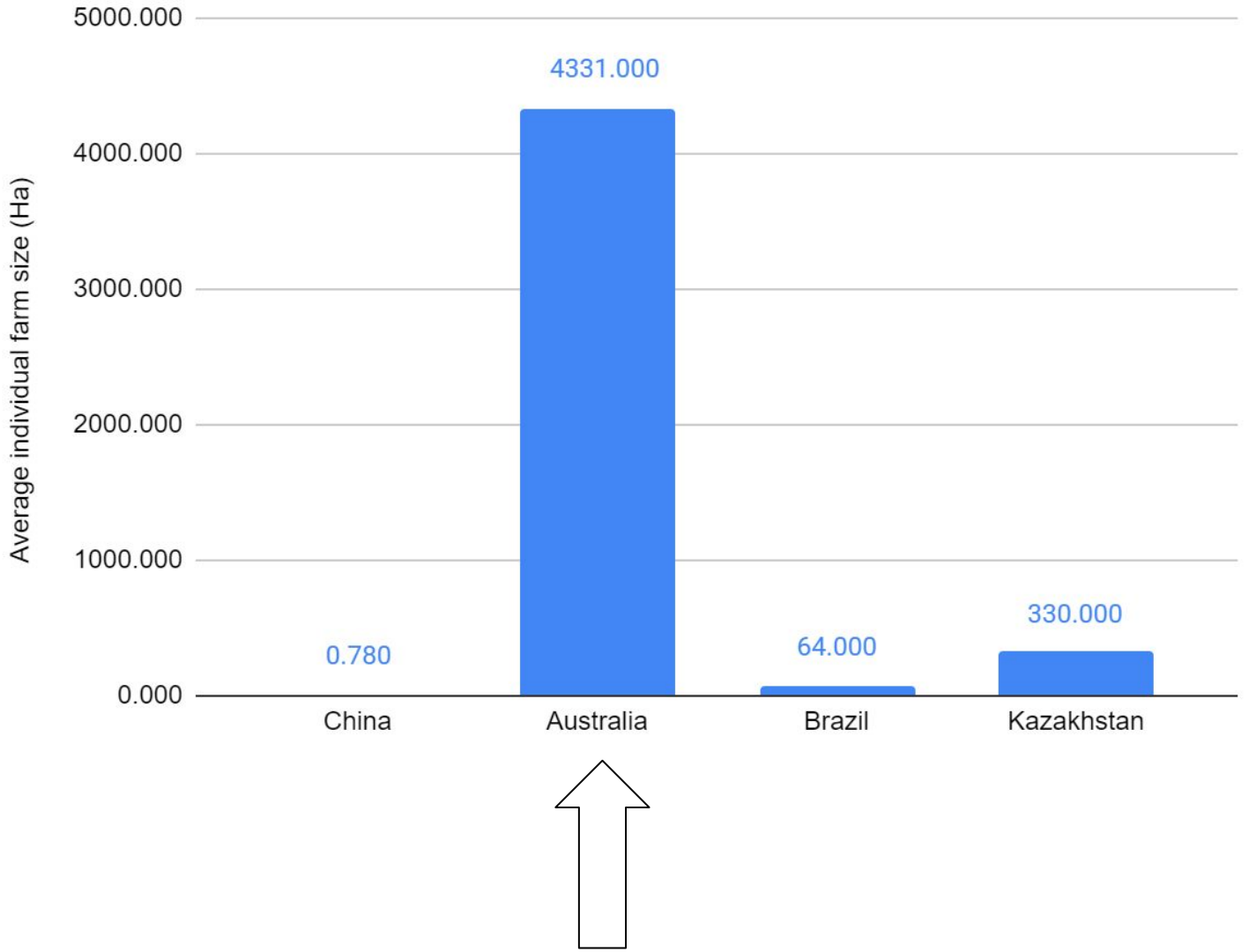
3rd

4th

Kazakhstan
2,169,941 sq-km

Average Individual Farm Size

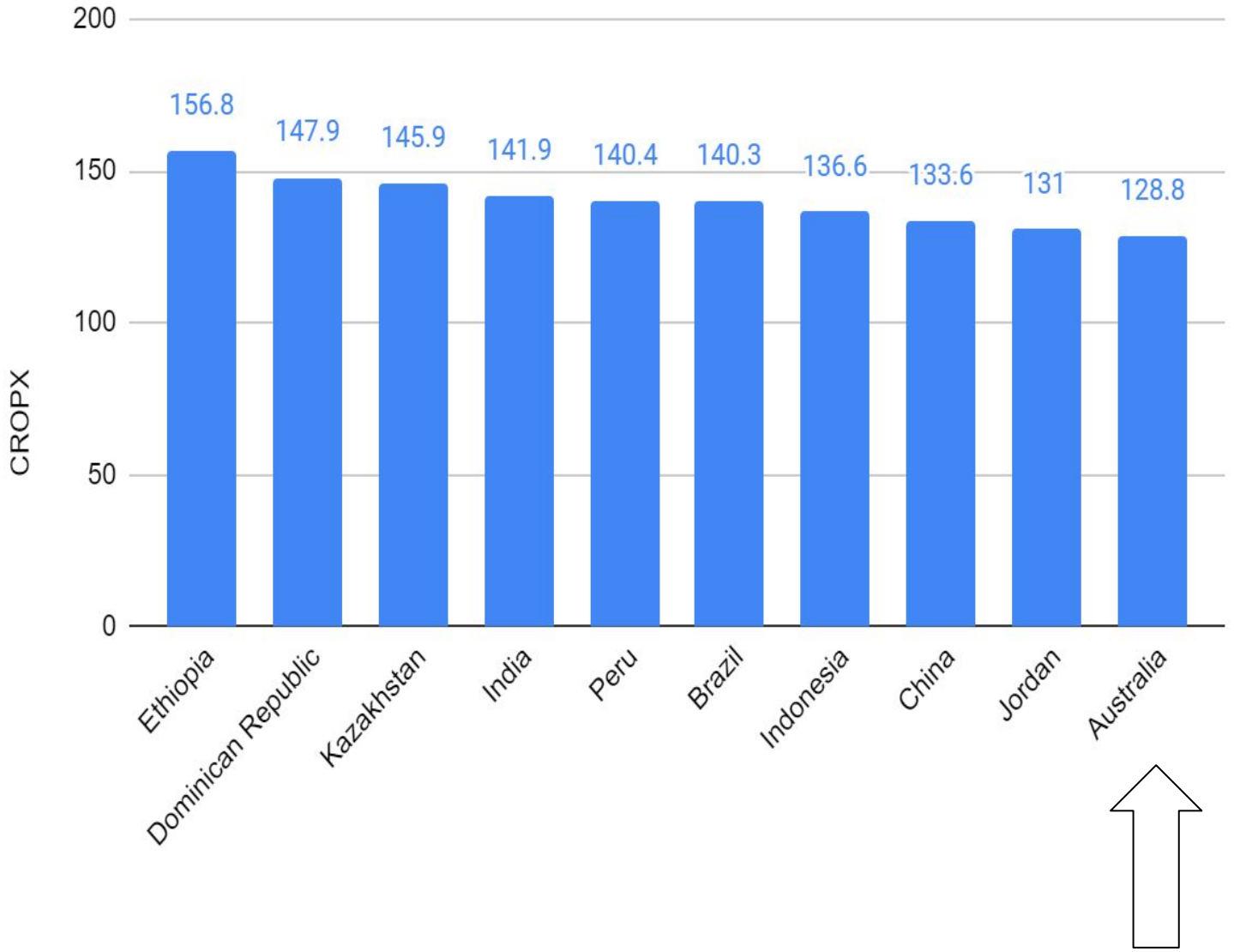
- In 2013, the average individual farm size in Australia is 4331 ha.
- Farming in Australia is more commercialized than in most countries, which responds to GV's desire in a potential market mentioned in Memo A.
- Farming commercialization is an indicator of better ability to pay.



Data source: "Innovation, Agricultural Productivity and Sustainability in China", Australian Bureau of Statistics, ResearchGate

Crop Production

- Crop production index from 2012
- Crop production in Australia has grown 28.8% since the 2004-2006 period



Data source: “Gyrfalcon Date Bank_Spring 2020”

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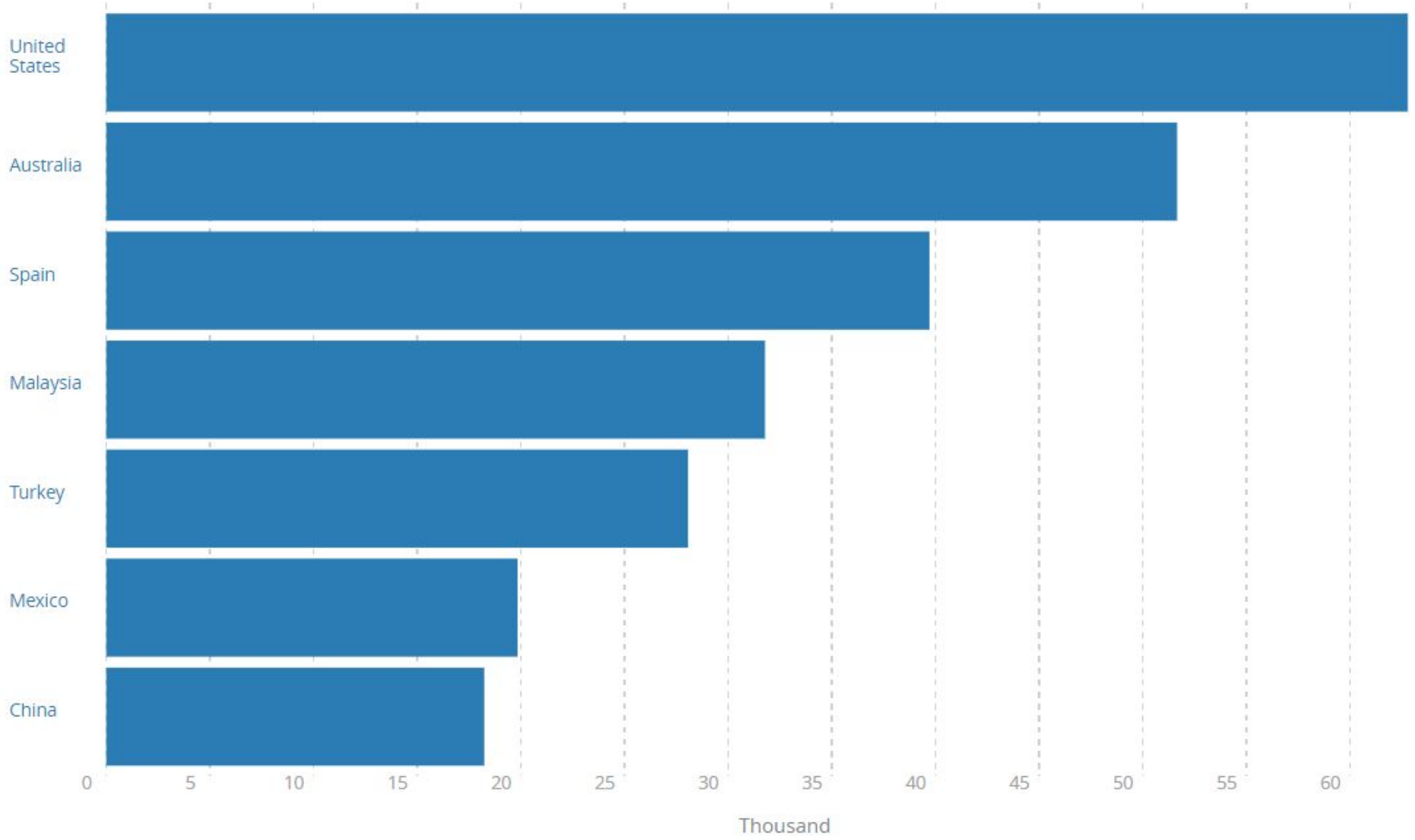
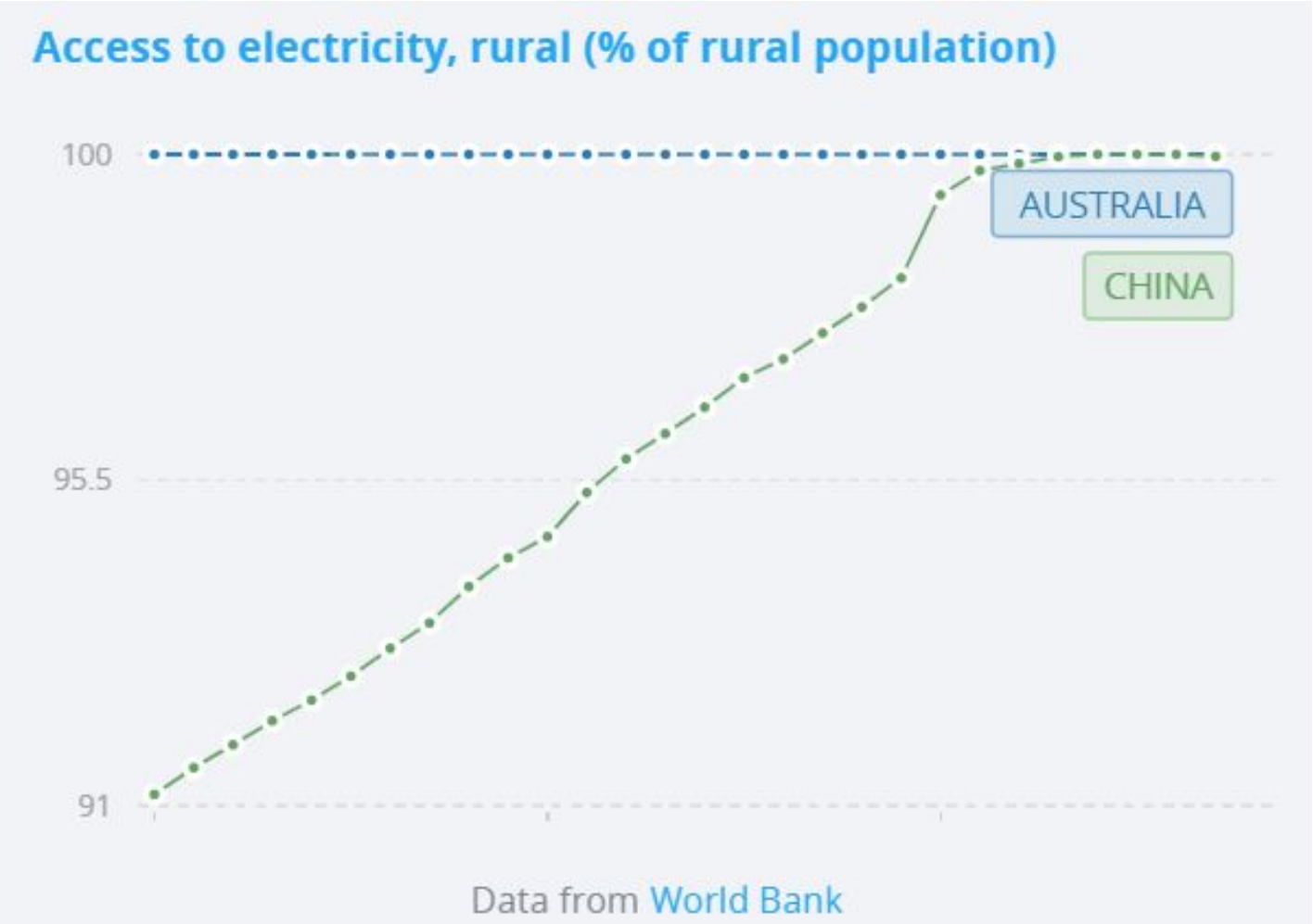
Highly Developed Economy

GDP, per capita, PPP



Ensured Coverage of Electricity in Rural Area

- Metric: Access to eletricity, rural (% of rural population)
- Australia: 100 (from 1990)
- China: 100 (from 2014)



This metric is indicated by the percentage of rural population with access to electricity.

Higher Education Level

- Metric: School enrollment, tertiary (% gross)
- Australia: 113
- China: 50

Since the overall population in Australia is better educated, we assume that farmers, as a sub-group, are also better educated.

This metric is calculated by (# of people going to college at any age)/(#of people going to college in the proper age for college)

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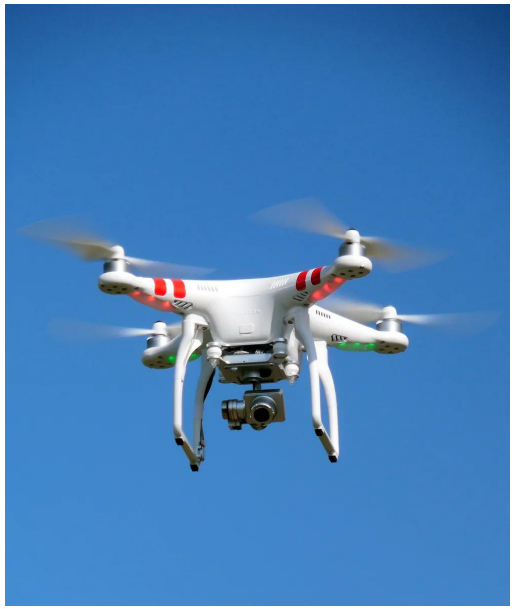
Australian Law Allows Drones

AUSTRALIA DRONE REGULATIONS

According to Australia's national aviation authority, Australia's Civil Aviation Safety Authority (CASA), flying a drone is legal in Australia.

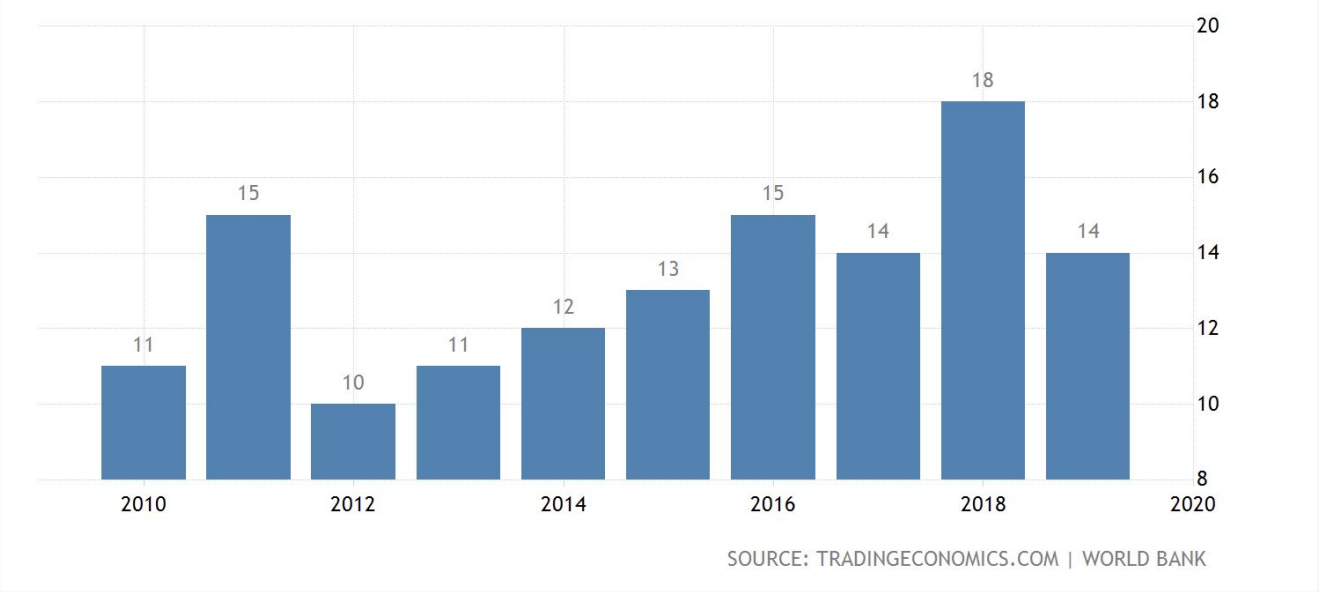


This metric is indicated by the UAV Coach: https://uavcoach.com/drone-laws-in-australia/

Ease of Doing Business Rank

Australia is ranked 14th among 190 economies in the ease of doing business, according to the latest World Bank annual ratings. The rank of Australia improved to 14 in 2019 from 18 in 2018.

The ease of doing business ranking is an indication of an economy's position relative to that of other economics

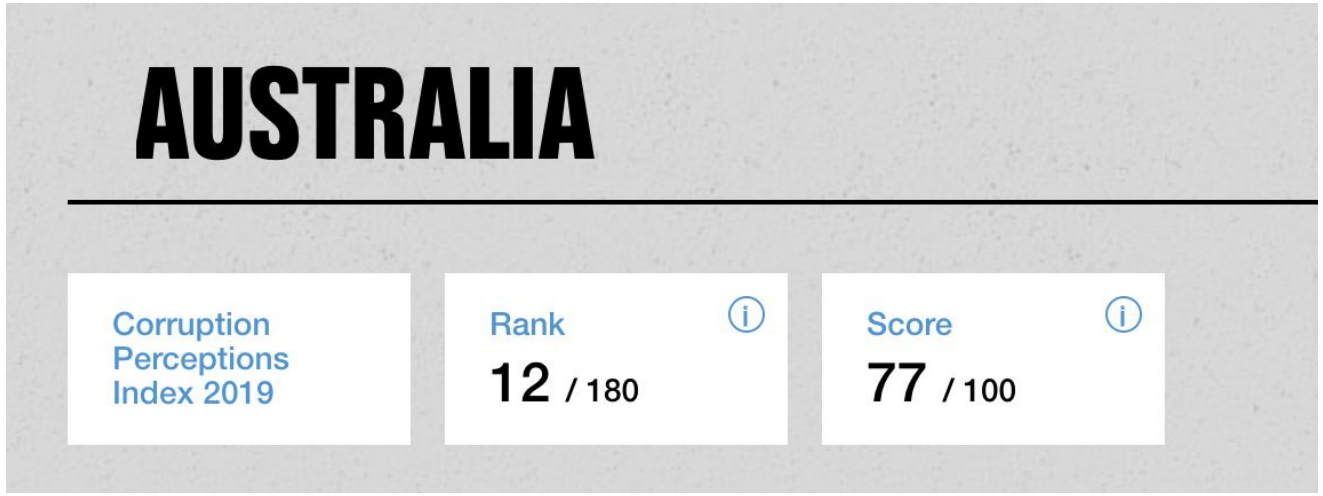


This metric is indicated by the Trading Economics:https://tradingeconomics.com/australia/ease-of-doing-business

Corruption Perceptions Index

Australia was placed 12th out of 180 countries in the Corruption Perception Index 2019. *(The higher score indicates less corruption.)*

The Corruption Perceptions Index (CPI) is an index published annually by Transparency International since 1995 which ranks countries "by their perceived levels of public sector corruption, as determined by expert assessments and opinion surveys."



This metric is indicated by the Transparency International: https://www.transparency.org/cpi2018

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Good Predicted Sales Performance in Australia According to Partner Company's PERF Index

- Important factors contribute to PERF:

  Agricultural Land, Agricultural Value Added (% of GDP), GDP Per Capita PPP (International Dollars)

- Compare PERF among all potential countries

- Australia is ranked third.

⇨ **PERF can be referred to estimate the sales of GAAP.**

```
Coefficients:
             Estimate Std. Error t value Pr(>|t|)
(Intercept)    6.2767     0.1316  47.697  < 2e-16 ***
`I-LOGAGLAND`  7.9818     0.1524  52.377  < 2e-16 ***
`I-AGVAL-PC`   0.4895     0.2135   2.293   0.0286 *
`I-GDPCAP`     1.0742     0.1695   6.338 4.09e-07 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.1897 on 32 degrees of freedom
  (9 observations deleted due to missingness)
Multiple R-squared:  0.989,     Adjusted R-squared:  0.988
F-statistic:   963 on 3 and 32 DF,  p-value: < 2.2e-16
```

Country	China	US	**Australia**
PERF	14.91	14.77	**14.54**
Rank	1	2	**3**

Data from Excel PERF

Data source: "Gyrfalcon Data Bank_Spring 2020"-PERF

Advantage in International Trade

- Australia has a bigger precentage of trade volume compared to China, and a upward trend.

- Australia has been in WTO since 1995, which means that this country has a 25-year long history in international trade.

- Conclusion: better trading environment

Data source: World Bank- Trade(% of GDP)

Stable Trading Relationship with Australia

- The United States is the third largest trade partner of Australia.
- The United States has trade war issue with China.
- Conclusion: stable relationship with Australia

Largest trading partners [edit]

The ten largest trading partners of Australia with their total trade (sum of imports and exports) in bil follows:[1]

Rank	Country/District	Exports	Imports	Total Trade	Trade Balance
1	China	110.427	64.287	**174.714**	46.17
2	Japan	44.613	23.994	**68.608**	20.619
3	United States	20.758	45.732	**66.490**	-20.758
4	South Korea	22.769	15.996	**38.766**	6.773
5	United Kingdom	12.616	14.846	**27.462**	-2.23
6	New Zealand	14.038	12.772	**26.810**	1.266
7	India	19.214	6.477	**25.690**	12.737
8	Singapore	11.216	13.477	**24.693**	-2.261
9	Thailand	5.119	16.686	**21.805**	-11.567
10	Germany	4.300	16.300	**20.599**	-12.000
	Total all countries [2]	373.240	362.244	**735.484**	10.996

Data source: International Trade Administation

DRAWBACKS AND RISKS

01 Australia has low area of irrigation land.

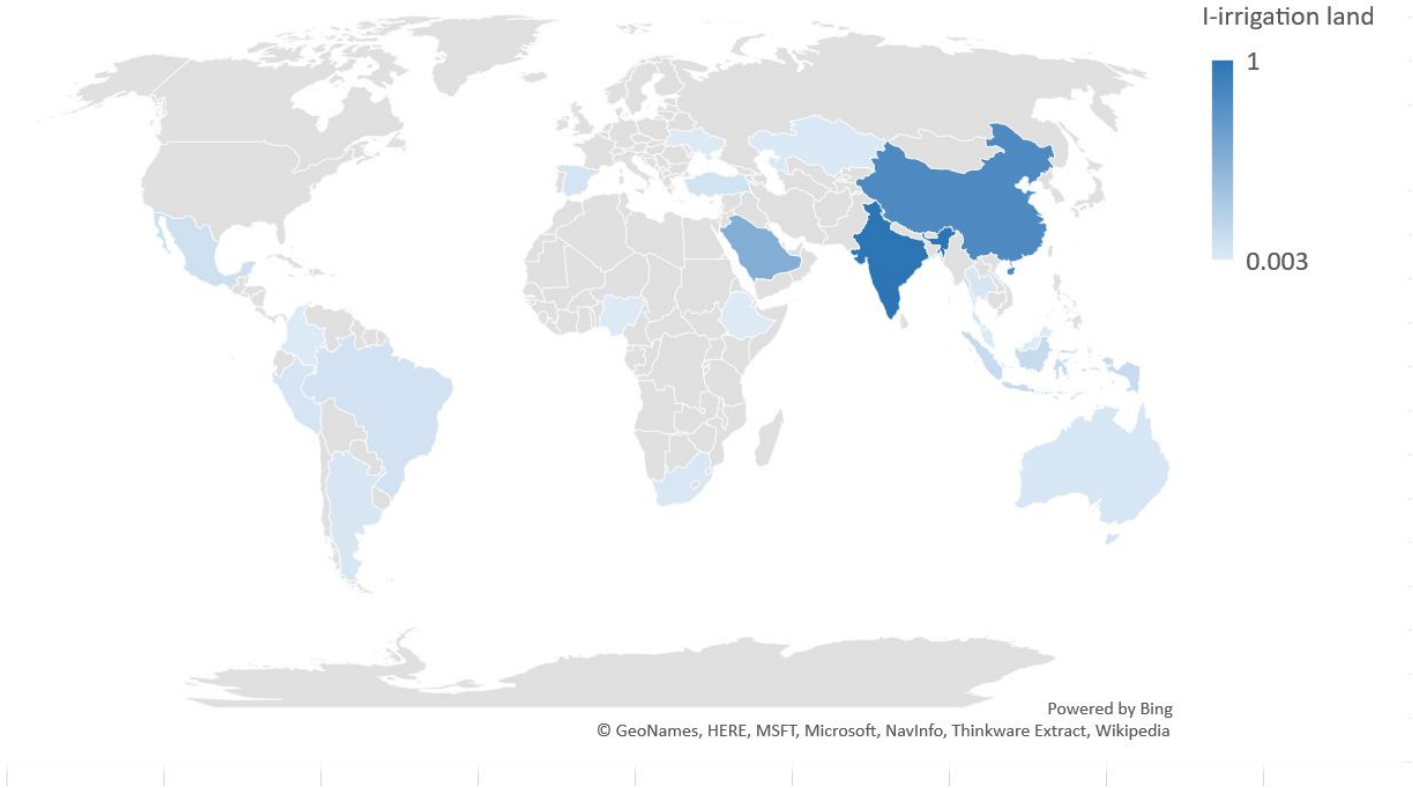
02 **Australia is the 2nd furthest country among the top 20 potential markets.**

03 **Risks of GAAP's technology/ competitive advantages being copied**

04 **Geopolitical risks (for example: trade wars)**

The area of Austrailia's irrigation land is only

- 27.0% of Indonesia's
- 6.8% of Saudi Arabia's
- 4.3% of China's
- 3.5% of India's



Data source: "World Bank"

From Washington DC to Sydney

Washington is 16 hours behind sydney

Washington

EST (UTC-0500)

00:54:14 AM

Wednesday, March 4, 2020

Sydney

AEDT (UTC + 1100)

04:54:14 PM

Wednesday, March 4, 2020

Flight duration

The two places are 15711 kilometers apart.

A non-stop flight will take about 19 hours 38 minutes.

NEXT STEPS

01

Revenue estimation: Execute research into Market capture - start with number of broadacre farms; Investigate competitive landscape in Australia to form a pricing strategies

02

Assessment of Client's capabilities: Examine challenges from operating in a new country in a new industry and lessons from past market entry cases

03

Go-to-market strategies:

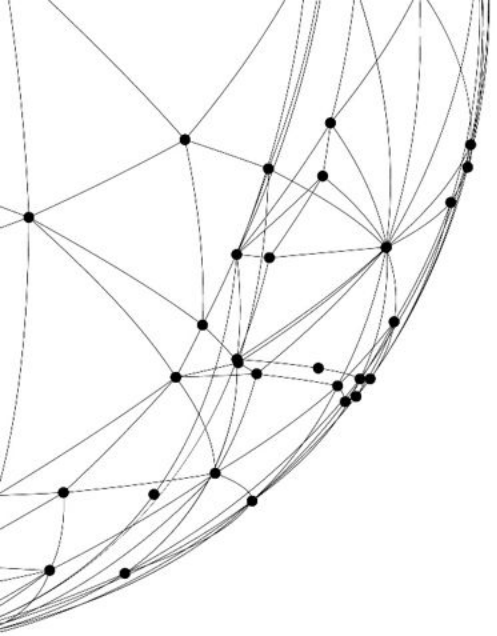
- Speed of entry: region test? All Australia at once?
- Method: Build, Partnership, or M&A?
- Marketing strategies & Salesforce

04

ROI estimation: after finalizing cost structures and financial resources.

05

Sustainable supply chain development



THANK YOU VERY MUCH

APPENDIX

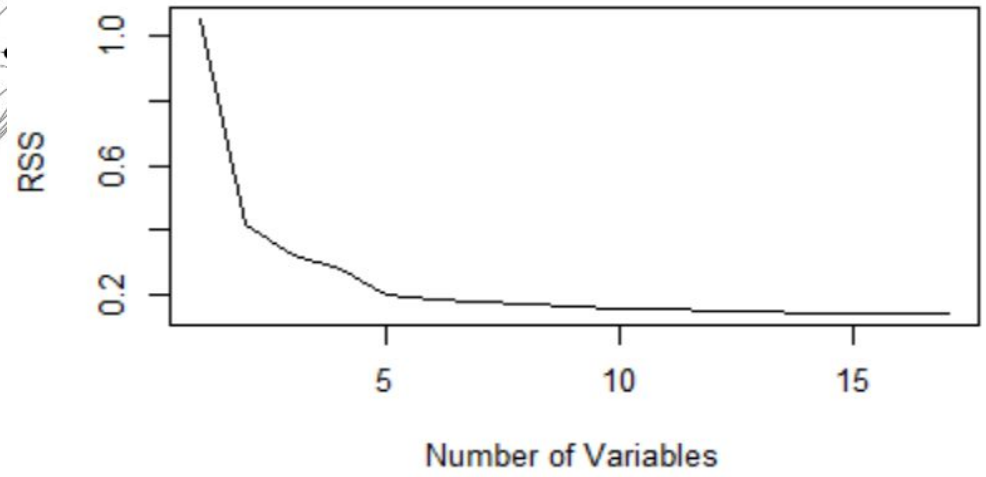
weights of the metrics		10%	15%	10%	7%	7%	18%	8%	8%	1%	8%	3%	5%	
WEIGHTED AVERAGE TOTAL SCORE (0-1)	Country	Overall market size in $ value (I-AGVAL)	Overall Market size in sq-km (I-AGLAND)	Market growth (I-CROPX)	Crop and land types (suitable for rotor-based aerial scanning)	User capabilities (tertiary education)	Economics (I-GDPCAP)	Infrastructure (ELEC-PC)	Ease of doing business (I-EASE-RK)	Geographic distance	Sales Potential (PERF)	Natural Disasters & Serious weather conditions	Business Transparency (I-CORRX)	Government regulations on drones
0.63	Australia	0.06	0.77	0.79	0.04	1.00	0.90	1.00	-0.04	-0.97	0.98	-0.13	1.00	
0.60	China	1.00	1.00	0.82	0.82	0.45	0.25	1.00	-0.21	-0.68	1.00	-1.00	0.45	
0.50	Saudi Arabia	0.03	0.34	0.55	0.52	0.60	1.00	0.93	-0.44	-0.66	0.93	-0.01	0.61	
0.43	Spain	0.09	0.05	0.71	0.05	0.79	0.64	1.00	-0.11	-0.37	0.81	-0.10	0.75	
0.42	India	0.52	0.35	0.87	1.00	0.25	0.11	0.70	-0.19	-0.74	0.92	-0.25	0.48	
0.42	Kazakhstan	0.01	0.42	0.90	0.02	0.48	0.47	1.00	-0.30	-0.59	0.92	0.00	0.36	
0.38	Argentina	0.05	0.29	0.78	0.03	0.80	0.42	0.96	-0.53	-0.51	0.92	-0.05	0.42	
0.38	Brazil	0.14	0.54	0.86	0.07	0.45	0.31	0.97	-0.80	-0.41	0.94	-0.07	0.54	
0.35	Malaysia	0.04	0.02	0.72	0.01	0.40	0.48	1.00	-0.11	-0.94	0.73	-0.01	0.65	
0.35	Turkey	0.14	0.07	0.71	0.07	0.21	0.38	1.00	-0.03	-0.53	0.81	-0.12	0.56	
0.34	Mexico	0.09	0.21	0.72	0.09	0.35	0.33	0.97	-0.32	-0.19	0.88	-0.16	0.44	
0.32	Indonesia	0.14	0.11	0.84	0.13	0.32	0.20	0.93	-0.16	-1.00	0.84	-0.12	0.42	
0.30	Ukraine	0.03	0.08	1.00	0.01	0.74	0.16	1.00	-0.66	-0.48	0.83	-0.01	0.32	
0.29	Thailand	0.05	0.04	0.79	0.04	0.43	0.30	1.00	-0.48	-0.87	0.80	-0.21	0.48	
0.29	South Africa	0.02	0.19	0.71	0.03	0.20	0.25	0.67	-0.15	-0.80	0.87	-0.02	0.55	
0.27	Peru	0.03	0.05	0.86	0.05	0.63	0.23	0.73	-0.66	-0.34	0.78	-0.03	0.48	
0.24	Colombia	0.04	0.09	0.67	0.01	0.49	0.26	0.88	-1.00	-0.23	0.82	-0.03	0.46	
0.21	Nigeria	0.15	0.14	0.67	0.00	0.09	0.11	0.34	-0.37	-0.54	0.87	0.00	0.34	
0.18	Ethiopia	0.02	0.07	0.96	0.00	0.07	0.03	0.08	-0.29	-0.71	0.81	-0.01	0.41	

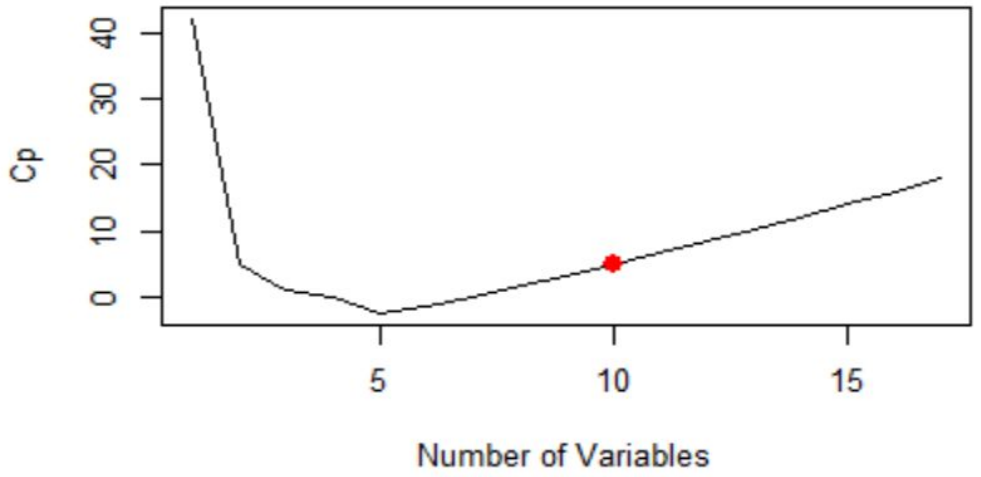
*Data in table are based on the following data sources: Gyrfalcon Ventures Data Bank (PERF), World Bank (Education, Size of irrigation land), UAV Coach Archive (Drone Regulations), Google Maps (Geographic distance), EM-DAT (Natural Disaster)

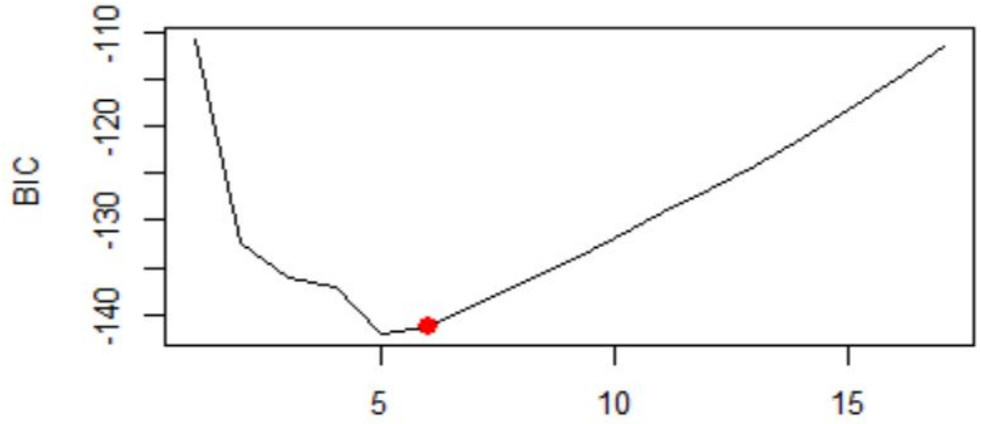
Code to discover the underlying deciding factors for PERF

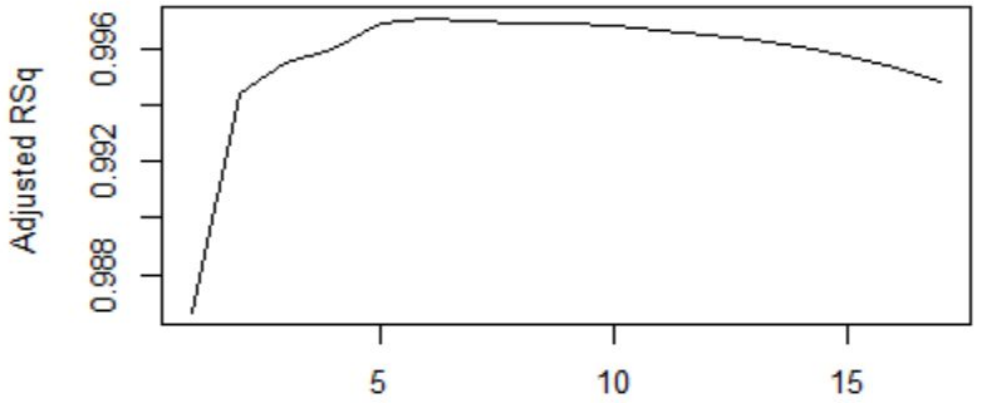
```
library(readxl)
data <- read_excel("Desktop/Gyrfalcon Data Bank_Spring.xlsx")
str(data)
df <- data[,-c(1,2,4:20)]  #pairs(official_data)

library(leaps)
lm_best <- regsubsets(PERF ~., data = df, nvmax = 17)
best.summary <- summary(lm_best)

par(mfrow =c(2,2))
plot(best.summary$rss ,xlab=" Number of Variables ",ylab=" RSS",type="l")

plot(best.summary$cp ,xlab =" Number of Variables ",ylab="Cp",type="l")
which.min (best.summary$cp )
points (10, best.summary$cp [10], col ="red",cex =2, pch =20)
which.min (best.summary$bic)
plot(best.summary$bic ,xlab=" Number of Variables ",ylab=" BIC",type="l")
points (6, best.summary$bic [6], col =" red",cex =2, pch =20)

plot(best.summary$adjr2 ,xlab =" Number of Variables ",ylab=" Adjusted RSq",type="l")
coef(lm_best,5)

model_2 <- lm(PERF~`I-LAND`+`I-LOGAGLAND`  +  `I-CROPX` + `I-AGVAL-PC`  +  `I-GDPCAP`,data = df)
summary(model_2)

model_3 <- lm(PERF~ `I-LOGAGLAND` + `I-AGVAL-PC`  +  `I-GDPCAP`,data = df)
summary(model_3)

# I-LOGAGLAND is the most important factor for PERF
```

Output from R-code: Error and Goodness of fit across models









Output from R-code: Linear Models' Performances

```
Call:
lm(formula = PERF ~ `I-LAND` + `I-LOGAGLAND` + `I-CROPX` + `I-AGVAL-PC` +
    `I-GDPCAP`, data = df)

Residuals:
     Min       1Q   Median       3Q      Max
-0.28824 -0.10392 -0.02867  0.10091  0.55122

Coefficients:
             Estimate Std. Error t value Pr(>|t|)
(Intercept)    6.42412    0.28953  22.188  < 2e-16 ***
`I-LAND`       0.28501    0.22364   1.274   0.2123
`I-LOGAGLAND`  7.78914    0.22537  34.561  < 2e-16 ***
`I-CROPX`     -0.07638    0.33944  -0.225   0.8235
`I-AGVAL-PC`   0.51022    0.21551   2.368   0.0246 *
`I-GDPCAP`     1.01085    0.21161   4.777 4.37e-05 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.1908 on 30 degrees of freedom
  (9 observations deleted due to missingness)
Multiple R-squared:  0.9896,    Adjusted R-squared:  0.9879
F-statistic: 571.3 on 5 and 30 DF,  p-value: < 2.2e-16
```

```
Call:
lm(formula = PERF ~ `I-LOGAGLAND` + `I-AGVAL-PC` + `I-GDPCAP`,
    data = df)

Residuals:
     Min       1Q   Median       3Q      Max
-0.31606 -0.12230 -0.03863  0.09157  0.58779

Coefficients:
             Estimate Std. Error t value Pr(>|t|)
(Intercept)    6.2767     0.1316  47.697  < 2e-16 ***
`I-LOGAGLAND`  7.9818     0.1524  52.377  < 2e-16 ***
`I-AGVAL-PC`   0.4895     0.2135   2.293   0.0286 *
`I-GDPCAP`     1.0742     0.1695   6.338 4.09e-07 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.1897 on 32 degrees of freedom
  (9 observations deleted due to missingness)
Multiple R-squared:  0.989,     Adjusted R-squared:  0.988
F-statistic:   963 on 3 and 32 DF,  p-value: < 2.2e-16
```