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Profitability Prediction in Cattle Ranches in Latin America: A Machine Learning Approach

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Abstract: As the cattle ranchin Latin America transformsitself from a macho activity to a normal business, the application of information technology and business principles becomes increasingly important. At the same time, on account of globalisation and technological developments more and more ranches have absentee owners and professional managers who have started using better data processing techniques. A mathematical model to aid in predicting the profitability of ranch operations would be of immense use to the managers. It may be used as the primary source of predicting profitability whilst some managers may use it as a valuable second opinion. Furthermore, it would of considerable interest to commercial managers to know the effect on predicted profitability should they change the value of an attribute of a activity. The paper demonstrates that both the Vector Space Model and Kernel Ridge Regression routines are fairly simple to implement in a commercial setting. Commercial application will, however, require close interaction between veterinary scientists and business scholars.

Key words: Profitability · Machine Learning · Cattle Ranching · VSM · KRR

INTRODUCTION

The development of the cattle industry in Latin America has had broadly similar political, economic and social patterns across the diverse geography. Underpinning the cattle industry in regions all the way from Northern Mexico to Patagonia was their character as pastoral frontiers. When the conquistadores came to the Americas in the 16th century, followed by settlers, they brought their cattle and cattle-raising techniques with them to the new lands. Huge land grants by the Spanish government, part of the hacienda system, allowed large numbers of animals to roam freely over vast areas. A number of different cattle rearing traditions developed, often related to the original location in Spain from which a settlement originated. The horsemen variously called gauchos, llaneros and charros, created a social system based on cattle. Initially, an estancia referred to a vaguely defined area encompassing grazing rights [1]. Later on, rising prices of hides in the international markets and increasing importance of jerked beef for export and also the economic activities of the Jesuit missionaries in the early nineteenth century led to rationalisation of production [2] and an estancia transformed itself into a ranch. Notwithstanding the existence with a barbed wire fence, business success at that time depended on skill with weapons and on military leadership and strategy.

The twentieth century saw introduction of veterinary science and scientific management practices in cattle ranches in the U.S. In 1908, American Society of Animal Science was founded and in 1910, the first issue of *Journal of Animal Sciences*was published. While scientific management practices percolated to Latin America, for many traditional ranchers who inherited most of their land or obtained it through claims on public lands, recurrent returns have been more important than long term profitability of the production system taking into account opportunity cost of land [3]. Moreover, for such ranchers land and cattle have a prestige value which often trumps direct economic returns [4]. Entry of investment farmers has changed the system and now most of these traditional farmers are also capitalist entrepreneurs concerned with profit maximisation. These cattle ranchers own most of the agricultural area and cattle stock in regions like the Pampas of Argentina, the Amazon in Brazil, the Llanos in Colombia and tropical lowlands in Central America where

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large tracts of land have few alternative uses. Ranching is characterised by and raising one single type of animal grazing on large natural pastures [5].

Expansion of ranching area is becoming difficult as opposition to deforestation is increasing. Cattle ranching has identified as the main promoter of deforestation [6]. Clear-cutting of mature Amazonian forest in Brazil has declined from 19,500 square kilometres per year through 2005 but is still substantial at 5843 square kilometres in 2012-13. On account of some legislative changes, the area may go up in 2014 and to the consternation of environmental activists it is not clear as to when deforestation will stop or reverse. Higher productivity in ranching operations through intensification can cost effectively abate deforestation [7]. During the last decade, the international prices of beef have been rising giving further incentive to efficient ranch operations.

Since the mid-70's, efforts have been made to model beef production [8].The models could be used for:

- Optimal allocation of nutrients for a breeding herd where quality, quantity and costs of nutrients vary seasonally.
- Optimal herd structure for different sets of production conditions as affected by alternative ages for slaughtering or selling steers, excess heifers and culled cows.
- Optimal growing rate, maturing rate, milk production and mature size for given sets of production conditions and breeding systems.
- Optimal stocking and supplemental feeding rates for sets of pasture or range and market conditions.

Most of these models are based on simplified assumptions of the biological processes and do not include population dynamics. It seems difficult to follow through a production process in a logical ordered manner. A few examples of important gaps in the knowledge are:

- The relationships between nutritional level, hormonal production and th e onset of estrous cycling in heifers and postpartum cows.
- The energetic efficiency of fat deposition, maintenance and mobilization for utilization.
- The genetic variability of growth curve parameters.
- The effect of ambient temperature, body composition and physiological state (e.g., weight loss) on nutrient requirements.
- The effect of disease at sub-lethal levels on growth, reproduction.

Machine learning which leans towards discriminative rather than generative models and techniques is increasingly being used in situations where due to the number of variables and a large number of attribute values of the variables, it is not possible to use traditional *if-then-else* type of deterministic programming to make predictions. While popular business applications of machine learning are in the field of finance and marketing, newer applications are being made in other businesses in many sectors in the service industry, like healthcare [9]. The objective of this paper is to create a Profitability Prediction System using a Machine Learning algorithm that could predict the expected profitability of activities at their starting point as well as to identify attributes which most influence profitability. Unfortunately, no existing Profitability Prediction System could be found that could serve as a template to be improved upon. This paper describes the system developed and the data analysis undertaken and attempts to apply existing mathematical techniques and algorithms as a solution to a commercial problem.

Machine learning algorithms are being used in the beef industry for quality control, e.g., to understand carcass profile and conformation scores [10]. Machine learning in the form of genetic algorithms and genetic programming has been applied in biochemistry most importantly to detect and predict spoilage of beefusing Fourier transform infrared spectroscopy [11]. While analysing surface colour, pH and tenderness of beef from data captured under commercial conditions,prediction correlation values can be improved significantly byapplication of Support Vector Machine with optimised kernels and parameters [12]. While these applications are integrated with the laboratory tests, of late machine learning is increasingly being applied in management as well. In most modern ranches the absentee owners possess no operating control and the managers make decisions pertaining to the herd as also relating to financial matters. Usually the incentive structure in place is a profit sharing plan whereby the managers receive larger cash bonuses in proportion to Net Income up to 20% of their salary with a five-year running average of Net Income as a benchmark [13].

As data management practices improved worldwide, computers became ubiquitous in ranch offices. Today, a large number of package software are available in the market, the most commonly used being CattleMax and Cow Profit$. However, ranching involves many complex systems that cannot be easily understood from a combination of production processes and financial

processes. Prior to the advent of Enterprise Resource Planning (ERP) systems, each office within the ranch would most likely have their own system, data and database. Many of these systems would not be able to communicate with one another. For instance, the financials system of a ranch could be on a separate computer system than the HR system, making it more intensive and complicated to process certain functions.An ERP system attempts to integrate all departments and functions across a ranch onto a single computer system that can serve the specific needs of the different departments. The ERP system shares a common database with compatible data transfer and processing routines, allowing various modules or systems to interact seamlessly. Once an ERP system is in place, instead of every single system needing to be compatible with each other, usually all aspects of ranchoperations can work in harmony thereby increasing productivity. People employed in different activities all have access to the same information and can update it. When one department finishes with, for example, a purchase order, it is automatically routed via the ERP system to the purchase department. To find out where the order is at any point, an employee can log in to the ERP system and track it down. This would be very difficult if the order existed in different forms on different systems which were not able to communicate with each other. An ERP system can make other major business processes, such as employee benefits or financial reporting equally efficient.

A major advantage of an ERP system is the integration of financial information. In absence of ERP, owners or managers attempting to understand the ranch's overall performance may find many different versions of the truth. The finance department may have its own set of revenue numbers, sales may have another version and the different business units may each have their own version of how much they contributed to revenues and profits. An ERP system creates a single version of the truth that cannot be called into question because everyone is using the same system.

An ERP system will generally have the following modules:

- Financials: Accounts payable, accounts receivable, fixed assets, general ledger and cash management.
- Human Resources: Benefits, training, payroll, time and attendance.
- Supply Chain Management: Inventory, supply chain planning, supplier scheduling, claim processing, order entry, purchasing.

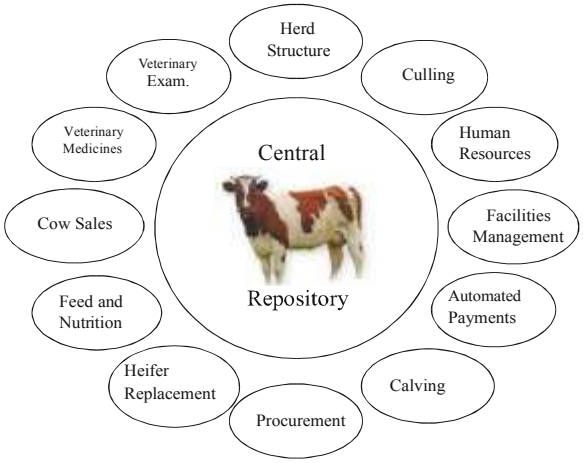

Fig. 1: ERP in a cattle ranch

- Projects: Costing, billing, activity management, time and expense.
- Customer Relationship Management: Sales and marketing, service, commissions, customer contact, calls centre support.

Popular commercial ERP systems include *SAP Business Suite*, *JD Edwards EnterpriseOne, Oracle E-Business Suite and PeopleSoft*(also from Oracle) and*Microsoft Dynamics*. *GNU Enterprise* is a popular open-source free-to-use ERP system.

Apart from the standard ERP modules such as Financials, Payroll and Human Resources, Supply Chain Management, Customer Relationship Management (CRM), ERP for a ranch would contains modules such as animal management, soil management, forage management, cow sales, heifer replacement and contractor management. Figure 1 shows a typical ERP system in a typical ranch.

Access to the ERP is made available via Character User Interface (CUI), Graphical User Interface (GUI), web browser, as shown on Figure 2. It has write-once, run anywhere support for iOS and Android.

Deploying an ERP system into a ranch can also have some disadvantages. Replacing the various disjoint and incompatible legacy systems with one ERP system may take anywhere between 6 months to several years and a considerable amount of resources to transfer all the data from the legacy systems to the ERP system and ensure that the ERP system can adequately replace all the functions of the legacy systems. Training the workforce to use the new ERP system may also be challenging considering that the ranches are located far from metropolitan centres in remote areas. The system may turn

Fig. 2: Management access via web browser

out to be too complex measured against the actual needs of the management orbe seen as too rigid and too difficult to adapt to the specific workflow and business process of the ranch. The blurring of internalfunctional boundaries can cause problems in accountability, lines of responsibility and employee morale increasing the risk of loss of sensitive information in the event of a security breach.Resistance in sharing sensitive internal information between offices and officials can reduce the effectiveness of the software. While the long term benefits can hardly be disputed, the profits and accounting rate of return are likely to be depressed in the first year.

MATERIALS AND METHODS

In the flow diagram, boxes represent stock variables which are Bred Cows, Calving Cows, Weaning Cows, Bred Back Cows, Cull Cows, Calves, Weaned Calves, Potential Development Calves and Stocker Calves. Arrows show action or process that transports units of accumulated stock from one stock to another.

The connectors that inform the units of stock being moved are Calving Rate, Weaning Rate, Pregnancy Rate, Calf Retention Rate and Stocker – Potential Development Ratio. The flow equations that will affect the operations are:

To Calving = (Bred cows)*(Calving Rate)
To Weaning = (Calving Cows)*(Weaning Rate)
To Culls = ((Bred Cows)*(1-(Calving Rate)) + ((Calving Cows*(1-(Weaning Rate)) + ((Weaned Cows*(1-(Pregnancy Rate))
(Bred Cows)*(t) = (Bred Cows)*(t-dt) + (Bred Cows Inflow) + – (Bred Cow Calving) – (Bred Cow Deaths)*(dt) and similar equations for various stges in case of cows and calves
(Total Expenses)*(t) = (Expenses on Hay + Protein, Veterinary examination and medicines, Labour, allocation, Cow depreciation, Lease costs, Taxes and Other depreciation)*(t-dt) + (Expenses)*(dt)
(Total Revenues)*(t) = (Sales as shown in Figure 3)*(t-dt) + (Revenues)*(dt)
Net Income = Total Revenues – Total Expenses
Net Investments = Breeding Cow Investment – Accumulated Depreciation – Net book value of Property, Plant and Equipment + Cash and Current Assets
Return on Investment = Net Income / Total Investment

Data Analysis: The data set was extracted from the live financial data andis based on a Progress database and the application is written in Progress OpenEdge ABL (Advanced Business Language, formerly called Progress 4GL, signifying 4th Generation Language) version 11.3. Progress technology and products provide infrastructure to over 60,000 organisations in 140 countries.Progress 4GL/ABL is a strongly-typed late-bound English-like procedural language. However, for a database language Progress 4GL/ABL does not follow SQL syntax. For example the SQL query.

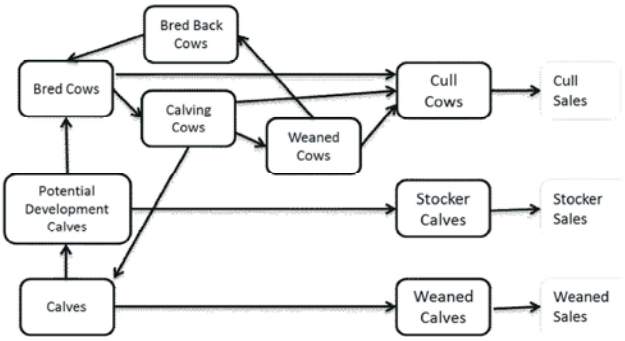

Fig. 3: Herd management flow diagram

SELECT a.name, b.ranch FROM people a INNER JOIN locations b on a.ranch_id = b.ranch_id would translate into the following Progress 4GL/ABL code:

```
for each locations no-lock,
    each people no-lock where
    people.ranch_id = locations.ranch_id:
    display people.name, locations.ranch.
end.
```

Progress's record locking techniques minimise the amount of time a record is exclusively locked for a user in a multiple user environment. Apart from standard data structures, Progress 4GL/ABL also allows for object-oriented programming with support of *encapsulation*, *polymorphism* and *inheritance* of classes.

A useful data structure in Progress 4GL/ABL is a *temporary table* (temp-table). A temp-table allows a database table like structure which is created in memory only for the session which is running and is deleted automatically when the session is terminated. Just as in regular database tables, Progress allows temp-table indexes, which allows for the data stored in the temp-table to be automatically sorted as per in the index, as well as fast access to the data via the index.For example, if we defined a temp-table that holds a similarity measure between transactions as follows:

```
define temp-table ttSim no-undo
field iTransaction1 as integer
field iTransaction2 as integer
field dScore as decimal
index ttS1 iTransaction ascending dScore
descending.
```

Here, iTransaction1 and iTransaction2 are integers which uniquely identify a transaction and dScore is the calculated similarity score between them. For n number of transactions, the temp-table would hold n*(n – 1) number of records.

Now, if we wanted to find out the top 10 most similar transactions to transaction number, say, 250, we can run the following simple query since the data is already sorted in a manner we require due to the index defined:

```
    define variable dSimScores as decimal extent 10
    no-undo.
    define variable iTop as integer initial 10 no-undo.
    define variable i as integer no-undo.
    for each ttSim where
    ttSim.iContract = 250:
    assign i = i + 1.
    if i > iTop then
    leave.
    assign dSimScores[i] = ttSim.dScore.
end.
```

A prospective transaction is entered in the *Transaction Status Ledger*. If it is decided that the ranch management should, say, purchase veterinary medicines, the Bill of Quantities (BOQ) for each medicine would be imported into the *Valuations/Commercials* module. The BOQ contains all the items of work required to be completed. As the work commences on the contract, the person in charge of the contract, would update the BOQ items in terms of percentage complete. Using this information, the cashier will pay the medicine supplier using *Contract Ledger* certificates. The amount claimed by the contractor and amount paid will be stored on the certificate in Contract Payment Ledger. This will update the expenditure on the contract. As the work on the contract progresses, *Procurement* would be used to organise inspections by the ranch officials or third parties, which would automatically update the cost of the contract. The *Financials* module will retain a summary of all the costs of the contract for reference and prediction.

Table 1: International Meat Prices (2002-2004 = 100)

		Bovine Index
2004		113
2005		119
2006		121
2007		126
2008		158
2009		135
2010		165
2011		191
2012		195
2013		197
2014	January	204
	February	208
	March	212
	April	212
	May	213
	June	215

Source: FAO Statistical database

Cross Validation: The experiments were done using 10-fold cross-validation which is commonly used [14]. The data is partitioned into 10 subsamples. Of the 10, each one in turn is used as test set and the other 9 as the training set. Leave-one-out cross-validation is not used due to the fact that it would prove to be computationally expensive.

However, we cannot divide the contracts into 10 subsamples as extracted from the database table. This is due to the fact that activity name is in the table index, which implies that the transactions will appear in ascending alpha-numeric order. This could be a potential problem if similar activities have similar names. In this case, we may end up with the scenario that transactions within each subsample may be very similar to each other but very different to transactions in another subsample. To overcome this, we pick contracts at random into the subsamples with the algorithm given in Appendix A.

RESULTS

Appendix B provides a consolidated table of all predictions by various methods. Encouraging result from implementing both VSM and KRR is the fact that they both give their best result on the same attribute combination. The fact that they perform badly on different attribute combinations, is of no relevance.

Profit leverage points were identified by changing selected variables by plus and minus 10%, keeping other variables constant. The net income was found to be sensitive to cow pregnancy rate, but it was not sensitive to heifer pregnancy rate or heifer retention rate. There are advantages to keeping cows for longer period as mature cows wean a heavier calf and cows become fully depreciated thus generating higher revenue per cow. However, at the time of rising cow prices, the cull rate typically increases to take advantage of the premium in the market place. We find that marketing decisions were not skewed by the fact that the incentive system was based on Net Income. The same marketing decisions are likely to have been taken if the managers were to be rewarded based on performance related to return on investment.

CONCLUSION

Much of Latin American colonization was ruled by cattle raising because ranching required little labour, generated decent profits and awarded social status in the community. Additionally, grass is able to grow in the poor Amazon soil. However, the abundance of cattle ranching led to extensive deforestation, causing extensive environmental damage. Medium and large ranchers possess almost ninety per cent of private land andthere is acute public pressure to stop deforestation within the areas that they inhabit. Of late cattle ranching has been transforming itself from a macho activity to a commercial enterprise using the latest management techniques. Application of Machine learning can open up new avenues for optimising operations in cattle ranches. We find that both the VSM and KRR routines are fairly simple to implement and provide the management to increase profitability and also help the owners in devising appropriate incentives for the managers.

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Appendix A: Algorithm for Cross Validation

```
define temp-table ttJob with fields i and name indexed by i
define temp-table ttFold with fields iFold and name indexed by iFold and name.
set total = 0 & folds = 10.
    loop through all contracts filtered by cost and profit percentage
        increment total.
        create an entry in ttJob with ttJob.i = total & ttJob.name = contract name.
end loop
set foldsize = floor(total / folds).
loop variable i from 1 to (folds – 1)
        set j = 0.
        repeat until j < foldsize
                set x = random integer between 1 and total
                find ttJob where ttJob.i = x.
                if found ttJob
                        create an entry in ttFold with ttFold.iFold = i & ttFold.name = ttJob.name.
                        delete record from ttJob.
                        increment j.
        end if
end loop
set total = total – foldsize.
set j = 0.
loop through all ttJob
                increment j.
                set ttjob.i = j.
        end loop
end Loop
loop through all ttJob
        create an entry in ttFold with ttFold.iFold = folds and ttFold.name = ttJob.name
end loop
export ttFold to text file for future use.
```

Appendix B: Predictions

Contract		VSM		VSM + RANSAC		VSM + RAN + WNN		KRR	
No	Profit %	Pred	Err	Pred	Err	Pred	Err	Pred	Err
1	7.41	5.65	1.76	5.39	2.02	5.73	1.68	6.49	0.92
2	13.69	0.25	13.44	9.42	4.27	9.96	3.73	7.72	5.97
3	13.61	10.32	3.29	11.05	2.56	9.30	4.31	8.46	5.15
4	0.74	6.19	5.45	9.67	8.93	7.61	6.87	4.25	3.51
5	-2.84	5.33	8.17	5.52	8.36	8.18	11.02	3.78	6.62
6	3.64	1.66	1.98	3.16	0.48	6.12	2.48	0.58	3.06
7	17.53	5.54	11.99	8.15	9.38	7.15	10.38	15.87	1.66
8	3.39	7.11	3.72	7.21	3.82	7.30	3.91	7.36	3.97
9	6.90	7.57	0.67	7.49	0.59	7.33	0.43	7.48	0.58
10	0.00	2.71	2.71	1.71	1.71	2.82	2.82	3.57	3.57
11	13.28	11.45	1.83	-2.48	15.76	12.36	0.92	0.49	12.79
12	-5.46	1.52	6.98	-3.10	2.36	-2.90	2.56	-6.41	0.95
13	16.43	5.23	11.20	8.29	8.14	6.59	9.84	5.06	11.37
14	10.35	8.18	2.17	8.68	1.67	8.39	1.96	2.31	8.04
15	9.23	10.68	1.45	10.47	1.24	7.29	1.94	14.09	4.86
16	0.00	0.88	0.88	2.92	2.92	5.21	5.21	-1.94	1.94
17	18.28	8.67	9.61	8.13	10.15	9.34	8.94	6.96	11.32
18	2.83	2.98	0.15	7.31	4.48	7.16	4.33	3.57	0.74
19	6.55	2.25	4.30	3.14	3.41	4.97	1.58	2.03	4.52
20	8.24	11.33	3.09	9.98	1.74	8.04	0.20	8.38	0.14
21	1.73	2.40	0.67	1.42	0.31	5.67	3.94	3.23	1.50
22	-18.91	-20.19	1.28	-18.60	0.31	-20.43	1.52	-18.27	0.64
23	-9.86	4.91	14.77	5.10	14.96	-6.01	3.85	2.26	12.12
24	14.89	6.92	7.97	5.20	9.69	8.29	6.60	0.73	14.16
25	-11.26	1.99	13.25	-12.50	1.24	5.77	17.03	-10.40	0.86
26	6.89	1.53	5.36	4.29	2.60	2.76	4.13	-1.17	8.06
27	10.65	-0.57	11.22	3.20	7.45	3.82	6.83	0.40	10.25
28	15.03	2.97	12.06	4.51	10.52	8.49	6.54	10.32	4.71
29	2.60	2.82	0.22	6.13	3.53	7.94	5.34	-2.39	4.99
30	9.88	10.66	0.78	10.67	0.79	9.75	0.13	7.23	2.65
31	0.48	8.97	8.49	9.95	9.47	8.80	8.32	14.28	13.80
32	-10.02	-10.57	0.55	3.69	13.71	-17.46	7.44	-12.06	2.04
33	8.80	1.36	7.44	2.84	5.96	5.86	2.94	0.30	8.50
34	-11.50	0.98	12.48	-12.74	1.24	-12.40	0.90	1.75	13.25
35	-12.32	-0.19	12.13	-1.26	11.06	-14.34	2.02	0.81	13.13
36	-8.86	-7.08	1.78	4.79	13.65	4.70	13.56	4.77	13.63
37	-5.79	4.68	10.47	4.78	10.57	5.70	11.49	2.38	8.17
38	6.43	4.63	1.80	8.09	1.66	6.81	0.38	4.93	1.50
39	17.63	9.25	8.38	9.48	8.15	9.84	7.79	7.51	10.12
40	14.48	9.69	4.79	10.85	3.63	9.06	5.42	7.04	7.44
41	3.41	-0.66	4.07	-1.31	4.72	6.60	3.19	2.00	1.41
42	11.56	2.77	8.79	2.23	9.33	8.06	3.50	3.71	7.85
43	1.45	6.38	4.93	5.63	4.18	6.88	5.43	5.51	4.06
44	-7.51	-10.79	3.28	-7.54	0.03	-8.23	0.72	-9.72	2.21
45	19.98	5.60	14.38	5.74	14.24	6.37	13.61	19.40	0.58
46	-3.02	4.02	7.04	6.53	9.55	8.82	11.84	5.81	8.83
47	3.97	2.79	1.18	2.02	1.95	3.10	0.87	3.57	0.40
48	9.49	4.19	5.30	13.89	4.40	9.98	0.49	3.35	6.14
49	11.52	10.46	1.06	9.82	1.70	8.81	2.71	12.79	1.27
50	8.39	7.37	1.02	8.07	0.32	7.85	0.54	8.19	0.20
51	10.07	5.98	4.09	3.94	6.13	5.28	4.79	4.91	5.16
52	-17.76	-2.49	15.27	-18.34	0.58	-13.28	4.48	-2.54	15.22
53	3.82	7.84	4.02	7.88	4.06	8.23	4.41	7.55	3.73
54	8.96	1.87	7.09	3.48	5.48	4.85	4.11	0.35	8.61
55	-13.80	-13.34	0.46	-13.83	0.03	-13.43	0.37	-14.87	1.07
56	-5.10	3.01	8.11	5.57	10.67	6.92	12.02	3.08	8.18
57	0.36	4.99	4.63	7.79	7.43	7.36	7.00	4.66	4.30
58	5.92	3.57	2.35	4.13	1.79	6.06	0.14	5.86	0.06
59	2.26	1.37	0.89	5.23	2.97	5.56	3.30	4.69	2.43
60	5.29	11.79	6.50	12.50	7.21	9.00	3.71	8.72	3.43
61	9.45	10.20	0.75	4.05	5.40	8.57	0.88	14.31	4.86

Appendix B: Cont.

Contract		VSM		VSM + RANSAC		VSM + RAN + WNN		KRR	
No	Profit %	Pred	Err	Pred	Err	Pred	Err	Pred	Err
62	-1.92	5.89	7.81	6.08	8.00	6.06	7.98	5.68	7.60
63	11.55	-0.22	11.77	2.96	8.59	4.65	6.90	0.25	11.30
64	3.66	-4.70	8.36	-0.80	4.46	-1.53	5.19	-3.64	7.30
65	6.88	6.80	0.08	6.83	0.05	7.01	0.13	7.43	0.55
66	2.57	6.63	4.06	-0.23	2.80	6.25	3.68	9.99	7.42
67	1.35	5.49	4.14	5.36	4.01	6.09	4.74	3.39	2.04
68	-8.12	-8.95	0.83	-9.93	1.81	-9.25	1.13	-10.04	1.92
69	2.63	6.70	4.07	5.29	2.66	8.12	5.49	-0.01	2.64
70	15.81	7.79	8.02	7.01	8.80	9.18	6.63	10.02	5.79
71	-11.91	-12.64	0.73	-11.10	0.81	-13.62	1.71	-12.99	1.08
72	0.78	8.73	7.95	8.13	7.35	9.37	8.59	7.25	6.47
73	0.55	-4.70	5.25	-0.80	1.35	-1.53	2.08	-2.54	3.09
74	-3.01	0.01	3.02	3.67	6.68	5.14	8.15	0.43	3.44
75	13.41	7.84	5.57	7.01	6.40	7.66	5.75	7.04	6.37
76	11.44	3.19	8.25	6.08	5.36	6.21	5.23	2.06	9.38
77	18.49	9.99	8.50	9.92	8.57	7.58	10.91	8.85	9.64
78	-17.47	-17.48	0.01	-18.08	0.61	-18.08	0.61	-18.90	1.43
79	0.91	3.79	2.88	9.73	8.82	7.01	6.10	1.23	0.32
80	-15.28	-1.23	14.05	0.03	15.31	-15.44	0.16	-15.46	0.18
81	5.65	5.35	0.30	5.19	0.46	6.69	1.04	4.26	1.39
82	-3.22	-1.04	2.18	4.85	8.07	6.50	9.72	0.57	3.79
83	14.05	2.21	11.84	2.39	11.66	2.74	11.31	12.41	1.64
84	16.69	4.37	12.32	1.44	15.25	6.13	10.56	5.36	11.33
85	14.19	7.41	6.78	7.47	6.72	7.18	7.01	4.41	9.78
86	16.26	5.40	10.86	7.54	8.72	7.22	9.04	14.73	1.53
87	2.53	3.04	0.51	1.82	0.71	5.83	3.30	3.45	0.92
88	-0.97	-2.15	1.18	-1.19	0.22	5.89	6.86	-1.32	0.35
89	12.82	4.93	7.89	3.41	9.41	5.45	7.37	1.53	11.29
90	18.91	8.03	10.88	10.96	7.95	16.10	2.81	12.66	6.25
91	5.44	0.70	4.74	4.81	0.63	5.32	0.12	1.45	3.99
92	2.69	1.76	0.93	1.00	1.69	-0.64	3.33	-1.17	3.86
93	-9.96	-1.45	8.51	-1.92	8.04	3.83	13.79	0.84	10.80
94	6.06	4.19	1.87	5.67	0.39	5.31	0.75	-1.32	7.38
95	-7.38	0.32	7.70	2.80	10.18	4.23	11.61	3.40	10.78
96	16.32	9.57	6.75	11.74	4.58	9.49	6.83	9.13	7.19
97	7.26	1.04	6.22	0.16	7.10	3.50	3.76	-2.41	9.67
98	-9.08	-1.82	7.26	-2.14	6.94	3.40	12.48	0.84	9.92
99	17.17	7.31	9.86	3.98	13.19	5.81	11.36	12.69	4.48
100	7.12	2.69	4.43	10.33	3.21	7.09	0.03	3.53	3.59
101	13.28	9.38	3.90	11.69	1.59	10.61	2.67	10.79	2.49
102	5.98	-0.08	6.06	1.03	4.95	2.75	3.23	0.71	5.27
103	9.35	7.57	1.78	7.49	1.86	7.33	2.02	6.77	2.58
104	4.50	-3.31	7.81	-1.09	5.59	4.85	0.35	-5.78	10.28
105	-5.48	1.33	6.81	2.75	8.23	5.64	11.12	3.45	8.93
106	2.65	9.33	6.68	4.78	2.13	6.45	3.80	2.78	0.13
107	9.20	4.39	4.81	7.43	1.77	8.29	0.91	7.15	2.05
108	18.15	5.72	12.43	2.57	15.58	5.76	12.39	16.43	1.72
109	6.16	6.85	0.69	6.89	0.73	7.07	0.91	7.48	1.32
110	5.36	5.88	0.52	4.33	1.03	6.92	1.56	2.06	3.30
111	1.72	0.00	1.72	4.22	2.50	4.32	2.60	-0.99	2.71
112	18.96	12.28	6.68	13.03	5.93	9.87	9.09	8.38	10.58
113	-12.87	-13.37	0.50	-13.91	1.04	-14.78	1.91	-12.59	0.28
114	2.05	-1.91	3.96	-0.18	2.23	3.81	1.76	-0.65	2.70
115	8.41	6.69	1.72	6.71	1.70	6.76	1.65	3.29	5.12
116	0.71	4.07	3.36	4.36	3.65	6.36	5.65	7.55	6.84
117	11.64	10.14	1.50	10.18	1.46	10.27	1.37	7.30	4.34
118	-2.11	6.82	8.93	9.04	11.15	7.06	9.17	11.39	13.50
119	8.96	3.29	5.67	7.62	1.34	6.42	2.54	3.20	5.76
120	13.17	8.24	4.93	7.26	5.91	6.33	6.84	4.11	9.06
121	5.59	9.48	3.89	8.08	2.49	8.08	2.49	4.74	0.85
122	14.98	5.36	9.62	5.18	9.80	7.70	7.28	4.97	10.01
123	5.56	2.28	3.28	7.62	2.06	5.48	0.08	3.86	1.70

Appendix B: Cont.

Contract		VSM		VSM + RANSAC		VSM + RAN + WNN		KRR	
No	Profit %	Pred	Err	Pred	Err	Pred	Err	Pred	Err
124	13.80	9.95	3.85	10.93	2.87	10.25	3.55	11.04	2.76
125	16.78	9.18	7.60	8.69	8.09	8.15	8.63	6.93	9.85
126	-16.83	-17.89	1.06	-19.35	2.52	-18.25	1.42	-17.33	0.50
127	8.12	3.17	4.95	6.18	1.94	6.95	1.17	3.36	4.76
128	6.95	7.74	0.79	8.98	2.03	8.67	1.72	7.71	0.76
129	12.59	0.07	12.52	-0.33	12.92	0.48	12.11	11.91	0.68
130	18.06	10.25	7.81	10.44	7.62	7.58	10.48	7.87	10.19
131	10.82	2.21	8.61	0.64	10.18	4.70	6.12	1.97	8.85
132	-0.69	-4.28	3.59	0.07	0.76	3.02	3.71	-3.82	3.13
133	-7.80	0.53	8.33	-3.00	4.80	7.23	15.03	0.61	8.41
134	-9.03	4.02	13.05	-7.33	1.70	-6.63	2.40	3.08	12.11
135	-2.74	11.17	13.91	13.02	15.76	8.50	11.24	7.83	10.57
136	10.27	8.16	2.11	7.41	2.86	8.43	1.84	6.93	3.34
137	-0.30	8.51	8.81	9.57	9.87	7.88	8.18	8.79	9.09
138	12.69	9.10	3.59	9.09	3.60	7.75	4.94	9.44	3.25
139	9.58	-3.53	13.11	3.55	6.03	4.32	5.26	2.67	6.91
140	-7.55	-0.77	6.78	1.02	8.57	4.35	11.90	1.36	8.91
141	4.80	2.48	2.32	6.54	1.74	6.14	1.34	1.52	3.28
142	-17.66	-20.69	3.03	-20.02	2.36	-18.64	0.98	-8.94	8.72
143	6.63	7.11	0.48	7.21	0.58	7.30	0.67	7.50	0.87
144	6.80	6.21	0.59	6.36	0.44	6.64	0.16	7.36	0.56
145	2.20	10.39	8.19	12.32	10.12	10.04	7.84	7.42	5.22
146	7.76	12.86	5.10	14.38	6.62	11.10	3.34	14.75	6.99
147	-17.45	-18.67	1.22	-18.13	0.68	-18.91	1.46	-18.11	0.66
148	6.80	5.47	1.33	5.31	1.49	6.06	0.74	3.54	3.26
149	-5.17	0.68	5.85	-3.33	1.84	7.47	12.64	-0.89	4.28
150	5.48	4.98	0.50	5.59	0.11	6.04	0.56	6.46	0.98
151	0.00	9.15	9.15	10.98	10.98	9.09	9.09	8.20	8.20
152	12.90	3.91	8.99	9.21	3.69	6.97	5.93	4.52	8.38
153	-13.82	-13.81	0.01	-13.74	0.08	-13.81	0.01	-14.97	1.15
154	-9.01	4.36	13.37	-9.68	0.67	-7.54	1.47	5.36	14.37
155	19.12	6.44	12.68	7.47	11.65	8.12	11.00	6.32	12.80
156	4.50	2.89	1.61	3.33	1.17	5.17	0.67	3.52	0.98
157	5.18	0.92	4.26	2.31	2.87	2.73	2.45	-1.01	6.19
158	11.37	4.85	6.52	2.01	9.36	6.95	4.42	4.18	7.19
159	12.00	1.30	10.70	10.91	1.09	9.59	2.41	7.74	4.26
160	1.78	1.42	0.36	4.72	2.94	5.51	3.73	3.16	1.38
161	-17.80	-17.75	0.05	-17.78	0.02	-17.98	0.18	-17.80	0.00
162	9.48	10.59	1.11	9.85	0.37	8.55	0.93	8.41	1.07
163	5.43	6.49	1.06	6.47	1.04	6.75	1.32	7.43	2.00
164	1.38	-2.91	4.29	-4.36	5.74	3.19	1.81	0.67	0.71
165	17.20	-0.19	17.39	17.26	0.06	16.34	0.86	17.50	0.30
166	10.09	11.00	0.91	10.85	0.76	10.95	0.86	10.18	0.09
167	11.41	2.62	8.79	-3.46	14.87	4.65	6.76	9.99	1.42
168	9.62	2.42	7.20	2.48	7.14	2.92	6.70	2.48	7.14
169	14.71	8.87	5.84	11.17	3.54	9.75	4.96	8.86	5.85
170	0.73	3.21	2.48	4.98	4.25	8.25	7.52	4.83	4.10
171	2.69	6.40	3.71	8.36	5.67	7.68	4.99	7.28	4.59
172	11.72	1.79	9.93	4.22	7.50	6.39	5.33	2.09	9.63
173	7.92	2.48	5.44	6.54	1.38	6.14	1.78	0.81	7.11
174	8.37	8.87	0.50	11.17	2.80	9.75	1.38	10.09	1.72
175	3.68	4.40	0.72	5.12	1.44	5.92	2.24	7.03	3.35
176	12.73	1.39	11.34	5.51	7.22	5.40	7.33	2.97	9.76
177	7.41	4.98	2.43	6.73	0.68	6.76	0.65	3.80	3.61
178	12.40	8.82	3.58	9.00	3.40	8.66	3.74	9.62	2.78
179	11.51	5.23	6.28	5.96	5.55	6.70	4.81	6.24	5.27
180	11.92	7.10	4.82	7.21	4.71	7.47	4.45	7.02	4.90
181	5.08	8.05	2.97	7.89	2.81	7.66	2.58	4.34	0.74
182	-4.36	5.02	9.38	7.84	12.20	7.58	11.94	-7.55	3.19
183	-3.11	-0.02	3.09	3.57	6.68	3.96	7.07	-2.83	0.28
184	6.80	9.97	3.17	8.32	1.52	12.14	5.34	10.34	3.54
185	13.58	12.02	1.56	15.05	1.47	12.11	1.47	8.38	5.20

Appendix B: Cont.

Contract		VSM		VSM + RANSAC		VSM + RAN + WNN		KRR	
No	Profit %	Pred	Err	Pred	Err	Pred	Err	Pred	Err
186	14.28	6.66	7.62	2.56	11.72	4.07	10.21	9.43	4.85
187	-18.39	-20.51	2.12	-19.29	0.90	-20.20	1.81	-18.31	0.08
188	-15.39	-10.35	5.04	1.72	17.11	-18.49	3.10	-0.33	15.06
189	-7.17	2.95	10.12	4.10	11.27	7.14	14.31	-6.44	0.73
190	-10.98	-6.88	4.10	-0.44	10.54	3.11	14.09	-8.64	2.34
191	9.47	-1.43	10.90	0.26	9.21	3.08	6.39	-4.53	14.00
192	1.14	-0.19	1.33	0.83	0.31	3.76	2.62	2.37	1.23
193	-2.16	4.97	7.13	7.41	9.57	7.05	9.21	3.75	5.91
194	5.30	11.81	6.51	11.66	6.36	9.22	3.92	7.37	2.07
195	-9.55	-1.11	8.44	-1.05	8.50	4.62	14.17	-1.17	8.38
196	8.01	-0.15	8.16	-0.39	8.40	4.21	3.80	2.46	5.55
197	11.68	4.77	6.91	8.25	3.43	7.78	3.90	7.25	4.43
198	10.85	7.46	3.39	9.45	1.40	8.45	2.40	8.06	2.79
199	15.80	5.29	10.51	14.11	1.69	10.21	5.59	13.60	2.20
200	3.87	4.45	0.58	5.20	1.33	6.61	2.74	6.62	2.75
201	7.96	7.82	0.14	7.79	0.17	7.30	0.66	4.03	3.93
202	14.62	6.04	8.58	5.31	9.31	8.83	5.79	10.35	4.27
203	-4.63	-2.41	2.22	6.79	11.42	6.51	11.14	3.77	8.40
204	-12.17	-7.53	4.64	-1.94	10.23	3.03	15.20	-8.16	4.01
205	-3.62	6.12	9.74	10.44	14.06	10.99	14.61	5.93	9.55
206	-2.02	10.41	12.43	9.41	11.43	8.48	10.50	9.17	11.19
207	13.06	10.35	2.71	10.27	2.79	9.41	3.65	7.29	5.77
208	0.27	-1.80	2.07	-0.23	0.50	1.60	1.33	-1.11	1.38
209	6.56	3.78	2.78	5.60	0.96	6.10	0.46	5.08	1.48
210	-0.06	-1.65	1.59	-0.17	0.11	4.23	4.29	5.80	5.86
211	-2.57	3.55	6.12	3.78	6.35	5.97	8.54	3.26	5.83
212	17.19	16.41	0.78	1.55	15.64	12.20	4.99	15.24	1.95
213	11.58	9.18	2.40	15.90	4.32	11.63	0.05	5.80	5.78
214	6.30	5.78	0.52	7.24	0.94	8.62	2.32	5.65	0.65
215	6.09	4.99	1.10	6.23	0.14	6.67	0.58	6.39	0.30
216	3.37	0.81	2.56	8.49	5.12	7.76	4.39	5.86	2.49
217	3.16	4.74	1.58	7.61	4.45	5.35	2.19	3.33	0.17
218	8.96	1.18	7.78	4.12	4.84	6.31	2.65	2.03	6.93
219	10.03	10.65	0.62	10.65	0.62	9.74	0.29	7.59	2.44
220	5.92	8.75	2.83	7.85	1.93	8.64	2.72	5.40	0.52
221	8.58	3.76	4.82	8.26	0.32	10.01	1.43	3.62	4.96
222	11.04	10.93	0.11	10.90	0.14	9.53	1.51	9.35	1.69
223	18.52	8.79	9.73	10.18	8.34	10.49	8.03	7.43	11.09
224	4.62	6.17	1.55	7.00	2.38	9.54	4.92	4.74	0.12
225	14.73	11.33	3.40	11.36	3.37	10.55	4.18	10.41	4.32
226	15.08	6.21	8.87	6.36	8.72	6.64	8.44	6.35	8.73
227	8.91	7.94	0.97	7.21	1.70	7.47	1.44	7.99	0.92
228	18.06	11.03	7.03	8.58	9.48	6.76	11.30	10.23	7.83
229	8.92	5.31	3.61	7.72	1.20	7.24	1.68	4.47	4.45
230	-8.06	1.74	9.80	6.50	14.56	5.84	13.90	1.52	9.58
231	5.60	9.77	4.17	10.89	5.29	8.56	2.96	6.61	1.01
232	3.33	1.89	1.44	2.47	0.86	7.12	3.79	7.05	3.72
233	19.63	10.64	8.99	15.43	4.20	9.36	10.27	13.30	6.33
234	-6.43	1.74	8.17	6.50	12.93	5.84	12.27	9.64	16.07
235	6.77	10.83	4.06	4.13	2.64	7.10	0.33	10.71	3.94
236	4.87	9.82	4.95	10.45	5.58	7.17	2.30	13.25	8.38
237	-14.31	-15.93	1.62	-15.77	1.46	-15.22	0.91	-14.20	0.11
238	5.60	5.74	0.14	6.71	1.11	5.93	0.33	-2.78	8.38
239	6.63	4.91	1.72	-1.40	8.03	8.23	1.60	5.74	0.89
240	-15.10	-17.22	2.12	-15.87	0.77	-16.92	1.82	-14.33	0.77
241	17.67	7.47	10.20	9.34	8.33	8.01	9.66	3.87	13.80
242	-15.74	-15.61	0.13	-15.20	0.54	-15.17	0.57	-16.94	1.20
243	13.67	1.61	12.06	4.21	9.46	6.81	6.86	11.73	1.94
244	-3.95	1.43	5.38	7.99	11.94	5.80	9.75	0.40	4.35
245	0.00	-3.91	3.91	0.39	0.39	-0.73	0.73	-3.91	3.91
246	18.44	5.03	13.41	8.65	9.79	7.16	11.28	7.33	11.11
247	3.05	3.41	0.36	1.98	1.07	3.73	0.68	3.57	0.52

Appendix B: Cont.

Contract		VSM		VSM + RANSAC		VSM + RAN + WNN		KRR	
No	Profit %	Pred	Err	Pred	Err	Pred	Err	Pred	Err
248	13.19	6.15	7.04	7.92	5.27	7.83	5.36	4.14	9.05
249	6.48	3.88	2.60	4.76	1.72	5.16	1.32	5.52	0.96
250	8.01	4.06	3.95	6.52	1.49	6.59	1.42	5.10	2.91
251	14.85	12.56	2.29	13.59	1.26	12.55	2.30	8.81	6.04
252	2.76	6.03	3.27	10.87	8.11	8.88	6.12	4.64	1.88
253	14.36	3.77	10.59	7.24	7.12	7.06	7.30	5.19	9.17
254	12.52	7.09	5.43	5.54	6.98	11.90	0.62	7.83	4.69
255	8.41	6.84	1.57	6.77	1.64	6.89	1.52	3.47	4.94
256	1.06	2.50	1.44	3.74	2.68	5.37	4.31	3.29	2.23
257	-14.32	-8.49	5.83	-15.32	1.00	-16.04	1.72	-12.24	2.08
258	12.52	5.13	7.39	8.66	3.86	8.06	4.46	6.41	6.11
259	6.41	6.76	0.35	6.79	0.38	6.98	0.57	6.98	0.57
260	-9.97	-10.48	0.51	-11.76	1.79	-10.59	0.62	-12.43	2.46
261	6.76	7.71	0.95	4.35	2.41	7.37	0.61	9.38	2.62
262	17.78	7.21	10.57	8.86	8.92	6.26	11.52	7.08	10.70
263	10.64	7.50	3.14	9.71	0.93	8.52	2.12	5.11	5.53
264	-8.29	4.31	12.60	5.44	13.73	-6.49	1.80	0.23	8.52
265	1.39	8.14	6.75	11.35	9.96	9.72	8.33	5.71	4.32
266	7.42	2.66	4.76	5.81	1.61	6.53	0.89	4.62	2.80
267	-18.85	-18.01	0.84	-21.23	2.38	-20.35	1.50	-18.30	0.55
268	10.94	1.24	9.70	4.26	6.68	6.57	4.37	0.30	10.64
269	8.70	4.93	3.77	7.64	1.06	8.60	0.10	7.61	1.09
270	5.62	5.20	0.42	5.31	0.31	6.38	0.76	5.95	0.33
271	-13.48	0.48	13.96	-13.54	0.06	-13.14	0.34	-11.45	2.03
272	15.95	8.96	6.99	7.29	8.66	10.18	5.77	10.32	5.63
273	-11.83	0.38	12.21	1.39	13.22	4.23	16.06	3.40	15.23
274	-13.56	0.76	14.32	-13.68	0.12	-15.97	2.41	-12.12	1.44
275	6.50	4.85	1.65	5.33	1.17	6.95	0.45	3.75	2.75
276	-7.59	0.73	8.32	3.69	11.28	3.82	11.41	3.63	11.22
277	6.16	5.19	0.97	3.77	2.39	7.15	0.99	1.57	4.59
278	7.87	0.27	7.60	8.45	0.58	7.58	0.29	-1.60	9.47
279	3.20	-0.51	3.71	0.78	2.42	1.89	1.31	-0.57	3.77
280	2.65	6.81	4.16	4.82	2.17	6.61	3.96	16.15	13.50
281	-1.72	4.93	6.65	2.19	3.91	4.96	6.68	1.00	2.72
282	15.44	2.43	13.01	3.55	11.89	4.81	10.63	10.63	4.81
283	15.38	3.92	11.46	3.22	12.16	4.63	10.75	13.68	1.70
284	13.66	3.25	10.41	4.77	8.89	4.55	9.11	4.33	9.33
285	7.98	-0.14	8.12	0.46	7.52	4.62	3.36	-1.38	9.36
286	2.19	1.90	0.29	8.45	6.26	6.18	3.99	0.17	2.02
287	-6.60	3.42	10.02	4.48	11.08	5.76	12.36	-4.89	1.71
288	14.75	12.22	2.53	10.48	4.27	10.30	4.45	12.68	2.07
289	13.97	6.29	7.68	1.09	12.88	7.41	6.56	2.80	11.17
290	18.91	9.31	9.60	11.61	7.30	9.55	9.36	8.58	10.33
291	19.45	8.99	10.46	11.25	8.20	9.49	9.96	14.46	4.99
292	14.63	8.99	5.64	11.43	3.20	10.08	4.55	9.17	5.46
293	16.22	15.56	0.66	1.83	14.39	5.67	10.55	16.49	0.27
294	-11.00	4.25	15.25	3.65	14.65	-5.67	5.33	0.30	11.30
295	6.63	8.19	1.56	8.09	1.46	10.30	3.67	9.22	2.59
296	9.68	7.91	1.77	8.50	1.18	7.65	2.03	4.41	5.27
297	11.76	-0.19	11.95	-1.26	13.02	4.34	7.42	-1.50	13.26
298	7.42	9.65	2.23	1.64	5.78	6.65	0.77	7.77	0.35
299	3.25	5.50	2.25	6.12	2.87	7.86	4.61	7.04	3.79
300	0.00	3.10	3.10	1.94	1.94	3.39	3.39	2.41	2.41
301	4.91	8.51	3.60	8.82	3.91	9.32	4.41	9.22	4.31
302	-3.42	9.00	12.42	6.43	9.85	11.83	15.25	8.00	11.42
303	6.10	6.74	0.64	2.47	3.63	5.34	0.76	1.21	4.89
304	17.55	12.96	4.59	12.50	5.05	9.34	8.21	11.39	6.16
305	-7.00	3.14	10.14	9.04	16.04	6.76	13.76	5.03	12.03
306	11.90	4.95	6.95	1.59	10.31	6.07	5.83	11.16	0.74
307	7.09	10.62	3.53	11.55	4.46	8.74	1.65	11.16	4.07
308	14.37	12.00	2.37	9.35	5.02	9.84	4.53	12.27	2.10
309	-0.21	10.42	10.63	10.46	10.67	10.28	10.49	1.64	1.85

Appendix B: Cont.

Contract		VSM		VSM + RANSAC		VSM + RAN + WNN		KRR	
No	Profit %	Pred	Err	Pred	Err	Pred	Err	Pred	Err
310	10.27	4.53	5.74	6.00	4.27	5.70	4.57	3.94	6.33
311	10.84	-0.57	11.41	3.20	7.64	3.82	7.02	0.40	10.44
312	5.51	2.07	3.44	2.61	2.90	4.62	0.89	-0.99	6.50
313	-2.00	11.35	13.35	12.75	14.75	10.64	12.64	0.42	2.42
314	18.36	5.44	12.92	8.18	10.18	7.02	11.34	17.39	0.97
315	7.70	-0.74	8.44	3.82	3.88	4.48	3.22	2.27	5.43
316	16.30	2.48	13.82	2.92	13.38	6.07	10.23	16.37	0.07
317	-14.16	-6.32	7.84	-0.01	14.15	2.00	16.16	-6.58	7.58
318	12.16	-0.70	12.86	1.20	10.96	5.59	6.57	-0.89	13.05
319	0.36	2.17	1.81	6.85	6.49	7.83	7.47	4.37	4.01
320	7.28	6.77	0.51	6.80	0.48	6.98	0.30	6.35	0.93
321	0.88	3.10	2.22	3.20	2.32	7.94	7.06	4.58	3.70
322	-12.54	-15.16	2.62	-12.13	0.41	-13.32	0.78	-14.56	2.02
323	13.43	-1.04	14.47	4.85	8.58	6.50	6.93	12.47	0.96
324	11.91	5.26	6.65	3.36	8.55	6.23	5.68	11.73	0.18
325	13.02	1.63	11.39	4.48	8.54	5.76	7.26	13.94	0.92
326	10.66	11.90	1.24	11.79	1.13	11.08	0.42	11.14	0.48
327	19.58	2.59	16.99	17.28	2.30	6.55	13.03	15.96	3.62
328	13.34	3.42	9.92	6.96	6.38	7.57	5.77	10.87	2.47
329	-3.21	7.45	10.66	5.96	9.17	7.04	10.25	-4.96	1.75
330	-0.91	3.63	4.54	4.77	5.68	5.70	6.61	2.13	3.04
331	-14.92	-3.49	11.43	-0.44	14.48	-0.70	14.22	-2.18	12.74
332	7.10	12.25	5.15	12.22	5.12	11.42	4.32	11.03	3.93
333	-1.65	6.09	7.74	6.16	7.81	9.56	11.21	8.21	9.86
334	7.61	4.70	2.91	4.53	3.08	4.08	3.53	2.93	4.68
335	10.23	4.08	6.15	6.88	3.35	7.00	3.23	7.05	3.18
336	3.65	0.50	3.15	7.95	4.30	7.37	3.72	2.87	0.78
337	1.79	8.68	6.89	10.38	8.59	9.69	7.90	7.53	5.74
338	5.62	5.22	0.40	5.04	0.58	6.37	0.75	3.09	2.53
339	4.50	0.78	3.72	4.93	0.43	5.41	0.91	0.81	3.69
340	-5.29	-0.72	4.57	0.13	5.42	2.36	7.65	0.83	6.12
341	1.97	0.11	1.86	-0.58	2.55	2.91	0.94	3.45	1.48
342	5.66	3.75	1.91	2.26	3.40	6.24	0.58	-2.31	7.97
343	18.92	7.35	11.57	6.84	12.08	7.64	11.28	4.82	14.10
344	3.74	4.43	0.69	7.45	3.71	6.42	2.68	2.47	1.27
345	12.86	3.24	9.62	1.44	11.42	7.58	5.28	2.10	10.76
346	13.18	11.93	1.25	11.76	1.42	8.48	4.70	11.32	1.86
347	19.93	14.06	5.87	12.08	7.85	11.88	8.05	17.98	1.95
348	10.06	7.85	2.21	9.42	0.64	10.10	0.04	12.36	2.30
349	-11.17	3.83	15.00	-11.77	0.60	-10.21	0.96	-13.57	2.40
350	6.73	5.36	1.37	6.12	0.61	7.57	0.84	-4.13	10.86
351	1.81	5.80	3.99	-0.18	1.99	3.78	1.97	8.00	6.19
352	18.85	13.15	5.70	16.30	2.55	7.50	11.35	11.63	7.22
353	7.83	-1.40	9.23	-6.82	14.65	3.12	4.71	-0.91	8.74
354	3.25	-0.97	4.22	0.83	2.42	1.60	1.65	0.99	2.26
355	16.04	6.05	9.99	7.98	8.06	7.22	8.82	8.28	7.76
356	-8.65	-1.41	7.24	-4.42	4.23	2.69	11.34	0.32	8.97
357	16.20	12.65	3.55	13.71	2.49	8.29	7.91	8.41	7.79
358	8.57	7.12	1.45	7.21	1.36	7.47	1.10	3.58	4.99
359	16.11	2.84	13.27	9.61	6.50	8.28	7.83	7.37	8.74
360	1.20	4.09	2.89	6.29	5.09	5.35	4.15	6.43	5.23
361	4.89	6.65	1.76	10.65	5.76	8.78	3.89	2.39	2.50
362	5.78	2.09	3.69	2.27	3.51	5.53	0.25	2.08	3.70
363	5.45	7.23	1.78	6.42	0.97	6.35	0.90	6.49	1.04
364	-18.13	-2.98	15.15	-16.40	1.73	-16.58	1.55	-12.15	5.98
365	-16.92	-5.05	11.87	-1.06	15.86	-16.60	0.32	-17.77	0.85
366	1.66	-0.60	2.26	-1.33	2.99	4.73	3.07	-0.27	1.93
367	-8.83	6.13	14.96	6.97	15.80	-7.73	1.10	-7.07	1.76
368	-4.98	0.68	5.66	-3.33	1.65	7.47	12.45	-0.66	4.32
369	-2.56	0.55	3.11	6.69	9.25	5.93	8.49	3.46	6.02
370	-5.84	5.58	11.42	8.35	14.19	6.27	12.11	-5.77	0.07
371	5.68	6.29	0.61	8.67	2.99	9.88	4.20	8.72	3.04

Appendix B: Cont.

Contract		VSM		VSM + RANSAC		VSM + RAN + WNN		KRR	
No	Profit %	Pred	Err	Pred	Err	Pred	Err	Pred	Err
372	8.59	1.37	7.22	10.33	1.74	9.26	0.67	8.84	0.25
373	-0.49	6.49	6.98	6.48	6.97	7.25	7.74	4.52	5.01
374	-2.89	8.10	10.99	8.99	11.88	8.02	10.91	4.54	7.43
375	14.77	11.08	3.69	13.43	1.34	11.93	2.84	10.81	3.96
376	5.87	7.77	1.90	9.57	3.70	9.79	3.92	8.03	2.16
377	-1.45	-5.31	3.86	3.39	4.84	6.42	7.87	1.58	3.03
378	19.13	16.56	2.57	8.06	11.07	7.02	12.11	3.08	16.05
379	5.98	3.58	2.40	4.85	1.13	6.34	0.36	4.93	1.05
380	7.34	5.35	1.99	10.80	3.46	9.24	1.90	7.51	0.17
381	4.12	8.58	4.46	10.72	6.60	9.30	5.18	8.78	4.66
382	16.68	7.19	9.49	5.47	11.21	6.78	9.90	3.31	13.37
383	5.50	-0.02	5.52	-1.18	6.68	5.47	0.03	2.12	3.38
384	9.25	7.64	1.61	6.96	2.29	7.39	1.86	7.62	1.63
385	2.18	2.92	0.74	3.70	1.52	5.82	3.64	2.88	0.70
386	3.88	8.64	4.76	8.01	4.13	8.03	4.15	10.96	7.08
387	10.67	6.40	4.27	8.36	2.31	7.85	2.82	6.33	4.34
388	10.58	3.19	7.39	6.08	4.50	5.84	4.74	2.09	8.49
389	19.26	11.67	7.59	10.79	8.47	9.46	9.80	18.59	0.67
390	-4.73	7.87	12.60	7.88	12.61	7.56	12.29	9.70	14.43
391	0.59	-4.80	5.39	-0.62	1.21	-1.25	1.84	-3.91	4.50
392	4.04	2.21	1.83	2.51	1.53	2.74	1.30	2.89	1.15
393	10.15	11.96	1.81	11.90	1.75	11.16	1.01	10.41	0.26
394	-10.75	5.43	16.18	-11.89	1.14	-10.42	0.33	-13.45	2.70
395	3.25	9.36	6.11	11.66	8.41	9.18	5.93	8.42	5.17
396	14.55	-0.91	15.46	-0.37	14.92	2.99	11.56	12.44	2.11
397	14.99	11.67	3.32	12.67	2.32	9.27	5.72	8.43	6.56
398	-2.30	0.52	2.82	2.77	5.07	5.76	8.06	-0.27	2.03
399	12.65	1.19	11.46	1.16	11.49	2.91	9.74	2.33	10.32
400	1.24	13.79	12.55	12.10	10.86	8.65	7.41	7.75	6.51
401	14.16	3.14	11.02	9.04	5.12	6.76	7.40	5.45	8.71
402	-8.79	2.73	11.52	5.33	14.12	-6.94	1.85	5.54	14.33
403	16.60	12.32	4.28	12.17	4.43	7.38	9.22	12.93	3.67
404	-9.44	2.48	11.92	6.54	15.98	-6.14	3.30	1.49	10.93
405	14.90	11.43	3.47	11.43	3.47	8.90	6.00	10.54	4.36
406	13.15	7.77	5.38	7.30	5.85	8.39	4.76	8.67	4.48
407	-0.94	10.81	11.75	11.91	12.85	8.50	9.44	8.43	9.37
408	16.13	5.13	11.00	8.66	7.47	8.06	8.07	6.14	9.99
409	7.22	5.76	1.46	9.22	2.00	7.28	0.06	9.61	2.39
410	-10.59	2.89	13.48	2.83	13.42	-16.83	6.24	-0.12	10.47
411	19.95	12.10	7.85	13.85	6.10	11.92	8.03	16.58	3.37
412	14.58	6.44	8.14	3.86	10.72	5.36	9.22	4.37	10.21
413	-10.67	0.23	10.90	1.28	11.95	4.38	15.05	-0.57	10.10
414	2.58	3.75	1.17	2.70	0.12	7.28	4.70	4.48	1.90
415	19.67	10.19	9.48	12.10	7.57	10.66	9.01	11.09	8.58
416	-1.63	-1.60	0.03	-0.33	1.30	3.43	5.06	1.02	2.65
417	10.69	4.46	6.23	6.05	4.64	5.40	5.29	3.66	7.03
418	6.39	7.11	0.72	7.21	0.82	7.30	0.91	7.48	1.09
419	-1.85	11.78	13.63	12.37	14.22	11.81	13.66	-1.81	0.04
420	-2.71	7.57	10.28	10.91	13.62	6.81	9.52	-4.79	2.08
421	9.55	5.70	3.85	6.75	2.80	6.64	2.91	5.44	4.11
422	14.81	9.34	5.47	9.27	5.54	10.57	4.24	7.51	7.30
423	2.79	7.64	4.85	10.70	7.91	9.99	7.20	8.35	5.56
424	8.01	9.28	1.27	9.51	1.50	8.69	0.68	8.39	0.38
425	19.81	9.57	10.24	14.35	5.46	9.67	10.14	9.28	10.53
426	-2.65	1.62	4.27	7.50	10.15	7.28	9.93	1.83	4.48
427	-8.46	5.93	14.39	7.29	15.75	6.59	15.05	2.81	11.27
428	7.82	6.76	1.06	6.79	1.03	6.98	0.84	6.35	1.47
429	0.00	10.26	10.26	11.47	11.47	8.74	8.74	8.06	8.06
430	5.96	8.98	3.02	6.51	0.55	7.72	1.76	7.71	1.75
431	-2.06	7.29	9.35	6.58	8.64	7.79	9.85	6.45	8.51
432	3.67	7.57	3.90	7.49	3.82	7.33	3.66	7.50	3.83
433	6.07	3.33	2.74	7.85	1.78	7.16	1.09	3.62	2.45

Appendix B: Cont.

Contract		VSM		VSM + RANSAC		VSM + RAN + WNN		KRR	
No	Profit %	Pred	Err	Pred	Err	Pred	Err	Pred	Err
434	4.71	5.67	0.96	8.34	3.63	8.14	3.43	9.11	4.40
435	10.53	6.04	4.49	6.25	4.28	7.05	3.48	7.53	3.00
436	12.37	2.06	10.31	1.91	10.46	4.49	7.88	1.72	10.65
437	10.27	5.78	4.49	6.64	3.63	6.38	3.89	6.52	3.75
438	-2.66	1.28	3.94	2.19	4.85	4.65	7.31	1.97	4.63
439	15.81	5.89	9.92	2.93	12.88	7.31	8.50	14.32	1.49
440	11.34	4.85	6.49	5.33	6.01	6.95	4.39	4.57	6.77
441	7.44	7.53	0.09	9.00	1.56	9.08	1.64	9.68	2.24
442	-10.57	2.83	13.40	4.25	14.82	-10.67	0.10	3.88	14.45
443	2.50	4.94	2.44	7.73	5.23	7.85	5.35	4.23	1.73
444	8.22	2.28	5.94	5.23	2.99	7.02	1.20	3.40	4.82
445	-4.84	6.02	10.86	3.93	8.77	7.14	11.98	2.48	7.32
446	12.93	5.78	7.15	6.05	6.88	7.24	5.69	6.69	6.24
447	13.16	8.93	4.23	9.59	3.57	9.03	4.13	11.49	1.67
448	-15.56	-10.36	5.20	-4.20	11.36	-15.63	0.07	-11.14	4.42
449	-2.12	-3.67	1.55	3.47	5.59	4.25	6.37	1.83	3.95
450	11.27	7.91	3.36	9.49	1.78	7.78	3.49	5.93	5.34
451	14.95	14.04	0.91	10.04	4.91	9.47	5.48	12.24	2.71
452	9.48	5.65	3.83	4.73	4.75	5.13	4.35	5.43	4.05
453	4.79	-6.90	11.69	6.30	1.51	6.24	1.45	-4.71	9.50
454	14.80	7.75	7.05	9.31	5.49	7.49	7.31	6.58	8.22
455	4.70	11.32	6.62	12.08	7.38	9.11	4.41	4.49	0.21
456	5.99	2.22	3.77	9.06	3.07	5.33	0.66	4.10	1.89
457	6.00	9.70	3.70	5.93	0.07	10.39	4.39	8.16	2.16
458	7.71	10.77	3.06	12.43	4.72	10.65	2.94	7.51	0.20
459	5.87	5.36	0.51	10.01	4.14	8.62	2.75	-0.09	5.96
460	-4.35	4.80	9.15	5.35	9.70	5.36	9.71	8.02	12.37
461	14.99	11.33	3.66	11.36	3.63	10.55	4.44	11.34	3.65
462	-6.90	2.71	9.61	5.95	12.85	6.57	13.47	3.46	10.36
463	17.53	7.82	9.71	3.95	13.58	7.43	10.10	12.69	4.84
464	1.03	2.97	1.94	1.80	0.77	7.16	6.13	4.98	3.95
465	-0.03	4.73	4.76	7.95	7.98	6.85	6.88	1.39	1.42
466	15.63	2.86	12.77	7.26	8.37	7.01	8.62	6.55	9.08
467	-14.30	-16.52	2.22	-14.73	0.43	-16.34	2.04	-14.71	0.41
468	12.61	6.49	6.12	6.47	6.14	6.75	5.86	7.54	5.07
469	10.80	-1.39	12.19	2.20	8.60	3.74	7.06	-1.81	12.61
470	10.80	6.44	4.36	11.03	0.23	8.44	2.36	2.67	8.13
471	5.37	8.53	3.16	12.89	7.52	9.14	3.77	7.99	2.62
472	11.38	3.84	7.54	2.20	9.18	6.60	4.78	5.14	6.24
473	3.78	3.38	0.40	5.28	1.50	5.37	1.59	5.06	1.28
474	17.87	7.58	10.29	8.31	9.56	7.68	10.19	8.67	9.20
475	9.95	7.00	2.95	8.29	1.66	7.74	2.21	1.29	8.66
476	10.57	5.77	4.80	4.68	5.89	8.55	2.02	6.66	3.91
477	9.00	7.33	1.67	9.71	0.71	8.02	0.98	3.09	5.91
478	18.91	8.82	10.09	10.50	8.41	9.24	9.67	3.87	15.04
479	6.82	4.56	2.26	8.05	1.23	8.22	1.40	4.31	2.51
480	13.33	13.51	0.18	15.62	2.29	9.27	4.06	10.46	2.87
481	11.15	5.51	5.64	5.86	5.29	6.94	4.21	3.24	7.91
482	-18.07	-20.70	2.63	-18.50	0.43	-18.27	0.20	-21.21	3.14
483	13.61	3.99	9.62	8.52	5.09	8.03	5.58	6.33	7.28
484	16.90	8.29	8.61	15.42	1.48	8.05	8.85	8.64	8.26
485	-10.01	-12.95	2.94	-11.29	1.28	-10.65	0.64	3.57	13.58
486	-13.87	-16.13	2.26	-14.02	0.15	-13.31	0.56	-16.82	2.95
487	7.64	0.97	6.67	9.60	1.96	7.17	0.47	-0.37	8.01
488	9.47	0.59	8.88	1.52	7.95	1.10	8.37	4.26	5.21
489	17.17	3.84	13.33	5.95	11.22	5.99	11.18	3.45	13.72
490	-2.32	7.97	10.29	8.10	10.42	7.46	9.78	9.04	11.36
491	9.19	-2.95	12.14	8.65	0.54	2.02	7.17	-1.64	10.83
492	-11.14	0.68	11.82	-3.33	7.81	-11.47	0.33	-0.89	10.25
493	16.82	4.14	12.68	9.28	7.54	7.78	9.04	1.79	15.03
494	14.22	1.80	12.42	6.12	8.10	5.38	8.84	2.03	12.19
495	2.73	1.37	1.36	9.39	6.66	7.96	5.23	-2.36	5.09

Appendix B: Cont.

Contract		VSM		VSM + RANSAC		VSM + RAN + WNN		KRR	
No	Profit %	Pred	Err	Pred	Err	Pred	Err	Pred	Err
496	-12.92	4.30	17.22	-13.18	0.26	-12.81	0.11	-13.28	0.36
497	7.85	6.89	0.96	11.81	3.96	7.24	0.61	7.43	0.42
498	-6.51	-3.41	3.10	4.61	11.12	6.76	13.27	-1.13	5.38
499	12.75	12.27	0.48	13.53	0.78	7.55	5.20	8.54	4.21
500	-10.17	-13.17	3.00	6.18	16.35	6.95	17.12	-12.44	2.27
501	15.18	10.39	4.79	11.19	3.99	11.90	3.28	7.59	7.59
502	-18.38	-18.17	0.21	-18.24	0.14	-20.55	2.17	-21.92	3.54
503	-1.79	-0.77	1.02	5.18	6.97	7.07	8.86	-3.56	1.77
504	0.51	12.04	11.53	12.37	11.86	11.51	11.00	8.38	7.87
505	9.79	-4.93	14.72	8.23	1.56	7.31	2.48	-2.86	12.65
506	10.48	10.76	0.28	10.69	0.21	8.53	1.95	10.58	0.10
507	9.93	8.84	1.09	5.54	4.39	8.55	1.38	8.94	0.99
508	6.90	4.28	2.62	5.61	1.29	6.64	0.26	3.78	3.12
509	11.60	6.32	5.28	7.60	4.00	7.66	3.94	4.73	6.87
510	14.88	1.30	13.58	10.72	4.16	8.47	6.41	8.03	6.85
511	12.14	5.90	6.24	7.84	4.30	5.05	7.09	5.44	6.70
512	-9.76	-1.95	7.81	-7.04	2.72	-6.67	3.09	-8.03	1.73
513	-13.03	-14.54	1.51	-15.14	2.11	-14.14	1.11	-15.96	2.93
514	15.05	7.04	8.01	6.27	8.78	7.93	7.12	6.58	8.47
515	-12.54	1.03	13.57	2.85	15.39	-15.51	2.97	-11.26	1.28
516	16.72	4.63	12.09	8.37	8.35	6.10	10.62	16.70	0.02
517	-12.06	-14.23	2.17	-14.11	2.05	-12.29	0.23	-13.76	1.70
518	6.98	2.59	4.39	3.35	3.63	5.11	1.87	2.48	4.50
519	7.95	7.86	0.09	0.16	7.79	9.46	1.51	12.18	4.23
520	8.37	10.61	2.24	10.45	2.08	9.29	0.92	10.18	1.81
521	16.69	16.05	0.64	4.91	11.78	6.12	10.57	13.36	3.33
522	9.16	6.44	2.72	10.05	0.89	9.30	0.14	7.36	1.80
523	8.65	7.92	0.73	9.51	0.86	7.90	0.75	6.58	2.07
524	-12.39	-15.74	3.35	-14.34	1.95	-13.98	1.59	-2.31	10.08
525	9.66	14.59	4.93	2.03	7.63	6.52	3.14	16.28	6.62
526	1.42	2.97	1.55	6.45	5.03	4.09	2.67	3.12	1.70
527	-10.78	-11.23	0.45	-10.18	0.60	-5.60	5.18	-11.32	0.54
528	3.23	8.82	5.59	2.34	0.89	8.52	5.29	8.02	4.79
529	13.79	7.08	6.71	8.93	4.86	10.22	3.57	9.75	4.04
530	-6.07	-3.91	2.16	0.39	6.46	-0.73	5.34	-2.97	3.10
531	3.11	2.79	0.32	5.66	2.55	5.38	2.27	3.62	0.51
532	3.03	-1.17	4.20	4.48	1.45	7.16	4.13	-9.11	12.14
533	5.79	6.62	0.83	8.66	2.87	7.34	1.55	6.87	1.08
534	9.59	4.49	5.10	8.40	1.19	8.27	1.32	1.57	8.02
535	8.39	9.00	0.61	11.10	2.71	10.15	1.76	8.89	0.50
536	12.26	4.07	8.19	8.69	3.57	8.16	4.10	7.51	4.75
537	-0.07	10.23	10.30	10.23	10.30	9.51	9.58	8.88	8.95
538	14.94	8.08	6.86	13.13	1.81	10.02	4.92	7.38	7.56
539	15.69	11.90	3.79	11.79	3.90	11.08	4.61	10.41	5.28
540	0.79	3.42	2.63	7.97	7.18	7.16	6.37	3.62	2.83
541	2.92	5.02	2.10	1.56	1.36	6.80	3.88	6.93	4.01
542	15.76	6.70	9.06	9.01	6.75	8.49	7.27	8.36	7.40
543	-3.52	7.84	11.36	9.42	12.94	8.85	12.37	-5.06	1.54
544	6.36	2.89	3.47	3.70	2.66	4.42	1.94	-0.33	6.69
545	12.29	8.81	3.48	9.91	2.38	7.73	4.56	6.97	5.32
546	-12.31	-12.02	0.29	3.93	16.24	-13.14	0.83	-12.39	0.08
547	6.70	10.19	3.49	10.52	3.82	8.43	1.73	7.71	1.01
548	0.26	-4.01	4.27	-9.42	9.68	2.26	2.00	-0.99	1.25
549	7.55	10.90	3.35	10.93	3.38	10.07	2.52	7.43	0.12
550	-2.00	3.39	5.39	6.58	8.58	6.39	8.39	3.07	5.07
551	13.23	6.29	6.94	9.08	4.15	6.64	6.59	9.86	3.37
552	13.47	9.59	3.88	15.47	2.00	7.58	5.89	2.44	11.03
553	8.95	9.18	0.23	11.79	2.84	8.49	0.46	6.58	2.37
554	6.14	3.56	2.58	10.18	4.04	7.13	0.99	4.38	1.76
555	18.01	11.40	6.61	11.43	6.58	10.85	7.16	10.80	7.21
556	14.12	3.28	10.84	4.26	9.86	4.69	9.43	4.01	10.11
557	11.28	4.07	7.21	3.05	8.23	5.39	5.89	4.33	6.95

Appendix B: Cont.

Contract		VSM		VSM + RANSAC		VSM + RAN + WNN		KRR	
No	Profit %	Pred	Err	Pred	Err	Pred	Err	Pred	Err
558	-6.47	8.14	14.61	9.56	16.03	-8.92	2.45	0.87	7.34
559	-4.07	9.08	13.15	11.99	16.06	9.36	13.43	-6.75	2.68
560	12.76	7.75	5.01	6.00	6.76	7.82	4.94	3.87	8.89
561	-16.75	-0.70	16.05	-4.20	12.55	-16.59	0.16	-17.54	0.79
562	0.73	5.62	4.89	1.00	0.27	3.54	2.81	6.40	5.67
563	17.25	9.48	7.77	11.61	5.64	9.64	7.61	8.73	8.52
564	-8.91	-1.25	7.66	0.45	9.36	1.64	10.55	1.52	10.43
565	-17.32	-17.06	0.26	-17.78	0.46	-19.86	2.54	-17.67	0.35
566	1.19	4.66	3.47	6.23	5.04	5.74	4.55	2.32	1.13
567	10.15	5.97	4.18	3.93	6.22	7.14	3.01	4.75	5.40
568	-6.14	7.51	13.65	7.21	13.35	7.47	13.61	4.79	10.93
569	4.12	5.96	1.84	11.12	7.00	9.28	5.16	9.08	4.96
570	-9.25	5.96	15.21	-10.12	0.87	-9.28	0.03	-10.08	0.83
571	-4.36	5.83	10.19	9.54	13.90	8.99	13.35	10.85	15.21
572	9.57	2.34	7.23	4.87	4.70	8.11	1.46	1.64	7.93
573	17.42	10.50	6.92	12.50	4.92	8.27	9.15	7.17	10.25
574	9.22	8.23	0.99	5.57	3.65	10.20	0.98	12.70	3.48
575	6.11	-3.31	9.42	3.88	2.23	5.14	0.97	3.89	2.22
576	2.17	-4.22	6.39	-0.65	2.82	-1.18	3.35	-3.54	5.71
577	5.69	3.26	2.43	2.58	3.11	5.70	0.01	2.13	3.56
578	7.75	0.50	7.25	5.94	1.81	6.21	1.54	3.62	4.13
579	2.46	0.55	1.91	3.26	0.80	4.73	2.27	0.73	1.73
580	1.87	11.62	9.75	12.11	10.24	12.63	10.76	7.87	6.00
581	1.11	7.56	6.45	7.32	6.21	8.72	7.61	8.34	7.23
582	4.17	8.55	4.38	9.82	5.65	9.16	4.99	5.18	1.01
583	12.50	8.36	4.14	9.05	3.45	8.70	3.80	10.50	2.00
584	3.40	3.87	0.47	4.67	1.27	5.92	2.52	2.31	1.09
585	9.26	12.25	2.99	12.22	2.96	11.42	2.16	10.80	1.54
586	17.73	15.79	1.94	17.57	0.16	13.42	4.31	17.54	0.19
587	-15.41	-17.93	2.52	-16.68	1.27	-15.71	0.30	-15.72	0.31
588	3.51	4.94	1.43	6.26	2.75	5.70	2.19	2.32	1.19
589	-9.75	-1.78	7.97	-7.40	2.35	3.42	13.17	-0.91	8.84
590	-9.16	6.90	16.06	-7.29	1.87	-5.63	3.53	-5.37	3.79
591	15.07	3.87	11.20	8.66	6.41	6.54	8.53	1.64	13.43
592	7.97	2.46	5.51	4.03	3.94	4.40	3.57	5.70	2.27
593	-10.80	-14.73	3.93	-12.84	2.04	-10.10	0.70	1.79	12.59
594	7.39	9.55	2.16	10.61	3.22	10.65	3.26	14.08	6.69
595	11.05	3.51	7.54	0.98	10.07	5.30	5.75	6.47	4.58
596	-18.06	-19.32	1.26	-19.13	1.07	-18.32	0.26	-20.50	2.44
597	16.50	5.84	10.66	9.91	6.59	7.94	8.56	3.94	12.56
598	-5.45	2.98	8.43	4.11	9.56	6.03	11.48	3.22	8.67
599	5.36	5.13	0.23	4.96	0.40	3.99	1.37	2.81	2.55
600	7.78	2.71	5.07	1.82	5.96	2.82	4.96	2.89	4.89
601	-0.92	4.61	5.53	2.87	3.79	6.60	7.52	8.32	9.24
602	2.73	10.93	8.20	12.88	10.15	10.80	8.07	8.91	6.18
603	1.46	2.52	1.06	3.23	1.77	7.08	5.62	1.14	0.32
604	18.22	9.83	8.39	9.60	8.62	9.38	8.84	7.61	10.61
605	3.27	2.98	0.29	7.31	4.04	7.16	3.89	3.62	0.35
606	7.45	7.30	0.15	5.65	1.80	9.15	1.70	9.81	2.36
607	-0.34	3.39	3.73	3.40	3.74	5.48	5.82	2.56	2.90
608	-6.79	-1.63	5.16	5.25	12.04	3.81	10.60	-2.37	4.42
609	15.85	3.80	12.05	1.81	14.04	8.04	7.81	1.44	14.41
610	13.67	3.54	10.13	7.76	5.91	7.12	6.55	-0.09	13.76
611	0.05	-4.80	4.85	-0.52	0.57	-1.25	1.30	-3.30	3.35
612	-7.35	2.64	9.99	4.35	11.70	5.79	13.14	2.33	9.68
613	17.99	9.79	8.20	10.41	7.58	8.32	9.67	8.85	9.14
614	13.95	9.96	3.99	10.46	3.49	9.98	3.97	1.33	12.62
615	8.59	7.63	0.96	10.53	1.94	9.28	0.69	8.69	0.10
616	7.59	2.16	5.43	0.62	6.97	4.90	2.69	3.21	4.38
617	9.29	12.21	2.92	5.80	3.49	5.97	3.32	7.79	1.50
618	8.45	-0.06	8.51	7.24	1.21	7.10	1.35	2.81	5.64
619	14.97	8.45	6.52	8.54	6.43	7.55	7.42	9.82	5.15

Appendix B: Cont.

Contract		VSM		VSM + RANSAC		VSM + RAN + WNN		KRR	
No	Profit %	Pred	Err	Pred	Err	Pred	Err	Pred	Err
620	8.02	6.24	1.78	8.84	0.82	6.58	1.44	7.76	0.26
621	11.70	6.63	5.07	9.24	2.46	8.92	2.78	7.95	3.75
622	-5.98	-3.66	2.32	3.40	9.38	3.79	9.77	-0.72	5.26
623	8.78	1.78	7.00	-0.18	8.96	7.69	1.09	6.45	2.33
624	15.82	2.70	13.12	4.45	11.37	4.74	11.08	3.80	12.02
625	-7.01	-1.32	5.69	5.59	12.60	3.88	10.89	-1.93	5.08
626	1.83	6.57	4.74	8.21	6.38	8.73	6.90	7.17	5.34
627	11.19	1.29	9.90	0.80	10.39	5.05	6.14	6.34	4.85
628	6.60	11.72	5.12	13.14	6.54	9.90	3.30	9.84	3.24
629	18.38	10.90	7.48	11.35	7.03	9.76	8.62	10.32	8.06
630	6.53	10.52	3.99	9.14	2.61	8.38	1.85	8.67	2.14
631	10.57	9.57	1.00	9.30	1.27	9.11	1.46	10.08	0.49
632	-8.27	5.47	13.74	9.02	17.29	7.74	16.01	5.52	13.79
633	14.74	10.94	3.80	10.80	3.94	8.29	6.45	10.15	4.59
634	-0.18	8.67	8.85	7.60	7.78	8.37	8.55	5.71	5.89
635	-2.97	4.99	7.96	8.25	11.22	8.10	11.07	3.07	6.04
636	3.82	7.73	3.91	3.28	0.54	7.67	3.85	4.88	1.06
637	-7.71	-0.13	7.58	3.93	11.64	-7.14	0.57	2.48	10.19
638	7.88	9.29	1.41	11.15	3.27	10.24	2.36	9.62	1.74
639	11.23	4.87	6.36	4.43	6.80	3.87	7.36	1.21	10.02
640	13.57	1.62	11.95	6.99	6.58	8.01	5.56	0.91	12.66
641	11.22	4.31	6.91	8.32	2.90	7.08	4.14	4.13	7.09
642	2.64	8.64	6.00	7.18	4.54	7.32	4.68	2.13	0.51
643	-3.90	5.92	9.82	8.32	12.22	7.58	11.48	4.73	8.63
644	13.82	3.27	10.55	4.65	9.17	5.68	8.14	5.13	8.69
645	11.68	4.25	7.43	5.90	5.78	6.43	5.25	3.38	8.30
646	6.47	6.25	0.22	6.98	0.51	6.56	0.09	2.93	3.54
647	12.04	2.84	9.20	7.08	4.96	5.38	6.66	2.06	9.98
648	14.97	5.97	9.00	6.65	8.32	8.44	6.53	7.04	7.93
649	15.27	3.35	11.92	4.25	11.02	6.54	8.73	2.01	13.26
650	9.60	12.19	2.59	10.31	0.71	8.42	1.18	10.26	0.66
651	11.37	0.27	11.10	4.64	6.73	5.74	5.63	5.14	6.23
652	12.68	8.19	4.49	8.25	4.43	8.43	4.25	7.83	4.85
653	17.31	3.73	13.58	3.05	14.26	6.22	11.09	13.32	3.99
654	17.80	3.78	14.02	8.73	9.07	7.41	10.39	3.73	14.07
655	-0.60	4.20	4.80	7.29	7.89	7.97	8.57	4.04	4.64
656	14.08	4.98	9.10	6.73	7.35	6.76	7.32	4.12	9.96
657	6.11	-1.20	7.31	1.62	4.49	2.80	3.31	5.67	0.44
658	13.10	8.00	5.10	9.58	3.52	8.59	4.51	8.17	4.93
659	14.78	1.11	13.67	0.94	13.84	5.12	9.66	2.36	12.42
660	6.80	10.53	3.73	14.18	7.38	10.58	3.78	9.13	2.33
661	11.39	8.93	2.46	9.59	1.80	9.03	2.36	9.90	1.49
662	-1.02	4.42	5.44	2.05	3.07	7.02	8.04	5.65	6.67
663	-4.23	10.96	15.19	-4.85	0.62	10.51	14.74	7.02	11.25
664	-4.96	7.34	12.30	8.62	13.58	6.89	11.85	7.63	12.59
665	7.18	5.89	1.29	8.90	1.72	8.26	1.08	4.53	2.65
666	9.42	5.16	4.26	10.39	0.97	6.89	2.53	5.33	4.09
667	-5.36	-2.16	3.20	2.92	8.28	6.37	11.73	3.58	8.94
668	3.09	5.19	2.10	7.88	4.79	9.17	6.08	7.61	4.52
669	10.12	6.48	3.64	7.31	2.81	6.92	3.20	5.97	4.15
670	9.35	0.63	8.72	-0.24	9.59	4.37	4.98	1.28	8.07
671	11.95	13.00	1.05	12.64	0.69	9.85	2.10	17.98	6.03
672	10.99	9.57	1.42	9.30	1.69	9.11	1.88	11.04	0.05
673	7.39	2.95	4.44	5.05	2.34	6.48	0.91	3.20	4.19
674	8.72	7.57	1.15	9.17	0.45	9.29	0.57	8.08	0.64
675	-3.27	-1.45	1.82	-1.92	1.35	3.83	7.10	-1.64	1.63
676	-8.36	1.59	9.95	4.76	13.12	6.22	14.58	4.05	12.41
677	17.86	12.38	5.48	14.01	3.85	10.93	6.93	15.80	2.06
678	5.48	10.68	5.20	11.80	6.32	10.13	4.65	4.16	1.32
679	11.82	2.45	9.37	4.22	7.60	5.93	5.89	3.89	7.93
680	13.69	7.39	6.30	5.44	8.25	6.98	6.71	9.40	4.29
681	-16.27	1.18	17.45	-5.98	10.29	-16.72	0.45	-18.23	1.96

Appendix B: Cont.

Contract		VSM		VSM + RANSAC		VSM + RAN + WNN		KRR	
No	Profit %	Pred	Err	Pred	Err	Pred	Err	Pred	Err
682	-9.39	5.81	15.20	-8.20	1.19	6.73	16.12	-9.14	0.25
683	-5.11	5.62	10.73	9.33	14.44	-7.77	2.66	1.57	6.68
684	17.33	2.17	15.16	2.64	14.69	5.39	11.94	15.58	1.75
685	6.30	2.76	3.54	6.54	0.24	7.06	0.76	9.08	2.78
686	15.24	6.51	8.73	8.01	7.23	8.08	7.16	11.44	3.80
687	6.26	7.11	0.85	7.70	1.44	7.93	1.67	7.86	1.60
688	14.82	0.96	13.86	0.66	14.16	7.86	6.96	7.64	7.18
689	-0.67	9.46	10.13	9.68	10.35	10.36	11.03	7.86	8.53
690	3.00	-1.89	4.89	-3.34	6.34	2.47	0.53	-6.11	9.11
691	7.11	5.02	2.09	8.35	1.24	7.94	0.83	7.50	0.39
692	10.30	0.36	9.94	-4.20	14.50	6.63	3.67	0.54	9.76
693	-4.15	6.46	10.61	6.49	10.64	7.22	11.37	7.57	11.72
694	0.00	-3.49	3.49	-0.44	0.44	-0.70	0.70	-2.18	2.18
695	1.15	1.18	0.03	-5.98	7.13	7.72	6.57	-0.66	1.81
696	12.02	3.98	8.04	3.59	8.43	5.80	6.22	2.67	9.35
697	6.54	8.63	2.09	11.65	5.11	9.29	2.75	6.26	0.28
698	-0.36	8.81	9.17	10.32	10.68	9.69	10.05	8.10	8.46
699	1.00	5.45	4.45	7.61	6.61	8.70	7.70	4.98	3.98
700	16.76	7.75	9.01	9.31	7.45	6.45	10.31	7.71	9.05
701	4.65	8.16	3.51	7.72	3.07	7.36	2.71	9.15	4.50
702	13.43	0.16	13.27	8.07	5.36	9.97	3.46	7.83	5.60
703	7.13	2.80	4.33	9.39	2.26	8.66	1.53	6.33	0.80
704	11.27	6.58	4.69	9.24	2.03	7.53	3.74	6.45	4.82
705	-1.46	4.03	5.49	9.04	10.50	7.38	8.84	6.20	7.66
706	4.27	4.84	0.57	8.33	4.06	8.55	4.28	6.25	1.98
707	-15.97	-16.57	0.60	-17.14	1.17	-15.45	0.52	-10.14	5.83
708	14.52	2.72	11.80	4.39	10.13	7.76	6.76	13.01	1.51
709	9.21	3.67	5.54	5.93	3.28	5.31	3.90	6.23	2.98
710	13.68	11.90	1.78	11.79	1.89	11.08	2.60	11.03	2.65
711	17.91	9.61	8.30	7.46	10.45	8.47	9.44	12.62	5.29
712	-1.10	4.47	5.57	8.49	9.59	6.94	8.04	4.05	5.15
713	16.29	11.43	4.86	10.67	5.62	9.52	6.77	16.51	0.22
714	6.56	9.86	3.30	9.76	3.20	9.41	2.85	11.04	4.48
715	14.10	3.07	11.03	9.04	5.06	6.52	7.58	4.07	10.03
716	-9.35	3.91	13.26	-10.21	0.86	-6.97	2.38	-6.20	3.15
717	7.81	7.32	0.49	8.71	0.90	7.44	0.37	7.85	0.04
718	14.52	9.84	4.68	10.87	3.65	8.34	6.18	7.62	6.90
719	1.91	10.04	8.13	5.93	4.02	3.41	1.50	8.72	6.81
720	-3.05	7.12	10.17	7.21	10.26	7.47	10.52	7.29	10.34
721	9.76	6.06	3.70	6.18	3.58	8.25	1.51	2.74	7.02
722	-6.84	1.37	8.21	5.23	12.07	5.90	12.74	-3.96	2.88
723	6.92	6.50	0.42	6.81	0.11	7.54	0.62	6.44	0.48
724	2.46	4.53	2.07	7.23	4.77	6.10	3.64	3.63	1.17
725	16.17	10.42	5.75	10.46	5.71	10.28	5.89	7.65	8.52
726	8.32	10.66	2.34	10.66	2.34	10.87	2.55	9.82	1.50
727	4.15	0.44	3.71	9.54	5.39	7.01	2.86	0.86	3.29
728	9.60	5.38	4.22	9.09	0.51	6.80	2.80	4.33	5.27
729	-1.48	3.21	4.69	2.77	4.25	6.16	7.64	1.41	2.89
730	1.43	2.14	0.71	5.46	4.03	4.94	3.51	0.14	1.29
731	5.21	4.69	0.52	4.54	0.67	6.37	1.16	7.85	2.64
732	12.00	12.25	0.25	12.22	0.22	11.42	0.58	11.56	0.44
733	10.46	6.35	4.11	8.47	1.99	8.25	2.21	4.66	5.80
734	8.70	7.70	1.00	6.33	2.37	6.38	2.32	7.73	0.97
735	3.01	3.78	0.77	8.73	5.72	7.41	4.40	4.13	1.12
736	4.26	4.76	0.50	2.79	1.47	4.91	0.65	1.44	2.82
737	-2.54	7.57	10.11	9.89	12.43	8.59	11.13	-1.41	1.13
738	6.51	9.42	2.91	9.63	3.12	8.83	2.32	7.62	1.11
739	6.65	8.99	2.34	11.43	4.78	10.08	3.43	9.17	2.52
740	0.00	3.41	3.41	1.98	1.98	3.73	3.73	3.18	3.18
741	10.90	7.59	3.31	8.85	2.05	7.90	3.00	12.06	1.16

Appendix B: Cont.

Contract		VSM		VSM + RANSAC		VSM + RAN + WNN		KRR	
No	Profit %	Pred	Err	Pred	Err	Pred	Err	Pred	Err
742	-1.14	-3.92	2.78	2.14	3.28	7.83	8.97	-2.24	1.10
743	0.38	3.30	2.92	4.16	3.78	6.82	6.44	3.09	2.71
744	9.05	7.42	1.63	8.16	0.89	8.36	0.69	5.76	3.29
745	11.36	-0.70	12.06	-4.20	15.56	5.59	5.77	-0.80	12.16
746	-4.10	9.16	13.26	9.86	13.96	7.36	11.46	-4.56	0.46
747	9.12	8.60	0.52	6.35	2.77	5.24	3.88	2.83	6.29
748	3.28	9.30	6.02	8.45	5.17	7.58	4.30	9.24	5.96
749	8.67	2.71	5.96	1.66	7.01	2.91	5.76	3.18	5.49
750	13.59	5.22	8.37	5.79	7.80	8.80	4.79	6.58	7.01
751	12.86	6.12	6.74	6.76	6.10	6.33	6.53	3.50	9.36
752	13.15	8.29	4.86	8.47	4.68	6.46	6.69	7.39	5.76
753	9.21	4.60	4.61	7.25	1.96	6.64	2.57	5.10	4.11
754	11.33	11.88	0.55	11.80	0.47	11.06	0.27	11.12	0.21
755	-17.03	-17.06	0.03	-19.46	2.43	-17.13	0.10	-19.95	2.92
756	16.44	0.21	16.23	4.58	11.86	7.63	8.81	3.15	13.29
757	7.92	8.03	0.11	9.65	1.73	7.98	0.06	8.76	0.84
758	-8.62	4.80	13.42	8.44	17.06	6.67	15.29	4.19	12.81
759	-3.81	5.21	9.02	7.95	11.76	7.05	10.86	3.40	7.21
760	15.17	5.43	9.74	2.20	12.97	7.37	7.80	7.08	8.09
761	-7.50	5.89	13.39	-8.90	1.40	-8.26	0.76	3.73	11.23
762	11.10	6.25	4.85	3.38	7.72	9.15	1.95	10.76	0.34
763	5.77	7.88	2.11	8.74	2.97	7.38	1.61	7.86	2.09
764	5.33	11.71	6.38	11.54	6.21	9.50	4.17	7.35	2.02
765	2.84	6.10	3.26	6.58	3.74	5.39	2.55	7.85	5.01
766	4.71	9.40	4.69	9.05	4.34	7.89	3.18	11.10	6.39
767	19.53	16.92	2.61	18.99	0.54	5.44	14.09	17.34	2.19
768	-4.36	6.61	10.97	1.81	6.17	3.18	7.54	-5.12	0.76
769	13.27	4.29	8.98	8.96	4.31	7.31	5.96	4.18	9.09
770	15.39	3.57	11.82	4.17	11.22	6.01	9.38	4.19	11.20
771	11.30	5.13	6.17	5.24	6.06	7.31	3.99	6.14	5.16
772	-6.02	4.98	11.00	6.73	12.75	-6.76	0.74	6.31	12.33
773	-6.81	-2.49	4.32	0.34	7.15	-0.28	6.53	-2.18	4.63
774	12.65	-3.79	16.44	9.57	3.08	1.42	11.23	-1.68	14.33
775	3.34	4.80	1.46	6.04	2.70	4.30	0.96	2.75	0.59
776	11.51	8.04	3.47	3.92	7.59	8.34	3.17	12.22	0.71
777	5.45	0.46	4.99	1.96	3.49	5.84	0.39	-0.20	5.65
778	0.45	1.53	1.08	3.05	2.60	6.34	5.89	6.51	6.06
779	-2.55	1.58	4.13	1.67	4.22	5.38	7.93	-0.99	1.56
780	-18.03	-19.94	1.91	-19.81	1.78	-18.93	0.90	-19.01	0.98
781	-9.16	1.30	10.46	6.93	16.09	3.44	12.60	0.55	9.71
782	8.59	2.65	5.94	5.95	2.64	5.28	3.31	3.55	5.04
783	10.95	6.95	4.00	5.81	5.14	6.81	4.14	9.38	1.57
784	-9.76	1.48	11.24	3.56	13.32	4.75	14.51	-3.51	6.25
785	10.88	6.77	4.11	6.90	3.98	7.66	3.22	9.24	1.64
786	9.07	4.31	4.76	4.55	4.52	8.24	0.83	3.71	5.36
787	-3.66	-0.29	3.37	2.72	6.38	6.06	9.72	1.42	5.08
788	9.06	3.14	5.92	9.04	0.02	6.76	2.30	4.95	4.11
789	18.44	11.43	7.01	10.67	7.77	9.52	8.92	16.82	1.62
790	9.92	7.91	2.01	5.62	4.30	7.55	2.37	8.78	1.14
791	-0.37	3.41	3.78	1.98	2.35	3.73	4.10	3.77	4.14
792	2.97	5.01	2.04	7.10	4.13	4.20	1.23	2.56	0.41
793	11.53	4.83	6.70	5.23	6.30	6.54	4.99	7.36	4.17
794	6.72	11.90	5.18	11.79	5.07	11.08	4.36	11.56	4.84
795	0.87	-2.02	2.89	-1.34	2.21	3.62	2.75	-0.27	1.14
796	0.00	-4.80	4.80	-0.52	0.52	-1.25	1.25	-3.91	3.91
797	4.15	9.42	5.27	10.50	6.35	9.03	4.88	8.06	3.91
798	12.75	3.05	9.70	5.89	6.86	5.46	7.29	2.47	10.28
799	8.66	3.66	5.00	6.04	2.62	5.75	2.91	3.75	4.91
800	-2.60	5.58	8.18	7.30	9.90	5.71	8.31	-7.21	4.61
801	-0.98	2.71	3.69	1.65	2.63	2.91	3.89	3.77	4.75

Appendix B: Cont.

Contract		VSM		VSM + RANSAC		VSM + RAN + WNN		KRR	
No	Profit %	Pred	Err	Pred	Err	Pred	Err	Pred	Err
802	13.49	13.04	0.45	12.82	0.67	10.11	3.38	16.55	3.06
803	0.20	4.31	4.11	5.96	5.76	8.22	8.02	7.72	7.52
804	7.29	3.84	3.45	6.57	0.72	6.03	1.26	5.65	1.64
805	5.28	10.53	5.25	11.74	6.46	11.45	6.17	11.16	5.88
806	10.14	6.83	3.31	7.49	2.65	7.07	3.07	6.08	4.06
807	-15.13	-15.70	0.57	-16.68	1.55	-17.97	2.84	-16.31	1.18
808	7.81	6.53	1.28	9.35	1.54	7.65	0.16	5.02	2.79
809	11.95	11.33	0.62	11.36	0.59	10.55	1.40	11.12	0.83
810	4.59	2.12	2.47	2.97	1.62	6.82	2.23	3.79	0.80
811	-11.75	3.55	15.30	-12.52	0.77	-11.81	0.06	-13.55	1.80
812	2.86	4.07	1.21	4.94	2.08	7.30	4.44	5.14	2.28
813	0.25	5.11	4.86	6.24	5.99	6.42	6.17	3.40	3.15
814	4.87	0.92	3.95	-0.39	5.26	5.85	0.98	4.58	0.29
815	0.55	4.78	4.23	1.72	1.17	5.36	4.81	5.41	4.86
816	2.45	4.29	1.84	8.96	6.51	7.31	4.86	4.28	1.83
817	12.86	4.29	8.57	5.14	7.72	6.78	6.08	2.67	10.19
818	5.07	2.70	2.37	4.45	0.62	3.33	1.74	6.55	1.48
819	14.58	12.25	2.33	12.22	2.36	11.42	3.16	11.03	3.55
820	-0.35	6.67	7.02	8.59	8.94	7.61	7.96	2.67	3.02
821	9.31	5.90	3.41	5.81	3.50	4.32	4.99	5.70	3.61
822	16.03	14.43	1.60	16.59	0.56	4.78	11.25	14.17	1.86
823	10.01	3.13	6.88	5.19	4.82	6.02	3.99	2.19	7.82
824	3.51	1.43	2.08	3.58	0.07	7.89	4.38	1.56	1.95
825	11.96	6.41	5.55	7.94	4.02	7.55	4.41	11.81	0.15
826	13.30	5.32	7.98	7.95	5.35	7.37	5.93	8.12	5.18
827	0.20	4.03	3.83	5.78	5.58	5.76	5.56	4.30	4.10
828	7.15	6.75	0.40	9.68	2.53	8.49	1.34	5.79	1.36
829	6.36	6.94	0.58	7.86	1.50	6.25	0.11	7.14	0.78
830	-4.03	5.00	9.03	9.54	13.57	8.71	12.74	5.67	9.70
831	0.40	3.76	3.36	3.82	3.42	8.43	8.03	5.53	5.13
832	8.89	-4.79	13.68	9.18	0.29	9.03	0.14	6.28	2.61
833	11.71	1.24	10.47	6.39	5.32	6.80	4.91	4.37	7.34
834	5.48	1.76	3.72	4.04	1.44	5.45	0.03	1.79	3.69
835	9.83	6.62	3.21	5.61	4.22	7.19	2.64	8.69	1.14
836	-12.62	-12.94	0.32	-14.20	1.58	-13.91	1.29	-12.85	0.23
837	-8.77	-10.47	1.70	6.84	15.61	-6.59	2.18	-9.04	0.27
838	4.00	3.42	0.58	6.52	2.52	6.07	2.07	4.34	0.34
839	11.02	5.96	5.06	11.12	0.10	9.28	1.74	7.37	3.65
840	4.63	4.15	0.48	3.00	1.63	7.03	2.40	2.31	2.32
841	0.00	2.21	2.21	2.39	2.39	2.74	2.74	3.18	3.18
842	-0.08	-2.98	2.90	-0.40	0.32	-0.58	0.50	-3.45	3.37
843	7.13	4.46	2.67	7.19	0.06	7.58	0.45	4.29	2.84
844	0.00	3.10	3.10	1.94	1.94	3.39	3.39	3.57	3.57
845	7.83	6.57	1.26	5.38	2.45	6.20	1.63	6.81	1.02
846	12.50	5.32	7.18	5.49	7.01	7.37	5.13	9.72	2.78
847	10.24	10.89	0.65	9.94	0.30	10.27	0.03	10.45	0.21
848	6.19	5.24	0.95	-0.64	6.83	2.27	3.92	5.35	0.84
849	-12.66	-14.02	1.36	-13.93	1.27	-12.14	0.52	2.48	15.14
850	5.19	4.84	0.35	5.27	0.08	7.22	2.03	5.13	0.06
851	11.92	7.02	4.90	4.21	7.71	7.64	4.28	7.38	4.54
852	6.99	7.32	0.33	8.72	1.73	7.43	0.44	12.20	5.21
853	18.86	10.49	8.37	9.21	9.65	6.70	12.16	8.36	10.50
854	-13.50	-1.55	11.95	-2.05	11.45	0.24	13.74	-13.54	0.04
855	2.23	6.30	4.07	10.44	8.21	7.93	5.70	1.19	1.04
856	4.63	4.98	0.35	4.94	0.31	6.46	1.83	1.40	3.23
857	1.13	5.95	4.82	8.83	7.70	8.60	7.47	13.52	12.39
858	15.72	10.68	5.04	6.87	8.85	8.18	7.54	8.36	7.36
859	0.13	6.80	6.67	9.09	8.96	7.40	7.27	4.50	4.37
860	2.91	3.58	0.67	8.57	5.66	6.97	4.06	4.48	1.57
861	9.18	4.94	4.24	6.73	2.45	6.76	2.42	4.19	4.99

Appendix B: Cont.

Contract		VSM		VSM + RANSAC		VSM + RAN + WNN		KRR	
No	Profit %	Pred	Err	Pred	Err	Pred	Err	Pred	Err
862	12.94	3.76	9.18	5.25	7.69	2.45	10.49	4.58	8.36
863	2.15	5.32	3.17	3.86	1.71	5.91	3.76	4.37	2.22
864	8.95	9.03	0.08	10.48	1.53	9.80	0.85	1.35	7.60
865	3.05	9.19	6.14	9.51	6.46	8.33	5.28	6.58	3.53
866	-4.63	6.75	11.38	9.68	14.31	8.49	13.12	5.58	10.21
867	2.56	1.45	1.11	10.21	7.65	9.38	6.82	8.03	5.47
868	-1.05	7.25	8.30	3.51	4.56	7.49	8.54	6.08	7.13
869	19.73	10.82	8.91	10.95	8.78	9.63	10.10	9.95	9.78
870	-18.00	-18.06	0.06	-19.23	1.23	-20.79	2.79	-16.69	1.31
871	-2.22	3.82	6.04	3.46	5.68	5.07	7.29	3.33	5.55
872	5.98	6.70	0.72	8.72	2.74	7.09	1.11	4.66	1.32
873	6.00	9.56	3.56	9.79	3.79	9.41	3.41	7.39	1.39
874	9.84	11.86	2.02	6.62	3.22	7.26	2.58	13.05	3.21
875	13.56	0.68	12.88	13.33	0.23	7.47	6.09	-0.89	14.45
876	-2.87	5.88	8.75	6.34	9.21	9.50	12.37	3.93	6.80
877	12.14	-2.43	14.57	11.59	0.55	4.78	7.36	-0.66	12.80
878	0.21	8.30	8.09	8.65	8.44	7.93	7.72	5.33	5.12
879	2.87	4.46	1.59	4.19	1.32	3.00	0.13	3.49	0.62
880	9.26	7.27	1.99	8.41	0.85	7.65	1.61	6.13	3.13
881	10.05	5.71	4.34	6.93	3.12	4.82	5.23	7.02	3.03
882	13.83	2.89	10.94	4.67	9.16	5.31	8.52	-1.46	15.29
883	8.41	0.15	8.26	9.12	0.71	7.95	0.46	8.84	0.43
884	10.94	10.19	0.75	11.10	0.16	11.14	0.20	9.88	1.06
885	5.09	8.10	3.01	8.10	3.01	7.93	2.84	8.06	2.97
886	-3.52	9.98	13.50	9.97	13.49	10.07	13.59	7.82	11.34
887	1.44	5.10	3.66	7.99	6.55	8.21	6.77	4.86	3.42
888	10.85	4.34	6.51	8.37	2.48	7.11	3.74	4.28	6.57
889	13.78	1.68	12.10	2.30	11.48	5.07	8.71	-1.52	15.30
890	-5.66	5.78	11.44	9.02	14.68	6.79	12.45	4.91	10.57
891	-0.18	-3.49	3.31	-0.44	0.26	-0.70	0.52	-3.40	3.22
892	8.88	6.12	2.76	7.87	1.01	6.14	2.74	4.93	3.95
893	12.44	6.75	5.69	7.63	4.81	8.80	3.64	6.58	5.86
894	11.13	4.24	6.89	8.54	2.59	7.53	3.60	8.58	2.55
895	-5.14	6.49	11.63	6.15	11.29	7.31	12.45	-2.43	2.71
896	-0.37	6.82	7.19	7.76	8.13	10.06	10.43	8.06	8.43
897	0.03	2.21	2.18	2.39	2.36	2.74	2.71	2.89	2.86
898	4.84	10.11	5.27	11.21	6.37	8.07	3.23	7.62	2.78
899	12.04	10.44	1.60	9.99	2.05	8.44	3.60	16.62	4.58
900	5.57	6.60	1.03	6.17	0.60	6.36	0.79	7.63	2.06
901	17.30	1.30	16.00	7.31	9.99	6.83	10.47	13.70	3.60
902	12.78	5.85	6.93	4.94	7.84	4.21	8.57	1.98	10.80
903	-1.90	6.44	8.34	10.27	12.17	6.01	7.91	3.33	5.23
904	-2.79	5.49	8.28	7.20	9.99	5.66	8.45	2.93	5.72
905	7.99	7.46	0.53	7.50	0.49	7.17	0.82	7.71	0.28
906	10.97	6.69	4.28	7.42	3.55	7.06	3.91	7.23	3.74
907	6.80	12.20	5.40	12.18	5.38	11.49	4.69	11.56	4.76
908	10.04	6.96	3.08	6.04	4.00	7.95	2.09	5.64	4.40
909	0.80	2.24	1.44	6.36	5.56	6.14	5.34	2.15	1.35
910	-1.71	7.73	9.44	9.63	11.34	4.59	6.30	3.66	5.37
911	-8.05	6.75	14.80	-8.68	0.63	-8.27	0.22	2.47	10.52
912	6.28	5.71	0.57	7.65	1.37	7.62	1.34	9.54	3.26
913	-16.06	-17.98	1.92	-17.31	1.25	-16.42	0.36	-16.62	0.56
914	19.62	5.87	13.75	6.52	13.10	5.60	14.02	7.17	12.45
915	16.92	6.06	10.86	9.06	7.86	7.89	9.03	3.44	13.48
916	7.34	7.92	0.58	8.54	1.20	7.53	0.19	8.92	1.58
917	-7.25	-7.29	0.04	4.07	11.32	4.11	11.36	-6.21	1.04
918	-0.31	-2.63	2.32	3.79	4.10	5.41	5.72	-1.57	1.26
919	-15.57	-2.20	13.37	-16.98	1.41	-15.97	0.40	-2.29	13.28
920	13.02	13.43	0.41	6.07	6.95	5.92	7.10	12.88	0.14
921	12.63	6.50	6.13	4.25	8.38	6.37	6.26	7.71	4.92

Appendix B: Cont.

Contract		VSM		VSM + RANSAC		VSM + RAN + WNN		KRR	
No	Profit %	Pred	Err	Pred	Err	Pred	Err	Pred	Err
922	-5.80	1.72	7.52	5.39	11.19	4.52	10.32	1.25	7.05
923	16.57	6.51	10.06	4.37	12.20	7.11	9.46	6.86	9.71
924	-4.66	8.08	12.74	7.89	12.55	7.41	12.07	-2.82	1.84
925	18.87	7.87	11.00	12.18	6.69	6.32	12.55	8.87	10.00
926	6.56	3.26	3.30	2.55	4.01	3.05	3.51	-1.93	8.49
927	-0.63	9.11	9.74	4.32	4.95	7.37	8.00	10.26	10.89
928	16.34	9.52	6.82	5.06	11.28	7.18	9.16	13.98	2.36
929	6.32	7.23	0.91	5.44	0.88	6.98	0.66	6.47	0.15
930	2.67	4.65	1.98	3.43	0.76	6.12	3.45	5.27	2.60
931	6.66	3.86	2.80	4.33	2.33	5.76	0.90	2.51	4.15
932	2.44	5.11	2.67	4.21	1.77	6.14	3.70	5.36	2.92
933	3.42	0.65	2.77	2.83	0.59	6.46	3.04	2.99	0.43
934	7.79	3.88	3.91	3.67	4.12	5.72	2.07	2.51	5.28