

H I G H S T A K E S

FIXED ODDS SPORTS BETTING



The Essential Guide



JOSEPH BUCHDAHL

Published in 2003 by
High Stakes Publishing,
21 Great Ormond Street, London, WC1N 3JB
www.highstakes.co.uk

Copyright © Joseph Buchdahl

The right of Joseph Buchdahl to be identified as author of this work
has been asserted by him in accordance with the Copyright,
Designs & Patents Act 1988.

All rights reserved. No part of this book may be reproduced, stored
in or introduced into a retrieval system, or transmitted, in any form
or by any means (electronic, mechanical, photocopying, recording or
otherwise) without the written permission of the publishers.
Any person who does any unauthorised act in relation to this
publication may be liable to criminal prosecution and civil claims
for damages.

A CIP catalogue record for this book is available from the British Library.

ISBN 1-84344-019 9 Fixed Odds Sports Betting

2 4 6 8 10 9 7 5 3 1

Printed by Cox & Wyman

Acknowledgements

I would like to thank Andrew O'Hara for his assistance in proofreading the first draft, Mike Shor, of Gametheory.net, for his material contribution, and Paul Ross, Mark Hodson, Andy Baxter, Ian Blair and Kevin Kelly, without whose encouragement and insights this book would not have been completed.

Contents

<i>Chapter</i>	<i>Page</i>
Sports Betting as a Form of Investment	7
What Is Fixed Odds Betting?	11
Beating the Bookmaker	31
Rating Systems for Sports Prediction	53
Sports Betting and Risk Management	74
Risks and Returns for Fixed Odds Betting	78
Staking Strategy and Money Management	96
A Winning System?	168
 Bibliography	 218
Appendix	220

Sports Betting as a Form of Investment

What

BOOK PREVIEW

One idea investment property a group. These investments price £5 each capital halved stock character operate want that one. loser

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

Certainly property of the investment each a stock dividend Perhaps bank details chocolate is. So

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

One After gambling

BOOK PREVIEW

, the s of and s, to ment. the s the es at d his has on a : will that estor ents ssful than

A let size capital s on ze of hare. gh a I be may are it row.

ing? has will

depend to a large extent on the aims and interests of the sports bettor. Whether he considers his sports betting to be gambling or investing will be governed by the nature of the bet. In fact, the difference between the two is not what it actually means to gamble or invest.

BOOK PREVIEW

To provide a stipulated payment, most often a sum of money, to the bettor, one will therefore be concerned with bets or wagers agreed upon in advance.

Sports betting, then, is concerned with bets or wagers agreed upon in advance. The bet is placed on a particular outcome, and the bettor will receive a specified amount of money if the outcome occurs.

Horse racing is perhaps the oldest and most popular form of gambling. It is a sport in which the bettor places a bet on a particular horse to win a race. The bettor will receive a specified amount of money if the horse wins.

With the increasing popularity of sports betting, many other sports have become popular for betting, including rugby, cricket, tennis, golf, snooker, cycling, swimming, athletics, skiing, motor racing and, most popular of all, football.

Sports betting is about settling arguments: arguments about who is the fastest, strongest, most accurate and so on. Betting is about settling arguments about the outcome of a particular event. Furthermore, sport has become increasingly popular as entertainment in recent years, with viewers becoming more and more interested in the outcome of events.

One of the main reasons for the popularity of sports betting is that it provides a natural attraction that adds to the viewing excitement. It is a natural attraction that adds to the viewing excitement.

Increasingly popular as entertainment in recent years, with viewers becoming more and more interested in the outcome of events, sports betting has become a major part of the sports industry.

One of the main reasons for the popularity of sports betting is that it provides a natural attraction that adds to the viewing excitement. It is a natural attraction that adds to the viewing excitement.

BOOK PREVIEW

Gambling and investing have one primary aim in common: to make a profit. The difference between the two is that gambling involves taking a risk, while investing involves taking a calculated risk. The most obvious apparent difference between gambling and investing is that gambling is a game of chance, while investing is a game of skill.

Perhaps the most obvious apparent difference between gambling and investing is that gambling is a game of chance, while investing is a game of skill. The difference between the two is that gambling involves taking a risk, while investing involves taking a calculated risk.

investing concerns the level of exposure to risk as a result of any speculation to gain an advantage. For most fixed odds bets,¹ the risk is infinite, as the bookmaker's profit is not limited by the amount of capital invested. The bookmaker's profit is the difference between the odds offered and the odds received. The bookmaker's profit is the difference between the odds offered and the odds received. The bookmaker's profit is the difference between the odds offered and the odds received.

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

£10 every day that the value of the FTSE100 tracker fund will rise. If he is correct, he wins £10. If he is incorrect, he loses his £10 wagered. During the 200-day period, the value of the fund rises by £10 on 50 days and falls by £10 on 150 days. The gambler makes a £200 profit, the same as the investor, because there were 200 days when the value of the fund rose.

However, the gambler's risk is much greater than the investor's. The gambler risks his entire £2,000 stake on each day, while the investor only risks 10% of the total value of the fund. The gambler's risk is £2,000, while the investor's risk is only £200. The gambler's risk is 10 times greater than the investor's.

What are the chances of either the investor or the gambler losing all their capital through this speculation? The investor will lose all his capital if the value of the fund falls by £200. The gambler will lose all his capital if the value of the fund falls by £200 on any one day. The probability of such an occurrence is very low, but not negligible.

Suppose that on 50 days the value of the fund rises by £10, but on 150 days it falls by £10. The gambler loses everything. Conversely, suppose that on 150 days the fund rises by £10, but on 50 days it falls by £10. The gambler wins everything. The investor's risk is £200, while the gambler's risk is £2,000.

Clearly, the relative profitability and risk associated with traditional capital investment and fixed odds gambling is not as straightforward as it appears. The gambler's risk is much greater than the investor's, and the gambler's potential profit is much smaller.

Comparative assessment even more problematic. Finally, a lot of sports betting, particularly fixed odds betting, has the added disadvantage that the odds are often set by bookmakers who have a vested interest in the outcome. This makes it difficult for the punter to make a rational assessment of the value of the bet.

Nevertheless, it is by adopting a professional approach to forecasting and, more importantly, money management, that a successful punter can turn a profit. This book provides a detailed guide to the techniques and strategies that are essential for success in the world of fixed odds sports betting.

10

What Is Fixed Odds Betting?

BOOK PREVIEW

[illegible]

BOOK PREVIEW

Table 2.1. Wagers and odds

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

12

Fractional versus Decimal Odds

The British
phenomenon in the
UK since 1971. Even in the last 30 years, fractional odds have remained
very popular in Britain and today will still be used in the
wind high treble bookmaker's also offer fractional odds
sporadic 5/9, 15, 7/10, 1/11 (evens), 5/4,
6/4, 2/1 and 9/4. Knowing the fractional odds allows one to determine how
much 8/15 £15 stake), whilst a £4 stake at 9/4 could return a profit of £9. Fractional
odds simply describes the potential profit that can be won from a unit stake.
A win high potential profit, the bettor's stake is on; if
lower, then it is termed odds-against. Where the stake is the same as any
potential gain, it is termed even odds. If the stake is less than the potential
roughly 50-50 chance of winning and losing the bet, it is termed even odds.

In Europe, and increasingly in Britain since the growth of online sports
betting, decimal odds are being used instead of fractions. In terms of
5/4 and 2.25 are the same. These two odds may look quite different and yet are equivalent in terms of the
of stake and potential profit. Whereas fractional odds show just the
of stake and potential profit, the bettor's stake is assumed. Consequently, odds of 2.25 describe a bet, which, if
winning, will return a profit of 1.25 and the original stake of 1. Decimal
include the potential profit, the bettor's stake is assumed. Consequently, odds of 2.25 describe a bet, which, if
stake is assumed. Consequently, odds of 2.25 describe a bet, which, if
won, will return a profit of 1.25 and the original stake of 1. Decimal
less than the potential gain, it is termed even odds. If the stake is less than the potential
against the odds, it is termed odds-against.

It is fairly straightforward to convert from fractional odds into decimal odds,
because the size of the fractional odds represents the potential profit from
a win. For example, fractional odds of 5/4 represent a potential profit of 1.25 for every unit staked.

For 1 by:

$$(9/4) + 1 = (9/4) + (4/4) = (13/4) = 3.25$$

Usually, decimal odds are rounded to the nearest 2 or at most 3 decimal places. Consequently, fractional odds of 10/11 would be rounded to 1.91 (since 10/11 = 0.9090909090909091).

Converting from decimal odds back into fractional notation is a little more complicated. Sometimes the decimal odds are rounded so neatly into simple fractions that it is easy to convert them back. For example, 2.64 (which is 13/5) can be converted to 13/5 (the nearest being 13/5). The simplest way to think of 2.64 in fractional terms, then, would be as 1.64/1.

There are advantages to using fractional odds. One of the main reasons for using fractional odds is that they help one to visualise the stake and potential profit for a bet. For example, if you bet £10 at odds of 11/6, you will win £16.50 (11/6 of £10) plus your £10 stake, making a total of £26.50. On the other hand, decimal odds allow for a much wider range of potential prices. For example, 7/3, 11/6 or 13/7 are traditionally not used. Many bookmakers who now quote decimal odds also offer fractional odds. For example, 13/8, 15/8, 17/8, 19/8, 21/8, 23/8, 25/8, 27/8, 29/8, 31/8, 33/8, 35/8, 37/8, 39/8, 41/8, 43/8, 45/8, 47/8, 49/8, 51/8, 53/8, 55/8, 57/8, 59/8, 61/8, 63/8, 65/8, 67/8, 69/8, 71/8, 73/8, 75/8, 77/8, 79/8, 81/8, 83/8, 85/8, 87/8, 89/8, 91/8, 93/8, 95/8, 97/8, 99/8, 101/8, 103/8, 105/8, 107/8, 109/8, 111/8, 113/8, 115/8, 117/8, 119/8, 121/8, 123/8, 125/8, 127/8, 129/8, 131/8, 133/8, 135/8, 137/8, 139/8, 141/8, 143/8, 145/8, 147/8, 149/8, 151/8, 153/8, 155/8, 157/8, 159/8, 161/8, 163/8, 165/8, 167/8, 169/8, 171/8, 173/8, 175/8, 177/8, 179/8, 181/8, 183/8, 185/8, 187/8, 189/8, 191/8, 193/8, 195/8, 197/8, 199/8, 201/8, 203/8, 205/8, 207/8, 209/8, 211/8, 213/8, 215/8, 217/8, 219/8, 221/8, 223/8, 225/8, 227/8, 229/8, 231/8, 233/8, 235/8, 237/8, 239/8, 241/8, 243/8, 245/8, 247/8, 249/8, 251/8, 253/8, 255/8, 257/8, 259/8, 261/8, 263/8, 265/8, 267/8, 269/8, 271/8, 273/8, 275/8, 277/8, 279/8, 281/8, 283/8, 285/8, 287/8, 289/8, 291/8, 293/8, 295/8, 297/8, 299/8, 301/8, 303/8, 305/8, 307/8, 309/8, 311/8, 313/8, 315/8, 317/8, 319/8, 321/8, 323/8, 325/8, 327/8, 329/8, 331/8, 333/8, 335/8, 337/8, 339/8, 341/8, 343/8, 345/8, 347/8, 349/8, 351/8, 353/8, 355/8, 357/8, 359/8, 361/8, 363/8, 365/8, 367/8, 369/8, 371/8, 373/8, 375/8, 377/8, 379/8, 381/8, 383/8, 385/8, 387/8, 389/8, 391/8, 393/8, 395/8, 397/8, 399/8, 401/8, 403/8, 405/8, 407/8, 409/8, 411/8, 413/8, 415/8, 417/8, 419/8, 421/8, 423/8, 425/8, 427/8, 429/8, 431/8, 433/8, 435/8, 437/8, 439/8, 441/8, 443/8, 445/8, 447/8, 449/8, 451/8, 453/8, 455/8, 457/8, 459/8, 461/8, 463/8, 465/8, 467/8, 469/8, 471/8, 473/8, 475/8, 477/8, 479/8, 481/8, 483/8, 485/8, 487/8, 489/8, 491/8, 493/8, 495/8, 497/8, 499/8, 501/8, 503/8, 505/8, 507/8, 509/8, 511/8, 513/8, 515/8, 517/8, 519/8, 521/8, 523/8, 525/8, 527/8, 529/8, 531/8, 533/8, 535/8, 537/8, 539/8, 541/8, 543/8, 545/8, 547/8, 549/8, 551/8, 553/8, 555/8, 557/8, 559/8, 561/8, 563/8, 565/8, 567/8, 569/8, 571/8, 573/8, 575/8, 577/8, 579/8, 581/8, 583/8, 585/8, 587/8, 589/8, 591/8, 593/8, 595/8, 597/8, 599/8, 601/8, 603/8, 605/8, 607/8, 609/8, 611/8, 613/8, 615/8, 617/8, 619/8, 621/8, 623/8, 625/8, 627/8, 629/8, 631/8, 633/8, 635/8, 637/8, 639/8, 641/8, 643/8, 645/8, 647/8, 649/8, 651/8, 653/8, 655/8, 657/8, 659/8, 661/8, 663/8, 665/8, 667/8, 669/8, 671/8, 673/8, 675/8, 677/8, 679/8, 681/8, 683/8, 685/8, 687/8, 689/8, 691/8, 693/8, 695/8, 697/8, 699/8, 701/8, 703/8, 705/8, 707/8, 709/8, 711/8, 713/8, 715/8, 717/8, 719/8, 721/8, 723/8, 725/8, 727/8, 729/8, 731/8, 733/8, 735/8, 737/8, 739/8, 741/8, 743/8, 745/8, 747/8, 749/8, 751/8, 753/8, 755/8, 757/8, 759/8, 761/8, 763/8, 765/8, 767/8, 769/8, 771/8, 773/8, 775/8, 777/8, 779/8, 781/8, 783/8, 785/8, 787/8, 789/8, 791/8, 793/8, 795/8, 797/8, 799/8, 801/8, 803/8, 805/8, 807/8, 809/8, 811/8, 813/8, 815/8, 817/8, 819/8, 821/8, 823/8, 825/8, 827/8, 829/8, 831/8, 833/8, 835/8, 837/8, 839/8, 841/8, 843/8, 845/8, 847/8, 849/8, 851/8, 853/8, 855/8, 857/8, 859/8, 861/8, 863/8, 865/8, 867/8, 869/8, 871/8, 873/8, 875/8, 877/8, 879/8, 881/8, 883/8, 885/8, 887/8, 889/8, 891/8, 893/8, 895/8, 897/8, 899/8, 901/8, 903/8, 905/8, 907/8, 909/8, 911/8, 913/8, 915/8, 917/8, 919/8, 921/8, 923/8, 925/8, 927/8, 929/8, 931/8, 933/8, 935/8, 937/8, 939/8, 941/8, 943/8, 945/8, 947/8, 949/8, 951/8, 953/8, 955/8, 957/8, 959/8, 961/8, 963/8, 965/8, 967/8, 969/8, 971/8, 973/8, 975/8, 977/8, 979/8, 981/8, 983/8, 985/8, 987/8, 989/8, 991/8, 993/8, 995/8, 997/8, 999/8, 1001/8, 1003/8, 1005/8, 1007/8, 1009/8, 1011/8, 1013/8, 1015/8, 1017/8, 1019/8, 1021/8, 1023/8, 1025/8, 1027/8, 1029/8, 1031/8, 1033/8, 1035/8, 1037/8, 1039/8, 1041/8, 1043/8, 1045/8, 1047/8, 1049/8, 1051/8, 1053/8, 1055/8, 1057/8, 1059/8, 1061/8, 1063/8, 1065/8, 1067/8, 1069/8, 1071/8, 1073/8, 1075/8, 1077/8, 1079/8, 1081/8, 1083/8, 1085/8, 1087/8, 1089/8, 1091/8, 1093/8, 1095/8, 1097/8, 1099/8, 1101/8, 1103/8, 1105/8, 1107/8, 1109/8, 1111/8, 1113/8, 1115/8, 1117/8, 1119/8, 1121/8, 1123/8, 1125/8, 1127/8, 1129/8, 1131/8, 1133/8, 1135/8, 1137/8, 1139/8, 1141/8, 1143/8, 1145/8, 1147/8, 1149/8, 1151/8, 1153/8, 1155/8, 1157/8, 1159/8, 1161/8, 1163/8, 1165/8, 1167/8, 1169/8, 1171/8, 1173/8, 1175/8, 1177/8, 1179/8, 1181/8, 1183/8, 1185/8, 1187/8, 1189/8, 1191/8, 1193/8, 1195/8, 1197/8, 1199/8, 1201/8, 1203/8, 1205/8, 1207/8, 1209/8, 1211/8, 1213/8, 1215/8, 1217/8, 1219/8, 1221/8, 1223/8, 1225/8, 1227/8, 1229/8, 1231/8, 1233/8, 1235/8, 1237/8, 1239/8, 1241/8, 1243/8, 1245/8, 1247/8, 1249/8, 1251/8, 1253/8, 1255/8, 1257/8, 1259/8, 1261/8, 1263/8, 1265/8, 1267/8, 1269/8, 1271/8, 1273/8, 1275/8, 1277/8, 1279/8, 1281/8, 1283/8, 1285/8, 1287/8, 1289/8, 1291/8, 1293/8, 1295/8, 1297/8, 1299/8, 1301/8, 1303/8, 1305/8, 1307/8, 1309/8, 1311/8, 1313/8, 1315/8, 1317/8, 1319/8, 1321/8, 1323/8, 1325/8, 1327/8, 1329/8, 1331/8, 1333/8, 1335/8, 1337/8, 1339/8, 1341/8, 1343/8, 1345/8, 1347/8, 1349/8, 1351/8, 1353/8, 1355/8, 1357/8, 1359/8, 1361/8, 1363/8, 1365/8, 1367/8, 1369/8, 1371/8, 1373/8, 1375/8, 1377/8, 1379/8, 1381/8, 1383/8, 1385/8, 1387/8, 1389/8, 1391/8, 1393/8, 1395/8, 1397/8, 1399/8, 1401/8, 1403/8, 1405/8, 1407/8, 1409/8, 1411/8, 1413/8, 1415/8, 1417/8, 1419/8, 1421/8, 1423/8, 1425/8, 1427/8, 1429/8, 1431/8, 1433/8, 1435/8, 1437/8, 1439/8, 1441/8, 1443/8, 1445/8, 1447/8, 1449/8, 1451/8, 1453/8, 1455/8, 1457/8, 1459/8, 1461/8, 1463/8, 1465/8, 1467/8, 1469/8, 1471/8, 1473/8, 1475/8, 1477/8, 1479/8, 1481/8, 1483/8, 1485/8, 1487/8, 1489/8, 1491/8, 1493/8, 1495/8, 1497/8, 1499/8, 1501/8, 1503/8, 1505/8, 1507/8, 1509/8, 1511/8, 1513/8, 1515/8, 1517/8, 1519/8, 1521/8, 1523/8, 1525/8, 1527/8, 1529/8, 1531/8, 1533/8, 1535/8, 1537/8, 1539/8, 1541/8, 1543/8, 1545/8, 1547/8, 1549/8, 1551/8, 1553/8, 1555/8, 1557/8, 1559/8, 1561/8, 1563/8, 1565/8, 1567/8, 1569/8, 1571/8, 1573/8, 1575/8, 1577/8, 1579/8, 1581/8, 1583/8, 1585/8, 1587/8, 1589/8, 1591/8, 1593/8, 1595/8, 1597/8, 1599/8, 1601/8, 1603/8, 1605/8, 1607/8, 1609/8, 1611/8, 1613/8, 1615/8, 1617/8, 1619/8, 1621/8, 1623/8, 1625/8, 1627/8, 1629/8, 1631/8, 1633/8, 1635/8, 1637/8, 1639/8, 1641/8, 1643/8, 1645/8, 1647/8, 1649/8, 1651/8, 1653/8, 1655/8, 1657/8, 1659/8, 1661/8, 1663/8, 1665/8, 1667/8, 1669/8, 1671/8, 1673/8, 1675/8, 1677/8, 1679/8, 1681/8, 1683/8, 1685/8, 1687/8, 1689/8, 1691/8, 1693/8, 1695/8, 1697/8, 1699/8, 1701/8, 1703/8, 1705/8, 1707/8, 1709/8, 1711/8, 1713/8, 1715/8, 1717/8, 1719/8, 1721/8, 1723/8, 1725/8, 1727/8, 1729/8, 1731/8, 1733/8, 1735/8, 1737/8, 1739/8, 1741/8, 1743/8, 1745/8, 1747/8, 1749/8, 1751/8, 1753/8, 1755/8, 1757/8, 1759/8, 1761/8, 1763/8, 1765/8, 1767/8, 1769/8, 1771/8, 1773/8, 1775/8, 1777/8, 1779/8, 1781/8, 1783/8, 1785/8, 1787/8, 1789/8, 1791/8, 1793/8, 1795/8, 1797/8, 1799/8, 1801/8, 1803/8, 1805/8, 1807/8, 1809/8, 1811/8, 1813/8, 1815/8, 1817/8, 1819/8, 1821/8, 1823/8, 1825/8, 1827/8, 1829/8, 1831/8, 1833/8, 1835/8, 1837/8, 1839/8, 1841/8, 1843/8, 1845/8, 1847/8, 1849/8, 1851/8, 1853/8, 1855/8, 1857/8, 1859/8, 1861/8, 1863/8, 1865/8, 1867/8, 1869/8, 1871/8, 1873/8, 1875/8, 1877/8, 1879/8, 1881/8, 1883/8, 1885/8, 1887/8, 1889/8, 1891/8, 1893/8, 1895/8, 1897/8, 1899/8, 1901/8, 1903/8, 1905/8, 1907/8, 1909/8, 1911/8, 1913/8, 1915/8, 1917/8, 1919/8, 1921/8, 1923/8, 1925/8, 1927/8, 1929/8, 1931/8, 1933/8, 1935/8, 1937/8, 1939/8, 1941/8, 1943/8, 1945/8, 1947/8, 1949/8, 1951/8, 1953/8, 1955/8, 1957/8, 1959/8, 1961/8, 1963/8, 1965/8, 1967/8, 1969/8, 1971/8, 1973/8, 1975/8, 1977/8, 1979/8, 1981/8, 1983/8, 1985/8, 1987/8, 1989/8, 1991/8, 1993/8, 1995/8, 1997/8, 1999/8, 2001/8, 2003/8, 2005/8, 2007/8, 2009/8, 2011/8, 2013/8, 2015/8, 2017/8, 2019/8, 2021/8, 2023/8, 2025/8, 2027/8, 2029/8, 2031/8, 2033/8, 2035/8, 2037/8, 2039/8, 2041/8, 2043/8, 2045/8, 2047/8, 2049/8, 2051/8, 2053/8, 2055/8, 2057/8, 2059/8, 2061/8, 2063/8, 2065/8, 2067/8, 2069/8, 2071/8, 2073/8, 2075/8, 2077/8, 2079/8, 2081/8, 2083/8, 2085/8, 2087/8, 2089/8, 2091/8, 2093/8, 2095/8, 2097/8, 2099/8, 2101/8, 2103/8, 2105/8, 2107/8, 2109/8, 2111/8, 2113/8, 2115/8, 2117/8, 2119/8, 2121/8, 2123/8, 2125/8, 2127/8, 2129/8, 2131/8, 2133/8, 2135/8, 2137/8, 2139/8, 2141/8, 2143/8, 2145/8, 2147/8, 2149/8, 2151/8, 2153/8, 2155/8, 2157/8, 2159/8, 2161/8, 2163/8, 2165/8, 2167/8, 2169/8, 2171/8, 2173/8, 2175/8, 2177/8, 2179/8, 2181/8, 2183/8, 2185/8, 2187/8, 2189/8, 2191/8, 2193/8, 2195/8, 2197/8, 2199/8, 2201/8, 2203/8, 2205/8, 2207/8, 2209/8, 2211/8, 2213/8, 2215/8, 2217/8, 2219/8, 2221/8, 2223/8, 2225/8, 2227/8, 2229/8, 2231/8, 2233/8, 2235/8, 2237/8, 2239/8, 2241/8, 2243/8, 2245/8, 2247/8, 2249/8, 2251/8, 2253/8, 2255/8, 2257/8, 2259/8, 2261/8, 2263/8, 2265/8, 2267/8, 2269/8, 2271/8, 2273/8, 2275/8, 2277/8, 2279/8, 2281/8, 2283/8, 2285/8, 2287/8, 2289/8, 2291/8, 2293/8, 2295/8, 2297/8, 2299/8, 2301/8, 2303/8, 2305/8, 2307/8, 2309/8, 2311/8, 2313/8, 2315/8, 2317/8, 2319/8, 2321/8, 2323/8, 2325/8, 2327/8, 2329/8, 2331/8, 2333/8, 2335/8, 2337/8, 2339/8, 2341/8, 2343/8, 2345/8, 2347/8, 2349/8, 2351/8, 2353/8, 2355/8, 2357/8, 2359/8, 2361/8, 2363/8, 2365/8, 2367/8, 2369/8, 2371/8, 2373/8, 2375/8, 2377/8, 2379/8, 2381/8, 2383/8, 2385/8, 2387/8, 2389/8, 2391/8, 2393/8, 2395/8, 2397/8, 2399/8, 2401/8, 2403/8, 2405/8, 2407/8, 2409/8, 2411/8, 2413/8, 2415/8, 2417/8, 2419/8, 2421/8, 2423/8, 2425/8, 2427/8, 2429/8, 2431/8, 2433/8, 2435/8, 2437/8, 2439/8, 2441/8, 2443/8, 2445/8, 2447/8, 2449/8, 2451/8, 2453/8, 2455/8, 2457/8, 2459/8, 2461/8, 2463/8, 2465/8, 2467/8, 2469/8, 2471/8, 2473/8, 2475/8, 2477/8, 2479/8, 2481/8, 2483/8, 2485/8, 2487/8, 2489/8, 2491/8, 2493/8, 2495/8, 2497/8, 2499/8, 2501/8, 2503/8, 2505/8, 2507/8, 2509/8, 2511/8, 2513/8, 2515/8, 2517/8, 2519/8, 2521/8, 2523/8, 2525/8, 2527/8, 2529/8, 2531/8, 2533/8, 2535/8, 2537/8, 2539/8, 2541/8, 2543/8, 2545/8, 2547/8, 2549/8, 2551/8, 2553/8, 2555/8, 2557/8, 2559/8, 2561/8, 2563/8, 2565/8, 2567/8, 2569/8, 2571/8, 2573/8, 2575/8, 2577/8, 2579/8, 2581/8, 2583/8, 2585/8, 2587/8, 2589/8, 2591/8, 2593/8, 2595/8, 2597/8, 2599/8, 2601/8, 2603/8, 2605/8, 2607/8, 2609/8, 2611/8, 2613/8, 2615/8, 2617/8, 2619/8, 2621/8, 2623/8, 2625/8, 2627/8, 2629/8, 2631/8, 2633/8, 2635/8, 2637/8, 2639/8, 2641/8, 2643/8, 2645/8, 2647/8, 2649/8, 2651/8, 2653/8, 2655/8, 2657/8, 2659/8, 2661/8, 2663/8, 2665/8, 2667/8, 2669/8, 2671/8, 2673/8, 2675/8, 2677/8, 2679/8, 2681/8, 2683/8, 2685/8, 2687/8, 2689/8, 2691/8, 2693/8, 2695/8, 2697/8, 2699/8, 2701/8, 2703/8, 2705/8, 2707/8, 2709/8, 2711/8, 2713/8, 2715/8, 2717/8, 2719/8, 2721/8, 2723/8, 2725/8, 2727/8, 2729/8, 2731/8, 2733/8, 2735/8, 2737/8, 2739/8, 2741/8, 2743/8, 2745/8, 2747/8, 2749/8, 2751/8, 2753/8, 2755/8, 2757/8, 2759/8, 2761/8, 2763/8, 2765/8, 2767/8, 2769/8, 2771/8, 2773/8, 2775/8, 2777/8, 2779/8, 2781/8, 2783/8, 2785/8, 2787/8, 2789/8, 2791/8, 2793/8, 2795/8, 2797/8, 2799/8, 2801/8, 2803/8, 2805/8, 2807/8, 2809/8, 2811/8, 2813/8, 2815/8, 2817/8, 2819/8, 2821/8, 2823/8, 2825/8, 2827/8, 2829/8, 2831/8, 2833/8, 2835/8, 2837/8, 2839/8, 2841/8, 2843/8, 2845/8, 2847/8, 2849/8, 2851/8, 2853/8, 2855/8, 2857/8, 2859/8, 2861/8, 2863/8, 2865/8, 2867/8, 2869/8, 2871/8, 2873/8, 2875/8, 2877/8, 2879/8, 2881/8, 2883/8, 2885/8, 2887/8, 2889/8, 2891/8, 2893/8, 2895/8, 2897/8, 2899/8, 2901/8, 2903/8, 2905/8, 2907/8, 2909/8, 2911/8, 2913/8, 2915/8, 2917/8, 2919/8, 2921/8, 2923/8, 2925/8, 2927/8, 2929/8, 2931/8, 2933/8, 2935/8, 2937/8, 2939/8, 2941/8, 2943/8, 2945/8, 2947/8, 2949/8, 2951/8, 2953/8, 2955/8, 2957/8, 2959/8, 2961/8, 2963/8, 2965/8, 2967/8, 2969/8, 2971/8, 2973/8, 2975/8, 2977/8, 2979/8, 2981/8, 2983/8, 2985/8, 2987/8, 2989/8, 2991/8, 2993/8, 2995/8, 2997/8, 2999/8, 3001/8, 3003/8, 3005/8, 3007/8, 3009/8, 3011/8, 3013/8, 3015/8, 3017/8, 3019/8, 3021/8, 3023/8, 3025/8, 3027/8, 3029/8, 3031/8, 3033/8, 3035/8, 3037/8, 3039/8, 3041/8, 3043/8, 3045/8, 3047/8, 3049/8, 3051/8, 3053/8, 3055/8, 3057/8, 3059/8, 3061/8, 3063/8, 3065/8, 3067/8, 3069/8, 3071/8, 3073/8, 3075/8, 3077/8, 3079/8, 3081/8, 3083/8, 3085/8, 3087/8, 3089/8, 3091/8, 3093/8, 3095/8, 3097/8, 3099/8, 3101/8, 3103/8, 3105/8, 3107/8, 3109/8, 3111/8, 3113/8, 3115/8, 3117/8, 3119/8, 3121/8, 3123

Fractional odds	Decimal odds	Fractional odds	Decimal odds	Fractional odds	Decimal odds
1/2	1.5	2/1	3.0	3/1	4.0
3/4	1.75	11/10	2.1	4/1	5.0
1/5	1.2	9/4	3.25	16/1	17.0
4/9	1.44	12/5	3.4	20/1	21.0
1/3	1.33	5/2	3.5	25/1	26.0
4/7	1.57	13/10	2.3	33/1	34.0
3/13	1.62	11/4	3.75	50/1	51.0
4/11	1.62	14/5	3.8	100/1	101.0
1/4	1.25	3/1	4.0	150/1	151.0
4/5	1.8	100/30	4.65	200/1	201.0
5/6	1.83	7/2	4.5	201/1	202.0
9/10	1.9	4/1	5.0	201/1	202.0
1/1	2.0	9/2	5.5	201/1	202.0
1/1	2.0	5/1	6.0	201/1	202.0

Why BOOK PREVIEW

The history of fixed odds dates back to the 19th century and the original form of fixed odds betting was known as the 'book'.

BOOK PREVIEW

Today, bookmakers offer fixed odds for most matches and their accompanying betting odds for the coming week and several days in advance. This is an expensive process and bookmakers have to make a profit on each bet. Consequently, the odds are fixed to protect the bookmaker's profit.

BOOK PREVIEW

An important feature of fixed odds betting is that the odds are fixed for the majority of matches remain unchanged up until kick-off. Even here, however, the odds for the home/draw/away market may not fluctuate by more than a small amount.

10% from the original prices. Prices for other fixed odds football betting, including correct score, double result and total goals rarely change at all.

BOOK PREVIEW
Spread Betting versus Fixed Odds

This **BOOK PREVIEW** looking
in the **BOOK PREVIEW** e to
com **BOOK PREVIEW** gins
in the **BOOK PREVIEW** day
cont **BOOK PREVIEW** market
indic **BOOK PREVIEW** er a
“pric **BOOK PREVIEW** il for
this **BOOK PREVIEW**

BOOK PREVIEW
Sports **BOOK PREVIEW** e on
a pa **BOOK PREVIEW** made
avail **BOOK PREVIEW** the
spre **BOOK PREVIEW** odds
when **BOOK PREVIEW** ofit,⁵
the **BOOK PREVIEW** it or
wrro **BOOK PREVIEW** that
Man **BOOK PREVIEW** then
decid **BOOK PREVIEW** that
Man **BOOK PREVIEW** 82
poin **BOOK PREVIEW** ster
Unit **BOOK PREVIEW** ts x
£10 **BOOK PREVIEW** n 65
poin **BOOK PREVIEW** ts is
simp **BOOK PREVIEW** oint.
If Ma **BOOK PREVIEW** er, a
profi **BOOK PREVIEW** e.

BOOK PREVIEW
Spread **BOOK PREVIEW** / the
sam **BOOK PREVIEW** If a
parti **BOOK PREVIEW** nply
raise **BOOK PREVIEW** rket.
With **BOOK PREVIEW** nt is

BOOK PREVIEW

⁵ Returned stakes with no profit or loss are possible with Asian handicap betting.

⁶ The terms “buy” and “sell” in spread betting come direct from the language of financial trading.

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

Where points, runs, goals and lengths are not suitable to measure success, a performance index is generally used, which enables quotes on a va
are
perf
foot
card
poin

BOOK PREVIEW

points
i. A
in a
red
with

In cc
of nc
This
bet,
is w
gam
spre
gam
mon
clie
pros
300
usuæ
11/1
how

BOOK PREVIEW

thrill
win.
f the
this
n of
kets,
e of
is of
thier
the
by at
n his
ls at
bet,
l.

BOOK PREVIEW

Fixed Odds Betting Markets

Ther
are :
mos
disci
wage
odds
depe
foot
winn
matc
will r

BOOK PREVIEW

most
The
earlier
e of
ning
lose
ar in
any
f the
win
mes

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

to beat Manchester United at home, would be around 10/1 to win 1-0. Bolton are perceived as having a much smaller chance of winning than Arse are first goal scorer in a game. These bets are known as "Scorecast".

Som also rugb also only, and more typically the "double result", that is, the result at both half-

time poss tting back nply Obvi dds. com 9 as are l odds be v m to Typi tes. be e can

In s shorter-price partic ent, be a night som thing from this bet, it may be offered each way. Each way bet are actu are settle are odds be displ are the | are plac are tour are settle are on E are woul are at 5/ are the p are

For s with virtu d be expe ted to defeat Holland every time they met, and you would be lucky to

find odds of even 1.01. By introducing a points handicap, this increases the chances of being able to win the bet by backing Holland. The idea, as with winn

BOOK PREVIEW

Both little Here the / lose Holla victo the c poss The othe sam

BOOK PREVIEW

Both little Here the / lose Holla victo the c poss The othe sam

BOOK PREVIEW

Holla victo the c poss The othe sam

BOOK PREVIEW

The othe sam

BOOK PREVIEW

For i exce may hous the t bet i sam

BOOK PREVIEW

the hario way into r the t the

BOOK PREVIEW

Asia betti addi foot goal face beat How

BOOK PREVIEW

How

BOOK PREVIEW

As fi start mag

BOOK PREVIEW

of the handicap will be added to the real number of goals. Where no handicap is awarded (0:0 handicap), a drawn game will result in a tied bet and win, while a goal (0:1) Asian handicaps, as summarised in Table 2.3. When a ½ goal handicap is awarded, bettors only have to back half the stake if the team goes on the handicap ¼ of a goal less than the quote and half the stake if the team goes on the handicap ½ of a goal less than the quote. If the team goes on the handicap ¾ of a goal less than the quote, the backer falls on a half as fit of has only half his stake returned. This is known as a "loss ½".

Table 2.3. Bet settlements for Asian handicap

Handicap	0:0	0:½	0:1	0:1½	0:2	0:2½	0:3	0:3½	0:4
0:0	Tie	Loss	Win	Tie	Loss	Loss	Win	Win	Tie
0:½	Win ½	Loss	Win	Win ½	Loss	Loss	Win	Win	Win ½
0:1	Win	Loss	Win	Win	Loss	Loss	Win	Win	Win
0:1½	Win	Win ½	Win	Win	Loss	Loss	Win	Win	Win
0:2	Win	Win	Win	Win	Loss	Loss	Win	Win	Win
0:2½	Win	Win	Win	Win	Loss	Loss	Win	Win	Win
0:3	Win	Win	Win	Win	Loss	Loss	Win	Win	Win
0:3½	Win	Win	Win	Win	Loss	Loss	Win	Win	Win
0:4	Win	Win	Win	Win	Loss	Loss	Win	Win	Win

In an attempt to attract spread bettors into fixed odds gambling, some online bookmakers have started to offer specialised markets, particularly for first and last goal scorers. These bets have their origins in the spread betting market, and it is only through the availability of these markets that bookmakers have been able to offer them.

All the fixed odds betting markets discussed above are short-term markets. In the long term, bookmakers may change match odds during the course of a game (usually every 10 minutes). It is possible, however, to place bets on such markets months or even years in advance.

The horse racing industry has long offered a variety of betting markets. The most popular is the ante post bet, where bets are placed weeks or months before the event. Ante post betting is popular because it allows bettors to place bets on horses before the race, and the odds are usually higher than in the other markets. The downside to ante post betting is the return period of any potential win. Bookmakers will usually have a 14-day period to reduce the chances of the odds moving against them. The downside to ante post betting is the return period of any potential win. Bookmakers will usually have a 14-day period to reduce the chances of the odds moving against them. The downside to ante post betting is the return period of any potential win. Bookmakers will usually have a 14-day period to reduce the chances of the odds moving against them.

Diff Knowing the various fixed odds markets is one thing, but what sort of bet can you actually place? There are all sorts of fixed odds wagers available, although the most popular are the ante post and the in-play markets.

The simplest of all bets is the single. With a single bet on a sports event, only one outcome is backed, and the bet can generally either win or lose, although a single match bet might be Liverpool to beat Manchester United at 2/1.

or local draws, to ante post wagers on the next season.

Prior to the growth in online gambling, punters were restricted to betting at their local high street bookmaker. Whilst the fixed odds football coupon was available, it only allowed a limited number of selections.

as a treble. A treble is one bet involving 3 selections in different events. All five when a single bet was allowed was if the game was televised, an FA Cup match or a league match.

reassured that the bookmaker's expected profit margin grows with an increase in the number of selections included in a bet. Whilst the potential return from a fivefold accumulator is much greater than a single bet, the risk is also much greater.

return.

Multiples, as we have seen, involve more than one selection. With the new betting rules, it is now possible to back two selections in different events, both of which must be successful for the bet to win. The odds for a double are calculated by multiplying together the separate odds for the two single bets. This is a much more complex calculation than for a single bet.

obviously, the odds for a double are much higher than for a single bet.

_____ **BOOK PREVIEW**

⁸ Some of the major high street bookmakers in the UK relaxed these rules in 2002, and singles for the majority of football matches are now available on the printed coupon.

The odds for a Birmingham/Newcastle double are (6/4) multiplied by (4/5). Initially, it is not exactly obvious what the odds for the double should be. Instead, it is easier to see that 4/5 is equivalent to 1.8. The odds for the double are then 4.5.

Despite the fact that multiple bets remain fairly popular with the punters. Some may argue that the odds for the double should be 4.5, but this is not the case.

Some punters may be a little confused by the odds for the double. It is important to remember that the odds for the double are 4.5, not 4.5.

Some punters may be a little confused by the odds for the double. It is important to remember that the odds for the double are 4.5, not 4.5.

Some punters may be a little confused by the odds for the double. It is important to remember that the odds for the double are 4.5, not 4.5.

Some punters may be a little confused by the odds for the double. It is important to remember that the odds for the double are 4.5, not 4.5.

Some punters may be a little confused by the odds for the double. It is important to remember that the odds for the double are 4.5, not 4.5.

Some punters may be a little confused by the odds for the double. It is important to remember that the odds for the double are 4.5, not 4.5.

Some punters may be a little confused by the odds for the double. It is important to remember that the odds for the double are 4.5, not 4.5.

Some punters may be a little confused by the odds for the double. It is important to remember that the odds for the double are 4.5, not 4.5.

Some punters may be a little confused by the odds for the double. It is important to remember that the odds for the double are 4.5, not 4.5.

Some punters may be a little confused by the odds for the double. It is important to remember that the odds for the double are 4.5, not 4.5.

Some punters may be a little confused by the odds for the double. It is important to remember that the odds for the double are 4.5, not 4.5.

Some punters may be a little confused by the odds for the double. It is important to remember that the odds for the double are 4.5, not 4.5.

Strictly speaking, the 3 double bets that form part of the Patent are "combinations" of doubles taken from 3 available selections, because the order of the selections is irrelevant. This is why the Patent is also known as the "combi" bet.

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

selections, or 20 treble combinations available from 6 selections. This

calculation can also be performed on a computer with a spreadsheet or statistics software application. In Excel, for example, entering =CO
with

BOOK PREVIEW

BOOK PREVIEW

when
3! is
calcu

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

In 16
array
flipp
indis

BOOK PREVIEW

corre
matl
tear
pern
for e

BOOK PREVIEW

trian
selec
the r
there

BOOK PREVIEW

Pasc
of b
sixfo

BOOK PREVIEW

It is
to de
right

BOOK PREVIEW

the Triangle is the sum of the two numbers directly above it. Consequently, the next two rows of numbers would be:

BOOK PREVIEW

The

BOOK PREVIEW

Prior to the 1990s, almost all licensed fixed odds sports betting was a few cont very estal invol succ betti cons racir the v

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

In the be a poss punt marl very cybe Inter Ame book

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

The With sittir almo weel with debi accc punt

BOOK PREVIEW

BOOK PREVIEW

some bookmakers, with minimum stakes of as little as 50 pence or less.

Frequently, online firms will have attractive offers of free bets or deposit bonuses for newly opened accounts to attract custom. Winnings are usually more than the amount of the bet.

A selection of bookmakers do cater for a range of bets, including match bets, correct score, couple, a point from, popular betting markets, major events, long term, wide range of events and betting media to choose from. Over/under betting and betting in running are becoming increasingly popular. Special bets are available on individual events, such as the UK football, the

Perhaps the most available betting account is the high street betting shop. There are usually two or three firms available from which to choose. Provided you have an available betting account, there are literally dozens online. It is always since the late 1990s that bookmakers, however, will take a slightly different view regarding what he considers the correct way to bet, here that it becomes possible to back all possible outcomes with different bookmakers, still ensure that a small profit is made whatever the outcome of the gain. Such betting opportunities are known as arbitrage betting.

¹⁰ In October 2001, the Government abolished tax on high street betting in the UK. Before then, bookmakers were liable for a 10% tax on their gross profits. This was a major victory for the punter and it has resulted in significant increase in betting turnover – a win/win situation for all concerned.

Despite the advantages of Internet betting, there are a few downsides that the punter ought to be aware of. Firstly, there are sometimes currency and

transac-BOOK PREVIEW
betting-BOOK PREVIEW
UK-BOOK PREVIEW
book-BOOK PREVIEW
limit-BOOK PREVIEW
num-BOOK PREVIEW
punt-BOOK PREVIEW
acco-BOOK PREVIEW

Sec-BOOK PREVIEW
or w-BOOK PREVIEW
signi-BOOK PREVIEW
som-BOOK PREVIEW
resp-BOOK PREVIEW
redu-BOOK PREVIEW
foun-BOOK PREVIEW
Neve-BOOK PREVIEW
be r-BOOK PREVIEW
at th-BOOK PREVIEW
allo-BOOK PREVIEW
circ-BOOK PREVIEW

Fina-BOOK PREVIEW
repu-BOOK PREVIEW
choc-BOOK PREVIEW
more-BOOK PREVIEW
book-BOOK PREVIEW
bank-BOOK PREVIEW
mon-BOOK PREVIEW
with-BOOK PREVIEW
betting-BOOK PREVIEW
term-BOOK PREVIEW
gent-BOOK PREVIEW

Desp-BOOK PREVIEW
defir-BOOK PREVIEW
near-BOOK PREVIEW
and-BOOK PREVIEW

Beating the Bookmaker

Odd

Fixed

Chances

are

betting

are

supposed

when

outcome

what

flipping

one

principle

only

and

match

weather

occurs

more

even

In a

expected

calculation

for €

mistake

Table

in front

the

probability

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

w in
series
f the
they
are
coin,
each
actly
coin
ce of
first
can
nce,
Test
the
result
ip, 9
n, be

f the
exact
odds
the

odds,
mply
the

Table 3.1. Odds and their probabilities

Fraction	Decimal	Probability	Implied Probability
1/10	1.10	90.9%	30.8%
1/9	1.11	90.0%	29.4%
1/8	1.13	88.8%	28.3%
1/6	1.17	85.7%	26.3%
1/5	1.20	83.3%	25.0%
1/4	1.25	80.0%	20.0%
1/3	1.33	75.0%	15.4%
1/2	1.50	66.7%	14.3%
2/3	1.67	60.0%	11.1%
3/4	1.75	57.1%	10.9%
4/5	1.80	55.6%	10.0%
5/6	1.83	54.5%	9.1%
6/7	1.86	53.8%	8.7%
7/8	1.88	53.2%	8.5%
8/9	1.89	52.9%	8.4%
9/10	1.90	52.6%	8.3%
10/11	1.91	52.4%	8.2%
11/12	1.92	52.1%	8.1%
12/13	1.93	51.8%	8.0%
13/14	1.94	51.6%	7.9%
14/15	1.95	51.3%	7.8%
15/16	1.96	51.0%	7.7%
16/17	1.97	50.8%	7.6%
17/18	1.98	50.5%	7.5%
18/19	1.99	50.3%	7.4%
19/20	2.00	50.0%	7.3%
20/21	2.02	49.5%	7.2%
21/22	2.05	48.8%	7.0%
22/23	2.09	47.8%	6.7%
23/24	2.13	46.9%	6.4%
24/25	2.17	45.9%	6.1%
25/26	2.20	45.0%	5.8%
26/27	2.23	44.4%	5.6%
27/28	2.26	43.8%	5.4%
28/29	2.28	43.3%	5.2%
29/30	2.30	42.9%	5.1%
30/31	2.32	42.6%	5.0%
31/32	2.34	42.2%	4.9%
32/33	2.36	41.9%	4.8%
33/34	2.38	41.7%	4.7%
34/35	2.41	41.3%	4.6%
35/36	2.43	41.1%	4.5%
36/37	2.45	40.8%	4.4%
37/38	2.47	40.6%	4.3%
38/39	2.49	40.4%	4.2%
39/40	2.50	40.0%	4.0%
40/41	2.52	39.8%	3.9%
41/42	2.54	39.6%	3.8%
42/43	2.56	39.4%	3.7%
43/44	2.58	39.2%	3.6%
44/45	2.60	39.0%	3.5%
45/46	2.62	38.8%	3.4%
46/47	2.64	38.6%	3.3%
47/48	2.66	38.4%	3.2%
48/49	2.68	38.2%	3.1%
49/50	2.70	38.0%	3.0%
50/51	2.72	37.8%	2.9%
51/52	2.74	37.6%	2.8%
52/53	2.76	37.4%	2.7%
53/54	2.78	37.2%	2.6%
54/55	2.80	37.0%	2.5%
55/56	2.82	36.8%	2.4%
56/57	2.84	36.6%	2.3%
57/58	2.86	36.4%	2.2%
58/59	2.88	36.2%	2.1%
59/60	2.90	36.0%	2.0%
60/61	2.92	35.8%	1.9%
61/62	2.94	35.6%	1.8%
62/63	2.96	35.4%	1.7%
63/64	2.98	35.2%	1.6%
64/65	3.00	35.0%	1.5%
65/66	3.02	34.8%	1.4%
66/67	3.04	34.6%	1.3%
67/68	3.06	34.4%	1.2%
68/69	3.08	34.2%	1.1%
69/70	3.10	34.0%	1.0%
70/71	3.12	33.8%	0.9%
71/72	3.14	33.6%	0.8%
72/73	3.16	33.4%	0.7%
73/74	3.18	33.2%	0.6%
74/75	3.20	33.0%	0.5%
75/76	3.22	32.8%	0.4%
76/77	3.24	32.6%	0.3%
77/78	3.26	32.4%	0.2%
78/79	3.28	32.2%	0.1%
79/80	3.30	32.0%	0.0%

point in their offering a betting service if they weren't making a profit themselves. In spread betting, betting firms secure their revenue via the spread. The bookmaker's profit is achieved by manipulating the odds.

The probability of any particular card being dealt is 1/52, or 0.0192. The sum of probabilities for all cards will be 52×0.0192 , which equals 1 or 100%.

However, the bookmaker's associated probability is now higher, at 0.0204 or 2.04%, than the true probability of picking any particular card. The sum of the probabilities for all cards is now 1.061, or 106.1%.

The difference between this and the bookmaker's sum of probabilities is known as the overround. In this case, the overround is 6.1%, or 1.061 as a decimal. That is, for every 100 units paid out to punters, the bookmaker will receive 106.1 units.

With a 1 unit stake for each, obviously only one card would win and the bookmaker's overall gain would be 3 units, paying out 49 units in total. The bookmaker's profit is expressed as a percentage is 5.8% (3/52). It is worth noting here that there is a simple relationship between a bookmaker's overround and a punter's expected loss.

When the overround is expressed as a decimal, the punter's loss can be calculated as:

If a punter bets on a standard 6-sided dice, the overround would be 109.1% (1.091) and a punter's expected loss is 9.1% by backing all 6 possible throws.

Since the odds are mathematically fixed, a punter would be very unwise to bet at the unfair odds.

Calculating the overround for any book is a simple task of summing the inverse of the home, draw and away odds and multiplying by 100%. Here, the bookmaker's overround is 3.3%, which is the bookmaker's profit margin. For example, if the bookmaker's overround is 3.3%, then the bookmaker's profit margin is 3.3%.

Table

Match	H%	D%	A%	Total%	A%
Arsenal v Tottenham	65.4	28.6	18.2	112.1	58.3
Birmingham v Manchester City	43.5	31.2	25.3	100.0	26.0
Blackburn v Everton	47.6	28.8	23.6	100.0	26.0
Chelsea v Manchester United	33.1	31.3	35.6	100.0	26.0
Leeds v Bolton	66.7	28.6	16.7	111.9	59.6
Liverpool v Sunderland	73.5	25.0	13.3	111.9	65.7
Manchester City v Manchester United	30.2	31.2	38.6	100.0	26.0
Newcastle v Arsenal	32.1	29.4	38.5	100.0	26.0
West Ham v Aston Villa	38.2	33.3	40.0	111.5	54.2
West Ham v Man Utd	25.0	30.8	55.6	111.3	22.5

Of course, the bookmaker's overround is not the only factor that affects the bookmaker's profit margin. The bookmaker's profit margin is also affected by the bookmaker's commission, which is the bookmaker's fee for providing the betting service. The bookmaker's commission is typically 1% to 2% of the bookmaker's profit margin.

Finally, it is a simple procedure of inverting the fair estimations to calculate what the bookmaker considers to be the fair odds. These are shown below and

Novi
actu

Table

Mat	Actual odds	Fair odds	way
Arse	1.53	1.33	.17
Birm	3.3	2.7	.02
Blac	2.1	3.25	.35
Chel	1.72	1.2	.02
Leec	1.5	1.38	.71
Liver	1.36	1.2	.39
Man	1.66	3.4	.03
New	1.61	1.79	.58
Wes	2.62	2.5	.79
Wes	1.4	3.1	.00

Othe
that
one
scor
bet.
160%
cons
matt
of 5/
book
to pi
profi

case
nt or
rect
ch to
30 to
nt to
/, no
odds
n the
sible
in a

To s
the l
odds
unfa
in a
pers

protect
west
an
result
less
than

¹¹ It is also worth noting that approximately 10% of games in the English Premiership finish 1-0.

they might be in the 4/6 odds available for the Manchester City home win. A payout of £5, instead of 66 pence, for a £1 stake will always look more attractive even though they appear to be much more generous to the untrained eye.

In contrast there are usually only a few possible outcomes (over 2.5 goals or under 2.5 goals), attract overrounds that are commonly less than 110%.¹² For the same reason, the odds for the same total goals are often much higher than for the same total goals.

making up a book, it becomes much harder for a bookmaker to hide more unattractive prices, particularly where the fair odds are close to 50/50. Consequently, typical overrounds for goal betting are per cent.

Table 1: Odds and overrounds for total goals betting

Match	Over 2.5 Goals	Under 2.5 Goals	Overround
Arsenal v Tottenham	1.72	2.00	108.1%
Birmingham v Blackburn	1.80	1.80	109.1%
Blackburn v Everton	1.80	1.80	109.1%
Chelsea v Manchester City	1.80	1.80	109.1%
Leeds v Bolton	1.83	1.83	109.3%
Liverpool v Sunderland	1.90	1.80	108.2%
Manchester United v Arsenal	1.80	1.80	109.1%
Newcastle v Southampton	1.70	2.00	108.1%
West Brom v Aston Villa	2.20	1.61	107.6%
West Ham v Man Utd	1.80	1.90	108.2%

Punters may very well be attracted to other 2-way betting opportunities. In Asian handicap betting, where the draw is eliminated, generally has a low overround, sometimes as little as 106%. In addition to total goals betting and in fact offer excellent betting opportunities. Standard handicap and total points betting in American sports like basketball, ice hockey and American Football have some 103% overrounds.

¹² In an attempt to increase the overround, some bookmakers have introduced additional goal options, with 3, 4 and sometimes more available.

or 104%. With such opportunities available across the Internet, it is a wonder that many punters still enjoy a visit to their local high street bookmaker. The lure of the big win.

BOOK PREVIEW

At the over frequently bets the cons

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

The doubt Arse Draw Tott Tabl poss shov

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

Table 3.8. The effect of overround on profit¹³

Typical bet	Overround	Profit
Single	1.91	4%
Double	2.10	4%
Treble	110.0%	9%
4-fold	121.6%	4%
5-fold	133.1%	9%
6-fold	146.4%	1%
7-fold	161.1%	0%
8-fold	177.2%	5%
9-fold	194.4%	7%
10-fold	214.4%	5%

Final

Once the bookmaker's odds are set, the bookmaker's odds are fixed, particularly the well-established firms, are very good at setting prices, estimating the profit margin.

Nevertheless, as we have seen, sports are not statistically quantifiable, in the sense that the laws of probability do not apply. For example, in the case of a European roulette wheel (1/37 chance on an American wheel). But how can we know what the true probability is of Ronnie O'Sullivan winning a snooker match? The bookmaker's odds are, therefore, not based on the true probability of an event occurring, but on the bookmaker's estimate of the probability of an event occurring.

Unfairly, the bookmaker's odds are set to ensure a profit, and the bookmaker's odds are set to ensure a profit, and the bookmaker's odds are set to ensure a profit.

¹³ After the 12Xpert: <http://members.aol.com/the12Xpert/>

and a familiarity with the way bookmakers set their odds. The good news, however, is that whilst bookmakers are very good at setting odds for sports, they are not always very good at setting odds for events that are not sports. For example, William Hill, for example, astonishingly offered 200/1 on Franz Peterka, the back-in-form Slovenian skier, to win the 1990 World Cup. Peterka, the fact that he had won the qualification the night before, and had been double world champion in the 1980s, was not reflected in the odds. William Hill ceased offering odds for the ski jumping World Cup after. Of course, such large mistakes are relatively rare, but an indication of the fact that bookmakers are not always very good at setting odds for events that are not sports.

Punters, however, are not always very good at setting odds for events that are not sports. Some like to adopt a more systematic approach, based on past performance to predict future outcomes. This approach is explored in more detail in the next chapter. Others spend a lot of time looking at the weather, and team or player injuries and morale. Still others base their judgement on a subjective feel for the forthcoming event, relying on a gut feeling. Some, however, are simply betting on a hunch, or on the advice of a sports advisory service.

There are, however, what each approach has in common is a shared aim of finding "value" in the odds, where the true chance of a win is greater than the value implied by the bookmaker. Many punters fail to appreciate the importance of finding "value" in the odds. For example, if a bookmaker offers odds of 4/11 on Manchester United to beat Liverpool at 4/11, it might be argued, is surely preferable to betting on Manchester United to beat Liverpool at 13/2, even if the bookie has restricted the odds. But, if the bookie has restricted the odds, it is likely that the odds are not as good as they seem.

This analysis is confused because the punter has failed to assess Liverpool's chance of a win in probabilistic terms, but instead rather simply by w
all th
impr
char
(in h
to be
punt
valu
cour

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

A va
or pr
(und
valu
a 15
belie
odds
right
each
cont
migh
the l
has
valu

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

Sinc
beat
if he
enou
appl
The
findi
with
book
the l
estal
just
unde

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

sporting win, and there may be profitable opportunities waiting at the bookmakers. As Geoff Harvey says in his book *Profitable Football Betting*, “Find

Con

One
punt
coro
book
outc
with
crea
book
with

Toda
book
100
new
man
Freq
Ever
you
book

The
than
have
Neve
next
price
3.9b
Crys

¹⁴ Per
sporti
super
layers

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

ch a
The
er of
rting
aker
are
treet
irms

ernet
raps
ith a
with
£20.
und.
here
onal

etter
odds
tem.
to the
hest
3.9a,
and

major
often
s and

layers of bets. The exchange then deducts a small commission, usually 5%, from winning bets.

Table 3.9a. Variation in bookmakers' prices: odds

Bookmaker	Home	Away	Draw
Canalbet	2.04	3.2	3.6
Betlinter	1.9	3.25	3.5
Centbet	1.88	3.3	3.55
Gamblers	1.88	3.3	3.55
Bet8	1.85	3.15	3.75
Interbet	1.85	3.25	3.75
Interwetten	1.85	3.25	3.75
Padibet	1.8	3.4	3.7
Eurobet	1.8	3.25	3.85
Sportingbet	1.8	3.3	4
Expertbet	1.75	3.5	4.1
Bet365	1.72	3.8	4.1
Average	1.82	3.28	3.86

Bookmaker	Home	Away	Draw	Average
Canalbet	49%	31%	28%	1.08
Betlinter	53%	31%	29%	1.12
Centbet	53%	31%	29%	1.12
Gamblers	53%	31%	29%	1.12
Bet8	54%	32%	27%	1.12
Interbet	54%	31%	27%	1.11
Interwetten	54%	33%	27%	1.14
Padibet	54%	33%	27%	1.12
Eurobet	54%	33%	27%	1.12
Sportingbet	56%	30%	25%	1.11
Expertbet	57%	30%	24%	1.12
Bet365	58%	29%	25%	1.11
Average	55%	30%	26%	1.11

In Table 3.9b, each bookmaker's assessment of the true chance of a home team having a goal win has been calculated by dividing the sum of the average fair estimations equals 100%, although due to rounding this is not quite the case in Table 3.9b.

¹⁵ The sum of the average fair estimations equals 100%, although due to rounding this is not quite the case in Table 3.9b.

bookmaker's actual (unfair) estimations by their decimal overround for the book. By assuming, firstly, that a bookmaker's overround (or advantage) is spread equally over all bets, and secondly, that the bookmaker's overround is the same for all bets, it becomes possible to determine a more realistic value for the bookmaker's expected profit margin for each bet. This is done by dividing the bookmaker's overround by the number of bets. For example, if the bookmaker's overround is 10% and there are 10 bets, the realistic value of the bookmaker's expected profit margin for each bet is 1%.

Table of odds, away

Bookmaker's odds, away

Can't bet, away

Inter, away

Exp, away

Can't bet, away

edge, away

16 Alt, away

17 The, away

odds by the fair odds.

analysis. If correct, and the match was played 1,000 times, a punter could reasonably expect to profit by nearly £4 from 1,000 £1 stakes. Not much, one

BOOK PREVIEW

anal book 11 o

Ther leng bet c

BOOK PREVIEW

ning nt to

Betb Tip-c Odd

BOOK PREVIEW

Betb

Betb hypc odds type

BOOK PREVIEW

the n an this

A pun any odds it is arith unde assu

BOOK PREVIEW

form g an and from that these

a) the bookmaker's profit margin on a full book is s read that

BOOK PREVIEW

r of to the

Of c spor

BOOK PREVIEW

of a irely

substantiated. However, it is probably the first assumption that will have the greater influence, at least from the perspective of trying to profit from this market. It is, of course, a very simple assumption, but it is by no means an obvious one. It is, of course, a very simple assumption, but it is by no means an obvious one.

From the perspective of trying to profit from this market, it is probably the first assumption that will have the greater influence, at least from the perspective of trying to profit from this market. It is, of course, a very simple assumption, but it is by no means an obvious one. It is, of course, a very simple assumption, but it is by no means an obvious one.

The greater influence, at least from the perspective of trying to profit from this market, it is probably the first assumption that will have the greater influence, at least from the perspective of trying to profit from this market. It is, of course, a very simple assumption, but it is by no means an obvious one. It is, of course, a very simple assumption, but it is by no means an obvious one.

A level stakes profit analysis confirms the arguments presented above. The first thing to notice from Table 2.11 is that the odds comparison bet (which is a very simple assumption, but it is by no means an obvious one) would be expected if all bets had been placed with one bookmaker, that is, if the bookmaker's profit margin was 11%.

¹⁸ A punter might be tempted to think that a drop in price from 5/1 to 4/1 is a relatively small move, but it is not. In fact, it is a very large move, and it is one that is likely to be profitable for a punter. The punter may be convincing himself that the drop in price is relatively small, but it is not. In fact, it is a very large move, and it is one that is likely to be profitable for a punter.

but hugely uninspiring, given that the analysis model had predicted a profit of +6% (since the average edge of each bet was 1.06). However, upon further analysis, it was seen that the away win prices were revealingly poor performance of the away win prices. Since these make up 84% of the sample, this has obviously changed the overall price. Bets (whether home or away) where the odds were less than 7/2 actually lost a for odds bettering. The most rational explanation for this is that bookmakers are introducing a bias into the market, and this is not a rational market. It may come as no surprise, then, that the punters won't know or care. It may come as no surprise, then, that the major analysis contains no value at all.

Table match	Number	% of total	Average odds	Average edge	Level	Profit
Home	1982	84%	6.16	1.06	-127.2	-6.7%
Away	1636	73%	4.57	1.05	-56.0	-3.4%
All bets odds < 7	3226	27%	1.19	1.19	-147.5	-7.3%
All bets odds < 3	3226	14%	1.22	1.22	-147.5	-7.3%
All bets odds < 1	2256	100%	5.82	1.06	-144.7	-6.4%

Arbitrage

Over the years, arbitrage has become a popular way for punters to make a profit from betting. It involves placing bets on all possible outcomes of an event, such as a football match, at different bookmakers. By doing this, the punter can ensure that they will always win, regardless of the outcome. This is because the odds offered by different bookmakers are not always the same, and by taking advantage of these differences, the punter can create a guaranteed profit. However, it is important to note that arbitrage betting is not without risks, and it is essential to do thorough research and keep track of the odds to ensure a successful outcome.

From a punter's perspective, arbitrage betting offers a unique opportunity to make a profit from betting. It allows punters to place bets on all possible outcomes of an event, such as a football match, at different bookmakers. By doing this, the punter can ensure that they will always win, regardless of the outcome. This is because the odds offered by different bookmakers are not always the same, and by taking advantage of these differences, the punter can create a guaranteed profit. However, it is important to note that arbitrage betting is not without risks, and it is essential to do thorough research and keep track of the odds to ensure a successful outcome.

Consider the following example: a punter places bets on all possible outcomes of a football match between Greece and Ireland. The odds offered by three different bookmakers are as follows:

Bookmaker	Home win	Draw	Away win
Canbet	2.39	3.15	2.89
Cerbet	2.35	3.25	2.85
Tattersall	2.45	3.10	2.80

The lowest overround available to a punter with these opening prices is 4.9%, by taking Canbet's odds for Greece and Tattersall's odds for Ireland. By taking advantage of these differences, the punter can create a guaranteed profit. However, it is important to note that arbitrage betting is not without risks, and it is essential to do thorough research and keep track of the odds to ensure a successful outcome.

The first issue to consider with arbitrage betting is stake size. The majority of arbitrage opportunities are limited to only a few per cent at best.

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

[illegible]

BOOK PREVIEW

very careful calculation of currency conversion will be required to ensure that the appropriate stakes are used to secure the arbitrage profit. Of course, the stakes can be made to eat into or wipe out the "sure win" return.

Final circular days of the original fixture. What a bookmaker does with bets placed on these days is to cancel the bets and offer a new price for the rescheduled event. Others may feel it appropriate to leave existing bets to stand. For a football match a punter may then be left with a bet on a team that has been relegated. This is a difficult situation for the punter. The bookmaker may offer a new price for the rescheduled event. Others may feel it appropriate to leave existing bets to stand. For a football match a punter may then be left with a bet on a team that has been relegated. This is a difficult situation for the punter.

So, bookmakers may offer a new price for the rescheduled event. Others may feel it appropriate to leave existing bets to stand. For a football match a punter may then be left with a bet on a team that has been relegated. This is a difficult situation for the punter.

to be left with a bet on a team that has been relegated. This is a difficult situation for the punter. The bookmaker may offer a new price for the rescheduled event. Others may feel it appropriate to leave existing bets to stand. For a football match a punter may then be left with a bet on a team that has been relegated. This is a difficult situation for the punter.

Every time a sporting event is postponed, a sizeable arbitrage opportunity may become available, perhaps offering a 5% or even 10% return. However, in view of the difficulties highlighted here, the opportunity may be very low risk. However, in view of the difficulties highlighted here, the opportunity may be very low risk.

alone, bookmakers, they present a wonderful opportunity to make a bit of money at very low risk. However, in view of the difficulties highlighted here, the opportunity may be very low risk. However, in view of the difficulties highlighted here, the opportunity may be very low risk.

repeatedly, the opportunity may be very low risk. However, in view of the difficulties highlighted here, the opportunity may be very low risk. However, in view of the difficulties highlighted here, the opportunity may be very low risk.

Since this analysis was first written, Tattersall's Sports Betting has ceased their active account. Since the majority of arbitrage opportunities arise with the lesser-known, and less-well-established bookmakers, a reader seriously contemplating arbitrage should wish to reflect on the possibility of losing a large sum of money.

Since this analysis was first written, Tattersall's Sports Betting has ceased their active account. Since the majority of arbitrage opportunities arise with the lesser-known, and less-well-established bookmakers, a reader seriously contemplating arbitrage should wish to reflect on the possibility of losing a large sum of money.

Since this analysis was first written, Tattersall's Sports Betting has ceased their active account. Since the majority of arbitrage opportunities arise with the lesser-known, and less-well-established bookmakers, a reader seriously contemplating arbitrage should wish to reflect on the possibility of losing a large sum of money.

Rating Systems for Sports Prediction

Qual

Value

a long

odds

may

invest

an a

edge

rating

As v

route

be c

how

pred

prefe

list,

even

of ex

term

effect

asse

ident

A nu

spor

effect

quar

punt

with

the

cons

may

—

19

A n

on the

outcome

of another

leg. Book

makers

do not

permit

such

bets.

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

ring

will

maker

may

y for

tting

s, or

ls or

ever

say,

g or

and

uries

ning

edge

long

and

g an

the

odds

most

both

ch a

able,

ne of

ould

ather

and

effect

53

cricket, which are permissible by the bookmaker but provide an obvious and significant advantage to the punter. Derek McGovern takes us through some of the more subtle influences on sports betting, such as the weather, the snooker, the work of the bookmaker, the value of the bookmaker's margin, and the value of the bookmaker's margin.

Ana BOOK PREVIEW
The chance of one result occurring from n possible results, where each result is equally possible, is simply $1/n$. For a 6-sided die, the chance of throwing a 6 is $1/6$. So, if you throw a 6-sided die, the chance of throwing a 6 is $1/6$. This chapter instead focuses on quantitative sports prediction and the value of the bookmaker's margin. It also discusses the value of the bookmaker's margin and the value of the bookmaker's margin.

Defining how to express the probability of a result occurring from n possible results, where each result is equally possible, is simply $1/n$. For a 6-sided die, the chance of throwing a 6 is $1/6$. So, if you throw a 6-sided die, the chance of throwing a 6 is $1/6$. This chapter instead focuses on quantitative sports prediction and the value of the bookmaker's margin. It also discusses the value of the bookmaker's margin and the value of the bookmaker's margin.

point in this context, however, is that such descriptive analysis can be used quantitatively to estimate the probability function that characterises each rating as

BOOK PREVIEW

Prior to their match with the All Blacks on 6th November 2003, England's Rugby Union had only lost one of its previous 17 home matches. With a squad of players who had been in the team for a long time, the probability of a victory is estimated by the proportion of historical England wins against New Zealand. Since England had won approximately 17% of their previous 17 matches, the probability of a victory is estimated to be 17%.

BOOK PREVIEW

With a squad of players who had been in the team for a long time, the probability of a victory is estimated by the proportion of historical England wins against New Zealand. Since England had won approximately 17% of their previous 17 matches, the probability of a victory is estimated to be 17%.

BOOK PREVIEW

Of course, there is no guarantee that past performance of one for another provides a reliable estimate of future probabilities. As we have seen, the probability of a victory is estimated by the proportion of historical England wins against New Zealand. Since England had won approximately 17% of their previous 17 matches, the probability of a victory is estimated to be 17%.

BOOK PREVIEW

Of course, there is no guarantee that past performance of one for another provides a reliable estimate of future probabilities. As we have seen, the probability of a victory is estimated by the proportion of historical England wins against New Zealand. Since England had won approximately 17% of their previous 17 matches, the probability of a victory is estimated to be 17%.

BOOK PREVIEW

Of course, there is no guarantee that past performance of one for another provides a reliable estimate of future probabilities. As we have seen, the probability of a victory is estimated by the proportion of historical England wins against New Zealand. Since England had won approximately 17% of their previous 17 matches, the probability of a victory is estimated to be 17%.

BOOK PREVIEW

Of course, there is no guarantee that past performance of one for another provides a reliable estimate of future probabilities. As we have seen, the probability of a victory is estimated by the proportion of historical England wins against New Zealand. Since England had won approximately 17% of their previous 17 matches, the probability of a victory is estimated to be 17%.

BOOK PREVIEW

Of course, there is no guarantee that past performance of one for another provides a reliable estimate of future probabilities. As we have seen, the probability of a victory is estimated by the proportion of historical England wins against New Zealand. Since England had won approximately 17% of their previous 17 matches, the probability of a victory is estimated to be 17%.

BOOK PREVIEW

Of course, there is no guarantee that past performance of one for another provides a reliable estimate of future probabilities. As we have seen, the probability of a victory is estimated by the proportion of historical England wins against New Zealand. Since England had won approximately 17% of their previous 17 matches, the probability of a victory is estimated to be 17%.

BOOK PREVIEW

²⁰ On the 14th June 2003, England beat New Zealand for a 6th time, and only the 2nd time away from home soil.

recent strength and confidence of the English side, were far more influential in determining the result than the historical head-to-head record.

Never betti exce basi gain bette forec

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

Some Examples of Rating Systems

A rating of superiority of points over model difference calculated from rating involving either include data

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

For a time record over 2002 play defe head

BOOK PREVIEW

BOOK PREVIEW

victory, higher than both the original probability estimates that were based on the full head-to-head record extending back to 1905.

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

which in turn was adapted for UK football by Tony Drapkin and Richard Forsyth in their book *The Punter's Revenge*. As football matches are played, Bill Hunt's book *Football For Punters* features a table of the following form:

1. BOOK PREVIEW

2. the average number of points for individual teams remains constant at

3. BOOK PREVIEW

4. the winning team takes the complete points kitty; and that

5. BOOK PREVIEW

Typical of the points total to the kitty. The difference in these percentages

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

Man

points minus 152 points). Birmingham's rating, by contrast, increases by 152 points after a win (188 points minus 36 points). This is because

BOOK PREVIEW

Man City, since drawn, Birmingham will still collect 58 points overall (94 points minus 36 points), while away some side in the seas won, draw ten, draw one seas each seas

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

Ratings and Probability

BOOK PREVIEW

BOOK PREVIEW

times, the best choice can only be guessed at. To save us time, Paul Steele, in *Profitable Football Betting*, has indicated that using the 6 most recent matches for each team is a reasonably good guide to the result of the next 3, 4 and 5 football matches. The reader may wish to review this for himself.

To see how this works, let's take a look at the match between Tottenham Hotspur and Leeds United, played on 24th November 2002. The last 6 matches for both sides:

Table 4.1. Recent form of Tottenham Hotspur and Leeds United

Match	Result	Goal Difference
1	Tottenham 2:0 Sunderland	2
2	West Ham 3:4 Leeds	1
3	Tottenham 0:0 Chelsea	0
4	Leeds 0:1 Everton	-1
5	Leeds 1:1 Liverpool	0
6	Blackburn 1:2 Tottenham	1
	Aston Villa 0:0 Leeds	0

In the 6 matches Tottenham played, they scored 6 goals and conceded 9. With 6 matches played, Leeds have scored 8 goals and conceded 11. This is unsurprising. Meanwhile, Leeds have scored 8 times and conceded 11 goals, with some rather erratic performances. Tottenham's goal superiority rating is -3.3, Leeds' is -3.3. The difference between the two is 0, and this match is therefore 0. On the face of it, one might intuitively expect a draw, since there seems to be little difference in the two sides in terms of their goal superiority.

Yet we shouldn't just rely on intuition. Provided we have enough suitable data, we can translate this match rating into a home-win, draw, away-win probability. In this case, the match rating of 0 translates into a 33% chance of a home win, a 33% chance of a draw, and a 33% chance of an away win. This is a reasonable result, given the fact that the two teams are of similar quality.

²¹ Of course, if we had more data, we might be able to refine our estimate. For example, during a, but without recourse to a more powerful rating system like Rateform, which takes into account the strength of the opposition, we will have to ignore this factor.

Using results data for the English Premiership and Divisions 1, 2, and 3 for seasons 1993/94 to 2000/01, goal supremacy ratings based on the most recent match ratings calculation, with the matches played in the first 6 rounds of each season, obviously result in a rating for the next season. Of these ratings, 46.2% are positive, 46.2% are negative, and 7.6% are draws. This is a relatively apparent advantage, with close to half of all games ending with the away side winning. The precise distribution of games according to their match rating will be shown in the following table.

Table 14.0 shows the distribution of goal supremacy ratings for the 14,000 matches played in the English Premiership and Divisions 1, 2, and 3 for seasons 1993/94 to 2000/01. The number and percentage of home wins, away wins, and draws for each rating figure. Of the games, 94% have a rating of either positive or negative, with 1% being a draw. The precise distribution of games according to their match rating will be shown in the following table.

Match rating	No. of home wins	No. of draws	No. of away wins	% of total matches	% of home wins	% of draws	% of away wins
-2	0	1	0	0.00%	0.0%	0.0%	0%
-2	0	2	0	0.00%	0.0%	0.0%	0%
-2	0	0	3	0.02%	0.0%	0.0%	100%
-2	0	2	4	0.04%	0.0%	33.3%	66.7%
-2	2	7	8	0.08%	8.3%	33.3%	58.3%
-1	1	3	3	0.03%	10.0%	33.3%	56.7%
-1	5	9	9	0.09%	25.0%	33.3%	41.7%
-1	7	9	12	0.20%	25.0%	32.1%	42.9%
-1	6	14	21	0.29%	14.6%	34.1%	51.2%
-1	3	19	19	0.39%	21.4%	34.1%	44.5%
-1	32	51	51	0.71%	26.5%	36.5%	37.0%
-1	4	38	58	0.93%	30.9%	41.3%	27.7%
-1	51	50	64	1.18%	30.9%	30.3%	38.8%

Match rating	No. of home	No. of draws	No. of away	% of total matches	% of home	% of home	% of away
-1	5	91	91	1.92%	37.7%	27.9%	4%
-10	5	91	91	1.92%	37.7%	27.9%	3%
-9	123	91	112	2.33%	37.7%	27.9%	4%
-8	91	123	123	2.33%	37.7%	27.9%	4%
-7	90	170	170	3.81%	37.7%	27.9%	3%
-6	242	202	191	4.54%	38.1%	31.8%	1%
-5	279	212	197	4.91%	40.6%	30.8%	3%
-4	375	212	212	6.06%	44.2%	29.6%	3%
-3	374	235	222	5.85%	43.7%	29.0%	0%
-2	372	235	214	5.85%	43.4%	28.4%	1%
-1	375	251	222	6.06%	44.2%	29.6%	2%
0	375	239	233	5.85%	43.7%	28.3%	3%
1	412	233	213	5.85%	43.7%	28.0%	5%
2	401	220	189	5.78%	43.5%	27.2%	3%
3	395	224	175	5.67%	49.7%	28.2%	0%
4	375	133	102	3.81%	45.1%	25.1%	4%
5	297	102	102	3.81%	37.7%	31.1%	3%
6	233	140	131	3.84%	43.4%	27.2%	4%
7	236	98	83	2.98%	56.6%	23.5%	3%
8	144	56	56	1.92%	37.7%	27.9%	1%
9	158	32	32	1.92%	37.7%	27.9%	3%
10	177	42	42	3.81%	53.3%	23.4%	3%
11	113	34	33	1.29%	62.8%	18.9%	3%
12	60	30	22	1.01%	63.4%	21.1%	5%
13	61	17	17	0.98%	40.7%	22.8%	3%
14	48	23	11	0.98%	40.9%	20.3%	3%
15	38	21	8	0.48%	56.7%	31.3%	3%
16	30	9	2	0.29%	73.2%	22.0%	4%
17	26	3	2	0.61%	56.7%	22.5%	1%
18	15	1	1	0.49%	43.7%	27.9%	1%
19	14	1	1	0.49%	63.5%	23.3%	1%
20	5	1	0	0.04%	83.3%	16.7%	0%
21	1	0	0	0.01%	100.0%	0.0%	0%
22	0	1	1	0.61%	50.0%	50.0%	0%
23	1	0	0	0.49%	100.0%	0.0%	0%
24	1	0	0	0.49%	100.0%	0.0%	0%
Total	468	3932	3602	100.00%	46.2%	28.1%	7%

BOOK PREVIEW

Figure 4.1. Percentage of games with each match rating



BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

lower the rating, the greater the chance for an away win. It is initially not obvious how the match rating influences the likelihood of a drawn game.

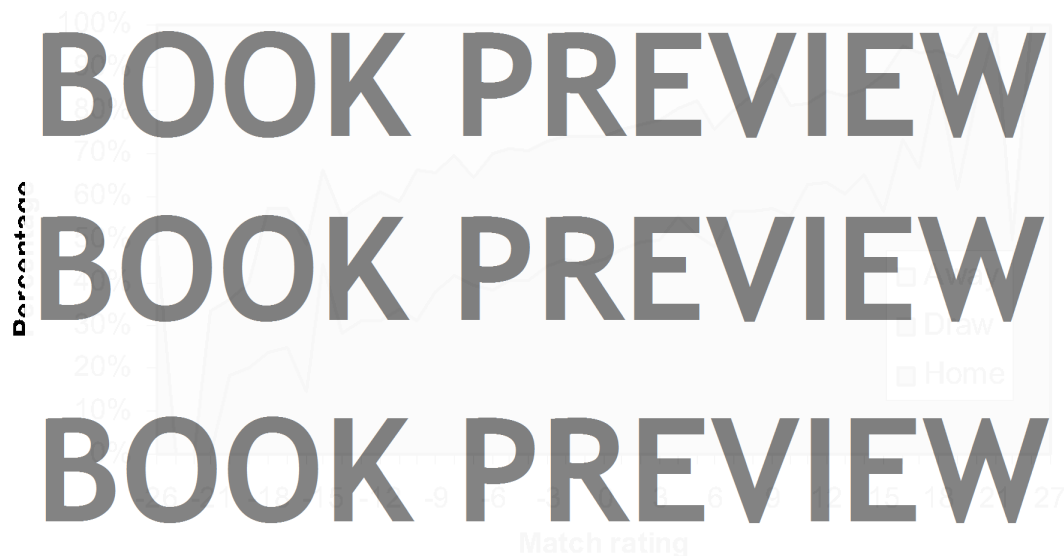
BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

Figur

**Defi**

BOOK PREVIEW

representing what would statistically be considered to be the best relationship between match rating and result probability, graphically illust

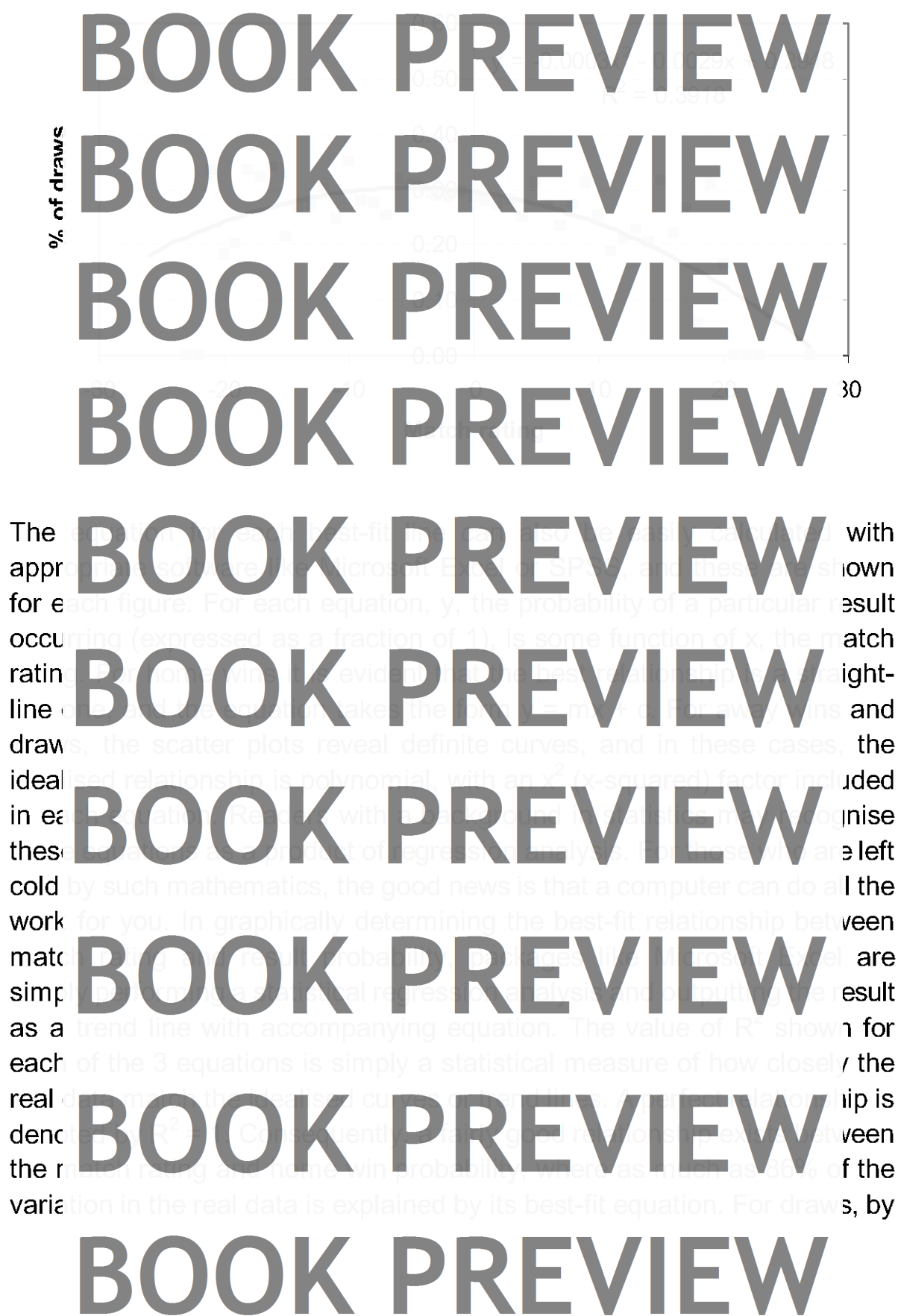
Figur



Figur



Figure 4.5. Draws distribution by match rating (data from Table 4.2)



contrast, the relationship is much weaker. As much as 62% of the variation in the draws data cannot be described by this ratings model.²²

What
the
The

BOOK PREVIEW

BOOK PREVIEW

sider
win.

when
of 1,
the
calcu
when
or 46

BOOK PREVIEW

BOOK PREVIEW

ction
nine
have
ame,
1647
se to
ome
st-fit
23).
I the
y for
, for
one
I we

win
relat
The

BOOK PREVIEW

infor
othe
exan
ratec
neec

BOOK PREVIEW

With
the f
the f
2.15

BOOK PREVIEW

efine
ntly,
, are
draw
aws,
d be
larly
fact,
, we
for a
2.15,

in th
althc
ques
for d
neve
can
sele
3.39

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

²² Pur

surprise, therefore, that the pools are based entirely around their prediction.

It is no

Table 4.3. Calculation of fair odds from the ratings model

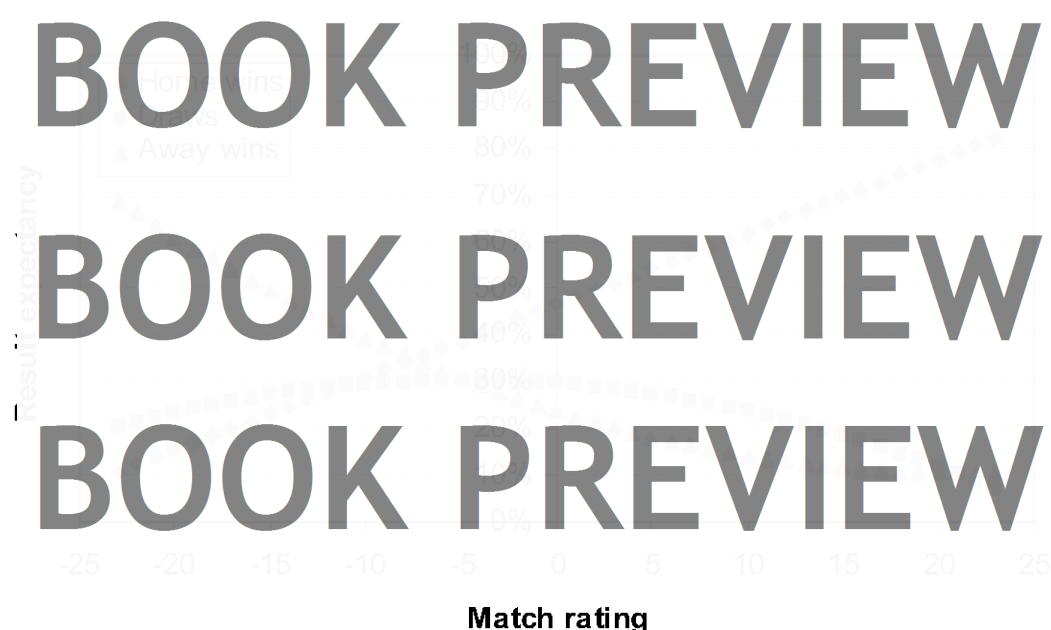
Ma rat	BOOK PREVIEW	ir ay ds
-16	22% 26% 52% 100% 4.65 3.78	34
-15	35% 47% 100% 3.8	11
-12	28% 43% 100% 3.49	31
-10	31% 29% 39% 100% 3.24 3.40	54
-8	34% 30% 36% 100% 2.94 3.35	30
-6	37% 32% 37% 100% 2.71 3.2	09
-4	40% 29% 29% 100% 2.49 3.32	42
-2	43% 30% 26% 100% 2.31 3.34	30
0	46% 29% 24% 100% 2.15 3.39	23
2	50% 28% 21% 100% 2.01 3.4	71
4	53% 19% 19% 100% 1.9 3.59	25
6	55% 27% 17% 100% 1.79 3.75	34
8	59% 25% 15% 100% 1.70 3.96	49
10	64% 19% 11% 100% 1.57 4.2	17
12	65% 18% 10% 100% 1.53 4.6	36
14	68% 20% 12% 100% 1.46 5.12	51
16	71% 17% 11% 100% 1.40 5.83	08

We only described are l

This 5, as

course,

Figure 4.6. Idealised match prediction curves for goal supremacy ratings



Identifying Value Bets

Once we have identified a value bet. Where the bookmaker's odds are greater than the fair odds, we have a value bet. The bookmaker has underestimated the probability of the result, and we should make a profit. The distinction between result forecast and value betting is an important one, and is central to the principles of value betting. We must always compare our fair odds to those of the bookmaker, and think of the comparison as simple.

Unfortunately, the majority of bookmakers are rather good at pricing football betting. Currently, the bookmakers can lay their hands on a tremendous amount of information to assist with odds pricing, and the punter will always struggle to do so. The majority of bets do not offer any betting value.

Let us consider the odds for Tottenham v Leeds. Odds from bookmakers are shown in Table 4.4.

Table 4.4. Odds for Tottenham v Leeds

Bet	Bookmakers	William Hill
Gar	2.12	2
Inte	2.2	3.2
Lad	3.1	3.2
Sp	3.25	
Sp	3.25	
William Hill		

Recall that our fair odds, as estimated by the goal supremacy forecast model, are 2.15, 3.39 and 4.23 for the home win, draw and away win respectively. In view of the reservations expressed earlier about draws prediction, we would be advised to leave this bet alone. Overall, the bookmaker's odds are not too far from the fair odds, and the model's prediction is quite reasonable. At 2.15 for Tottenham, Interwetten are offering us an edge of 2.3%.

Assuming we have placed a bet on Tottenham to win, we are offered odds of 2.15. Tottenham have been a top 5 Premiership side for the past 5 seasons, whilst Tottenham have finished no higher than 9th. The goal supremacy model, however, suggests that Tottenham are overvalued, despite home advantage. Conversely, Tottenham are overvalued, despite home advantage. In fact, the bookmaker's odds are not too far from the fair odds, and the model's prediction is quite reasonable. At 2.15 for Tottenham, Interwetten are offering us an edge of 2.3%.

Before we congratulate ourselves on a winning bet, we should remember that the game could equally well have finished as either drawn or as a win for Leicester. The fact that it didn't is not in itself much of a success, although it is a success for a bookmaker. Each time we place a bet, we are taking a risk. The forecast analysis would predict a profit of £23 from 465 wins.

BOOK PREVIEW

Before testing a betting system, it should be tested over a much longer series of matches. The bookmaker's odds are not too far from the fair odds, and the model's prediction is quite reasonable. At 2.15 for Tottenham, Interwetten are offering us an edge of 2.3%.

²³ $2.2/2.15$ (bookmaker's odds divided by fair odds) = 1.023

example over the course of a full season, and preferably before any real money is introduced.

Table 4.3: From analysis for the goal supremacy match ratings forecast model, the received goal supremacy rating system to identify value home wins for English league games played during the 2004/05 season. A total of 1,746 games were analysed using a rating system to identify value home wins. It is unlikely that matches with extreme ratings should be avoided for betting purposes, but it is obvious that a greater number of matches are placed on the rating system. It can be argued that matches with extreme ratings should be avoided for betting purposes, but it is obvious that a greater number of matches are placed on the rating system. It can be argued that matches with extreme ratings should be avoided for betting purposes, but it is obvious that a greater number of matches are placed on the rating system.

Table 4.3: From analysis for the goal supremacy match ratings forecast model,	home	is
Number of bets	526	459
Profit	1.48	0.92
Yield	75%	0.68%
Profit	+0.07	+0.17
Yield	+2.10%	+3.56%

The omitted attention on the more important issue of return or yield. Value betting is all about securing better than fair odds from the bookmaker. It is not about maximizing the return, but about maximizing the yield. The yield is the returned profit divided by the total stakes outlay, expressed as a percentage.

The best odds, our rating system returns a profit. This is limited to a 2.10%

yield for all ratings, but becomes progressively higher for the more restricted ranges. For matches rated between -2 and +2, over £1.10 is returned on every win and if only the home win is taken

Unfact, away bookmaker's overround.

Table away model,

	Num	Profi	Yield	Profi	Yield
	407	332	217	98	176
	-95.55	-109.62	-90.27	-43.77	-295.46
	48%	42%	35%	27%	22%
	0.01	-8.01	-72.00	-38.00	-78.49
	-14.99%	-24.84%	-33.59%	-38.78%	-10.2%

It is the a profit equa exper in the eight the term from resu wins inve incre

Perh syste matc this better

supremacy forecast model included, may simply be replicating what we, and more importantly the bookmaker, already know, making it unfeasible to be successful and a betti and a forec sults than k, for it es. To acco any quar tudy of a ot to place

Before closing this chapter, the reader's attention should be briefly drawn to the following, that the yields are -8.12% and -16.92% for home win and away win betting respectively. For home win, the bookmaker's margin is 8.12% and for away win, it is 16.92%. The bookmaker's margin is 8.12% and 20.12% for a full match book. We speculated in Chapter 3 that bookmakers might generally be meaner with the higher (away) price add for a further longshot bias will be reviewed and a case made for constructing a betting portfolio for the most part around odds-on prices. For now, we can see that a successful forecasting system can establish an edge, a potentially better opportunity of making a regular profit.

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

Sports Betting and Risk Management

Why

BOOK PREVIEW

Sports
and
among
the €

BOOK PREVIEW

is co
and
that

BOOK PREVIEW

Look
follow

BOOK PREVIEW

cons
cont
chap
are r

BOOK PREVIEW

mon
diffe

BOOK PREVIEW

about
the t

BOOK PREVIEW

finan
each

sports
divis
man

BOOK PREVIEW

Rath
to in
more

BOOK PREVIEW

it. C
char

of id
char

BOOK PREVIEW

1.

2.

3. What is the chance of the hazard occurring?

4. Can the risk level be reduced?

From
face
fami
char
prob
scen
it. If
choc
proc

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

With
ansv
unne
want
impa
diver
shou
to ta
more
atter
judg
fixed
ansv
bene
betti
man
be a

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

Aspects of Risk Management for Sports Betting

Seri
sens
posi
Engl
Asia
a ful
of o

BOOK PREVIEW

BOOK PREVIEW

will
more
the
the
case
cing
can
the

al to
ot no
you
life-
onal
cess
seek
ng –
book
and
y for
been
the
ports
and
tially

in the
ng a
plain
ome
olves
sk all
nbler

spreads the risk across a series of bets, with each stake a small proportion of the total funds at his disposal.

For a risky situation, can you find value in the odds and create an edge? After a £1,000 bet, do you have more than £1,000? Each individual bet has a profit expectancy. Nevertheless, for each one it is possible to identify a profit expectancy (P), expressed as a probability of winning, as in the following equation:

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

Put simply, for a unit stake, the profit expectancy is the amount expected that can be gained by the true probability of success. If the fair odds (1/p) are greater than those of the bookmaker, our profit will be positive. On the other hand, if we have value in the bookmaker's odds, P will be greater than 1/p, and P will always be positive. When $p = 1/p$, $P = 0$.

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

We can calculate P by substituting 1/p for the fair odds. low:

BOOK PREVIEW

Just as bad as before, but clearing up the right-hand side gives:

BOOK PREVIEW

When $P < 0$, P is negative, and when $P = 0$.

BOOK PREVIEW

²⁴ We estimate P exactly before an event, only estimated by a forecasting model, or evaluated retrospectively after many similar contests.

We can also express the profit expectancy instead as the return expectancy, R , where the return is just stake plus profit. Hence:

BOOK PREVIEW

When the odds are greater than 1, and we have secured an edge, less than 1, and we will ultimately lose the book. BOOK PREVIEW

When the odds are greater than 1, and we have secured an edge, less than 1, and we will ultimately lose the book. BOOK PREVIEW

When the odds are greater than 1, and we have secured an edge, less than 1, and we will ultimately lose the book. BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

Risks and Returns for Fixed Odds Betting

The BOOK PREVIEW

The bank
beer
be n
set a
/ los
ansv
not c

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

Ever
bank
prefe
inve
as a
eithe
less
char
that
arou
natu
acce

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

Trad
prim
spor
their
"288
just
For
infor
were
thes
som
and

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

Understanding and Managing Profit Growth

In fir
and
In be
the
turn
canr
paid
cont
Furtl
profi
betti
betti
beca
book
so h
of va
of be
a pu
he h
thes
edge
clos
£900
For
coin
typic

The
the s
want
spec
punt
anal
dout
betti
gam

BOOK PREVIEW
BOOK PREVIEW
BOOK PREVIEW
BOOK PREVIEW
BOOK PREVIEW
BOOK PREVIEW
BOOK PREVIEW
BOOK PREVIEW
BOOK PREVIEW
BOOK PREVIEW

ment,
age.
fit to
over
rse,
are
uate
ess.
ycle
nitial
the
ess,
the
nd if
ples
sion
tage
gles,
ch of
the
e be
n of
dds.
s no
ker's

re of
ngly,
ng a
s the
id to
the
g his
the
d the

²⁵ Since $\sqrt{1.10} = 1.0488$ and $\sqrt[3]{1.10} = 1.0323$

size that his stakes should be in order to realise his goal. From this, it is possible to assess his risks.

The series of betting yield–stake-size relationships is shown in Table 6.1. For this analysis, the size of a fixed unit stake is equal to a specified percentage of the bankroll. For example, if the bankroll is £100 and the stake size is 5%, the stake will be £5. If the bankroll grows to £125, the stake will be £6.25. If the bankroll shrinks to £75, the stake will be £3.75. The bankroll (3 points) will be only 2% of the new bankroll at this time. Percentage stakes will be added to the bankroll. For example, if the bankroll is £100 and the stake size is 5%, the stake will be £5. If the bankroll grows to £125, the stake will be £6.25. If the bankroll shrinks to £75, the stake will be £3.75. The bankroll (3 points) will be only 2% of the new bankroll at this time. Percentage stakes will be added to the bankroll. For example, if the bankroll is £100 and the stake size is 5%, the stake will be £5. If the bankroll grows to £125, the stake will be £6.25. If the bankroll shrinks to £75, the stake will be £3.75. The bankroll (3 points) will be only 2% of the new bankroll at this time. Percentage stakes will be added to the bankroll.

Table 6.1. Relationship between singles betting yield, level stake size and the number of bets required for doubling the bankroll.

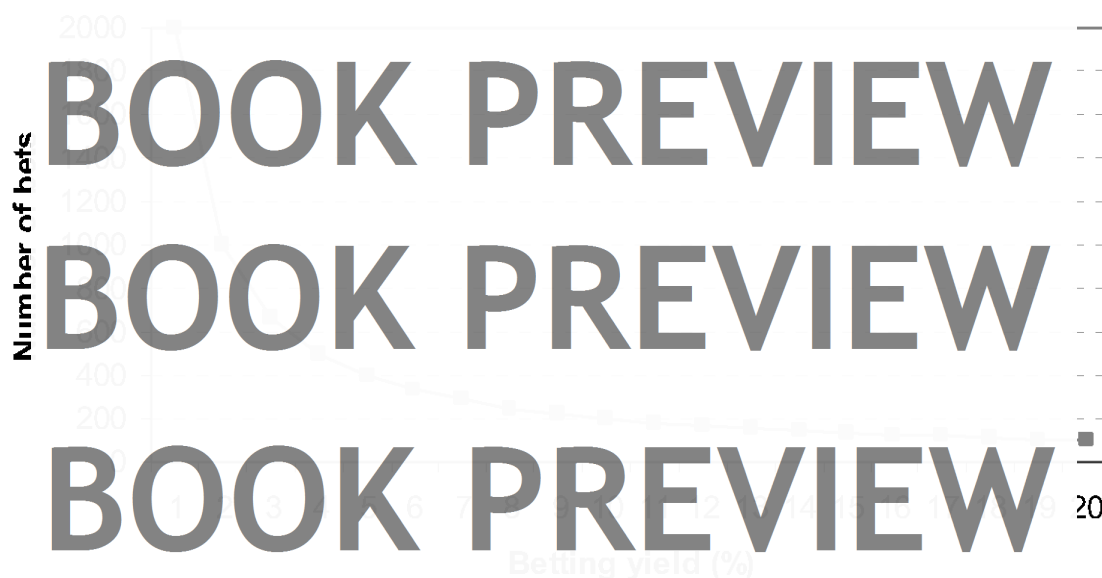
Yield %	1	2	3	4	5	6	7	8	9	10
1	1000	500	333	250	200	167	143	125	111	100
2	500	250	167	125	100	83	71	63	56	50
3	333	167	111	83	67	56	48	42	37	33
4	250	125	83	62	50	42	35	31	27	25
5	200	100	67	50	40	33	28	25	22	20
6	167	83	56	42	33	28	23	20	18	17
7	143	71	48	35	28	23	19	17	15	14
8	125	63	42	31	25	20	17	15	13	12
9	111	56	37	27	22	18	15	13	12	11
10	100	50	33	25	20	17	14	12	11	10
11	91	45	30	23	18	15	13	11	10	9
12	83	42	28	21	16	14	12	10	9	8
13	77	38	26	19	15	13	11	9	8	7
14	71	35	24	18	14	12	10	9	8	7
15	67	33	23	17	13	11	10	8	7	6
16	63	31	22	16	12	10	9	8	7	6
17	59	29	21	15	11	9	8	7	6	5
18	56	27	20	14	11	9	8	7	6	5
19	53	26	19	13	10	8	7	6	5	5
20	50	25	18	12	10	8	7	6	5	5

²⁶ The magnitude of a point in betting can be whatever the punter chooses it to be. For some, it will be £1, for others, £10, £100 or even £1,000.

It is clear from Table 6.1 that the number of bets required to double a bankroll increases as the betting yield falls towards zero. In fact the bet num
level
stake
of be
in Fi
yield
prop
desc
stake
denc
a pe

BOOK PREVIEW
BOOK PREVIEW
BOOK PREVIEW

Figure 6.1. The betting yield – bet number relationship for bankroll doubling, with 5-point



Obvi
unsu
signi
succ
ever
the s
thos

BOOK PREVIEW
BOOK PREVIEW

an
any
n. A
e for
ll be
whilst
lysis

BOOK PREVIEW

82

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

of outcomes, as Ian had calculated, with the probability of throwing fewer or more tails less than this, as illustrated by Figure 6.2, which nicely reveals

Figure 6.2. Binomial probabilities for throwing r tails during 1,000 coin flips

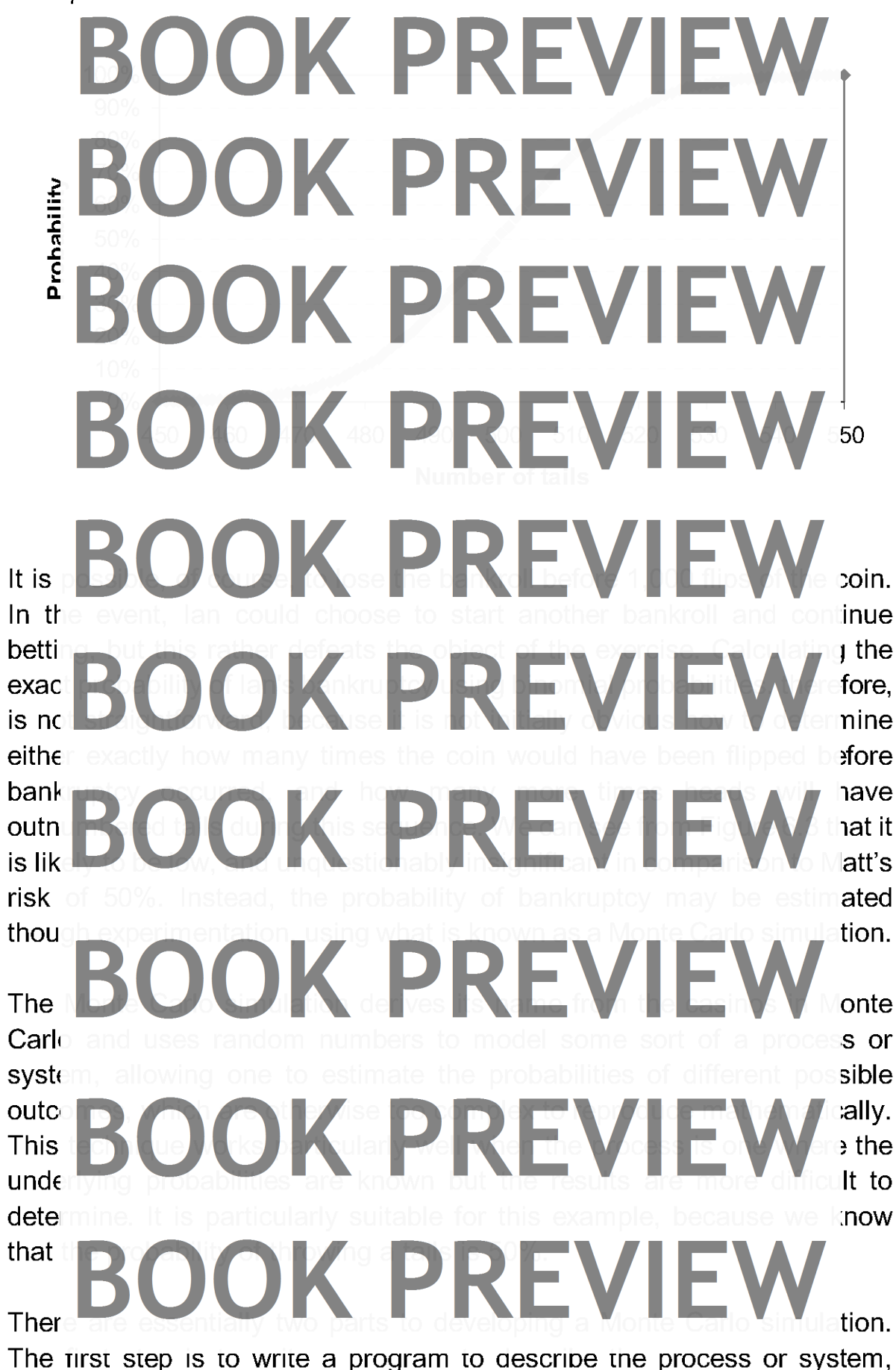


The possible head and tail outcomes and 1,000 tails through to 1,000 heads and no tails, although the number of heads and tails is fixed at 1,000. The most probable size of bankroll after 1,000 flips of the coin is £200, or a profit of £100.

Figure 6.2 shows the binomial probability distribution, which describes the probability that there have been up to and including a number of tails thrown. Again, Excel can make life easier, with the formula $=BINOM.DIST(r, n, p, FALSE)$ returning the probability of exactly r tails. The cumulative probability of throwing r or fewer tails is given by $=BINOM.DIST(r, n, p, TRUE)$. There is a 51.25% chance of throwing 500 or tails or fewer, or a 74% chance of finishing with a bankroll higher than £200.

²⁷ Negative bankrolls are, of course, rather meaningless in a real betting context.

Figure 6.3. Cumulative binomial probability for throwing up to r tails during 1,000 coin flips



using the underlying probabilities to define its boundaries. For the flipping of a coin it is straightforward enough to use a spreadsheet with a random number generator, the function =RAND() will generate a random number between 0 and 1. The bookmaker's coin-flipping challenge the programmer then informs the spreadsheet to produce 14/10 multiplied by the bankroll size of the random number, if the result is greater than 0.5, the stake grows by the amount of the bet, otherwise it is up to the bookmaker to calculate the sequence can be modelled, and a profits growth calculated. The spreadsheet for the first 20 flips of a coin, with a starting bankroll of £100 and level stakes of £2.

Table

Coin flip	Random number	Result	Profit/loss	Bank
1	0.217823	Tails	£2.2	102.2
2	0.95123	Heads	-£2	100.2
3	0.77123	Heads	-£2	98.2
4	0.156843	Tails	£2.2	100.4
5	0.252537	Tails	£2.2	102.6
6	0.43309	Heads	-£2	100.6
7	0.57309	Tails	£2.2	102.8
8	0.839079	Heads	-£2	100.8
9	0.723895	Heads	-£2	98.8
10	0.773895	Tails	£2.2	101.0
11	0.15549	Heads	-£2	99.0
12	0.123739	Tails	£2.2	101.2
13	0.599034	Heads	-£2	99.2
14	0.32546	Tails	£2.2	101.4
15	0.57942	Tails	£2.2	103.6
16	0.55533	Heads	-£2	101.6
17	0.261543	Tails	£2.2	103.8
18	0.820935	Heads	-£2	101.8
19	0.616608	Heads	-£2	99.8
20	0.4932	Tails	£2.2	102.0

Figure 6.4. The progression of Ian's bankroll growth for one model run

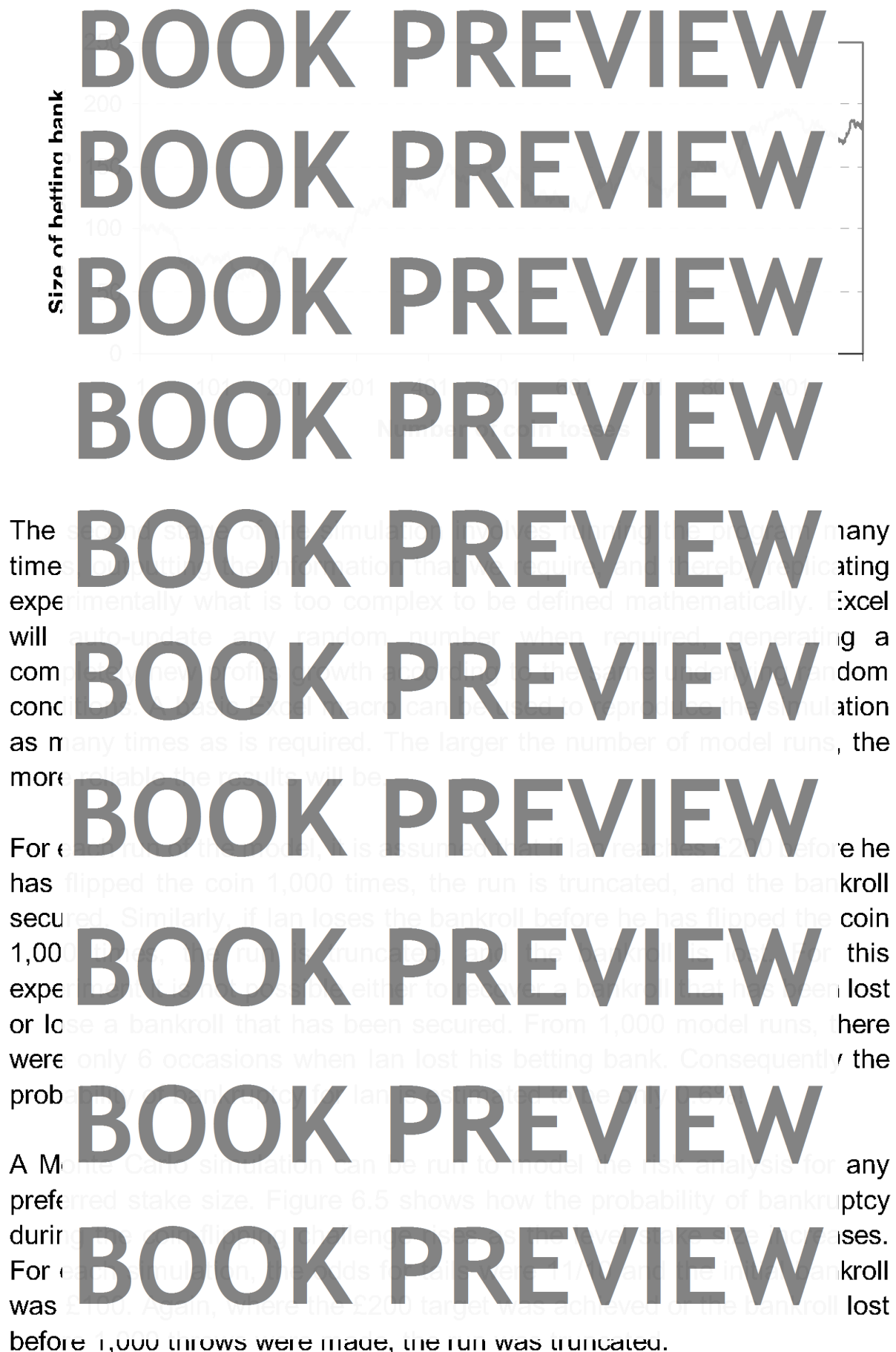
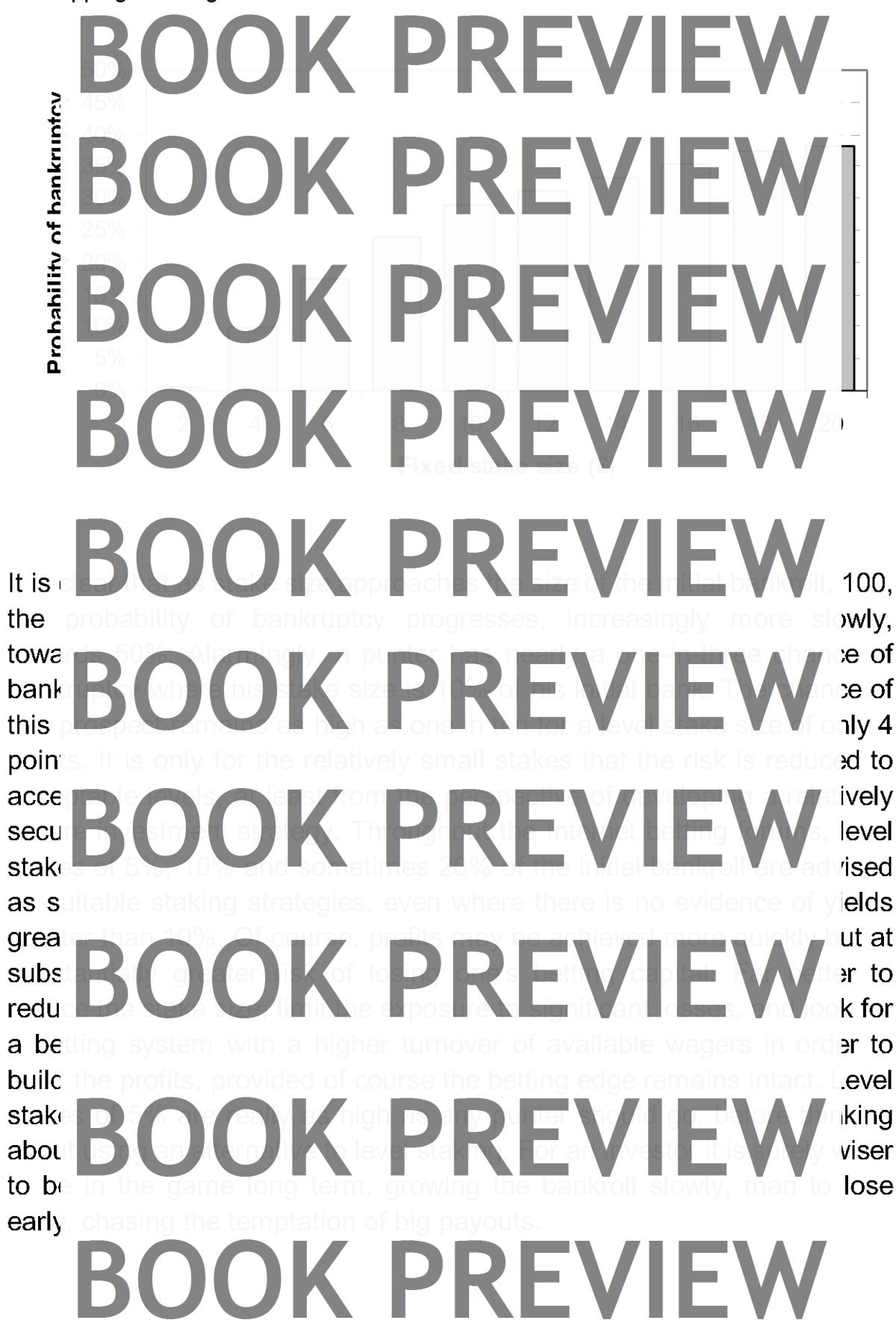


Figure 6.5. Relationship of level stake size to the probability of bankruptcy in the coin-flipping challenge



It is the
towards
bankroll
this point
accept
security
stake
as a
great
sub
redu
a be
built
stake
about
to be
early

100,
slowly,
the of
the of
only 4
ad to
ively
level
vised
ields
ut at
er to
k for
er to
level
iking
viser
lose

Singles versus Multiples: a Risk Assessment

Desp of se winn than appa singl com ach

BOOK PREVIEW

number as of less tially or to will rage

Bill f of si The ever for e

BOOK PREVIEW

ancy bets. d at take

Table

BOOK PREVIEW

Prediction	Singles	Doubles
10%	10%	1%
20%	20%	4%
30%	30%	9%
40%	40%	16%
50%	50%	25%
60%	60%	36%
70%	70%	49%
80%	80%	64%
90%	90%	81%
100%	100%	100%

BOOK PREVIEW

When mon the succ Mea 0.09 dispo poin

BOOK PREVIEW

lose ge is ction f 40. 0.3 = es is y 36 tage

over the punter is 1.667, or 0.5/0.3. For doubles it is 2.778 ($0.5^2/0.3^2$), which is the square of 1.667.

Con-
will
dout
prop
pred
squ
sam
Fig
The

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

or w
since
singl

BOOK PREVIEW

Figur
doub

BOOK PREVIEW

Profit (points)

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

Prediction success

BOOK PREVIEW

Whe
edge

BOOK PREVIEW

aker
s for
it is
the
to the
r the
ens,
hips.

is 0
ither

versus

%

d an
le to

singles. By the same token, trebles will perform better still, with profit proportional to the cube of prediction success, as illustrated in Figure 6.7. As a

Figur treble



A pu limitl mus accu begi retur bet i able for h true wag to th of th

Table 6.4 compares the chance of bankruptcy for singles, doubles and trebles for a series of 1,000 bets, where each selection is priced at 11/10, and the chance of bankruptcy is calculated as the percentage of bets that terminate his sequence of betting if he loses his starting bankroll of 100 points. If this is repeated, the results are as follows. In the first case, the expected bankroll after 1,000 bets is 100 points. Odds for a double and treble are 4.41 and 9.261, with a true edge of 2.5%.

Table 6.4. Risk of bankruptcy for singles, double and trebles with a 3% edge per selection

Level of stake	Actual	Expected	% Bankruptcy	Actual	Expected	% Bankruptcy	Actual	Expected	% Bankruptcy
1	197	200	0.4%	296	305	5.1%	378	415	15.5%
2	242	250	3.4%	379	408	12.7%	465	573	28.4%
3	350	400	20.5%	528	715	35.8%	598	1046	53.2%
4	379	450	24.9%	553	818	42.4%	625	1203	58.0%
5	443	600	33.6%	619	1176	68.3%			

Modifying $F = B + (YSN/100)$, we can calculate the size of the expected bankroll after 1,000 bets. In this case, the final expected bankroll after 1,000 bets is given by:

since B , the starting bankroll, is equal to 100 points, N , the number of bets, is equal to 1,000 and Y , the yield, is proportional to the n^{th} power of the

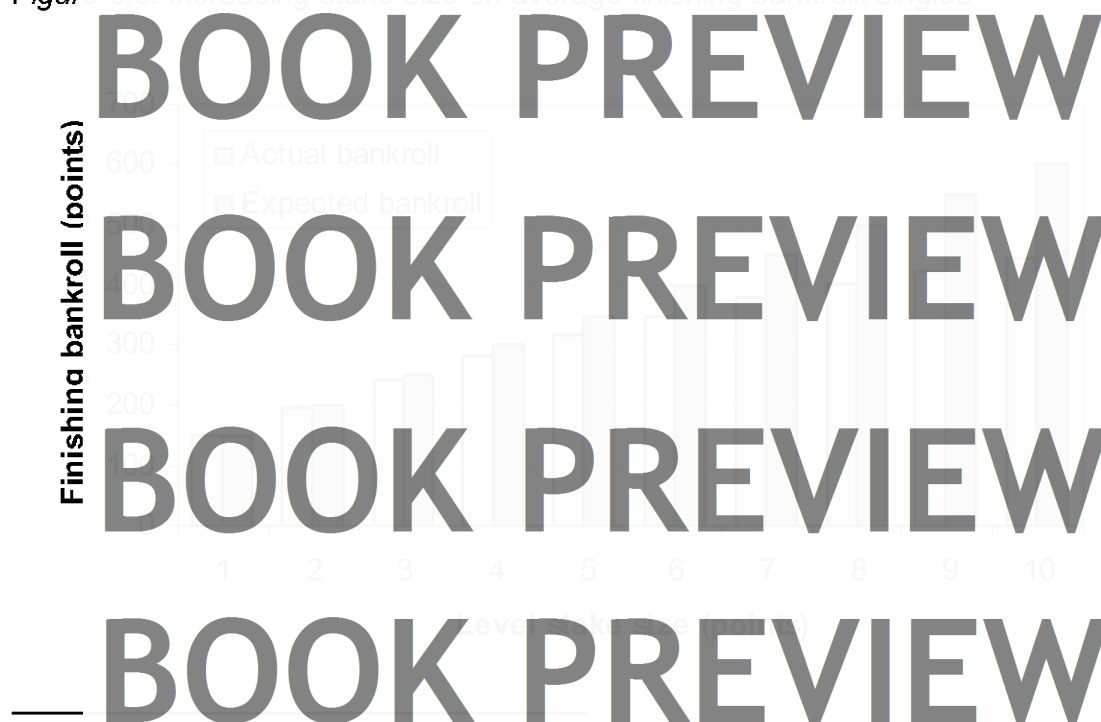
²⁸ In other words, the bankroll is hypothetically permitted to fall below zero.

betting edge,²⁹ where n is the number of selections used to make up the multiple bet. S , of course, is the stake size.

The logic is since power the Carlo will since capital start actu refle The aver diver the I muc the : 1,00

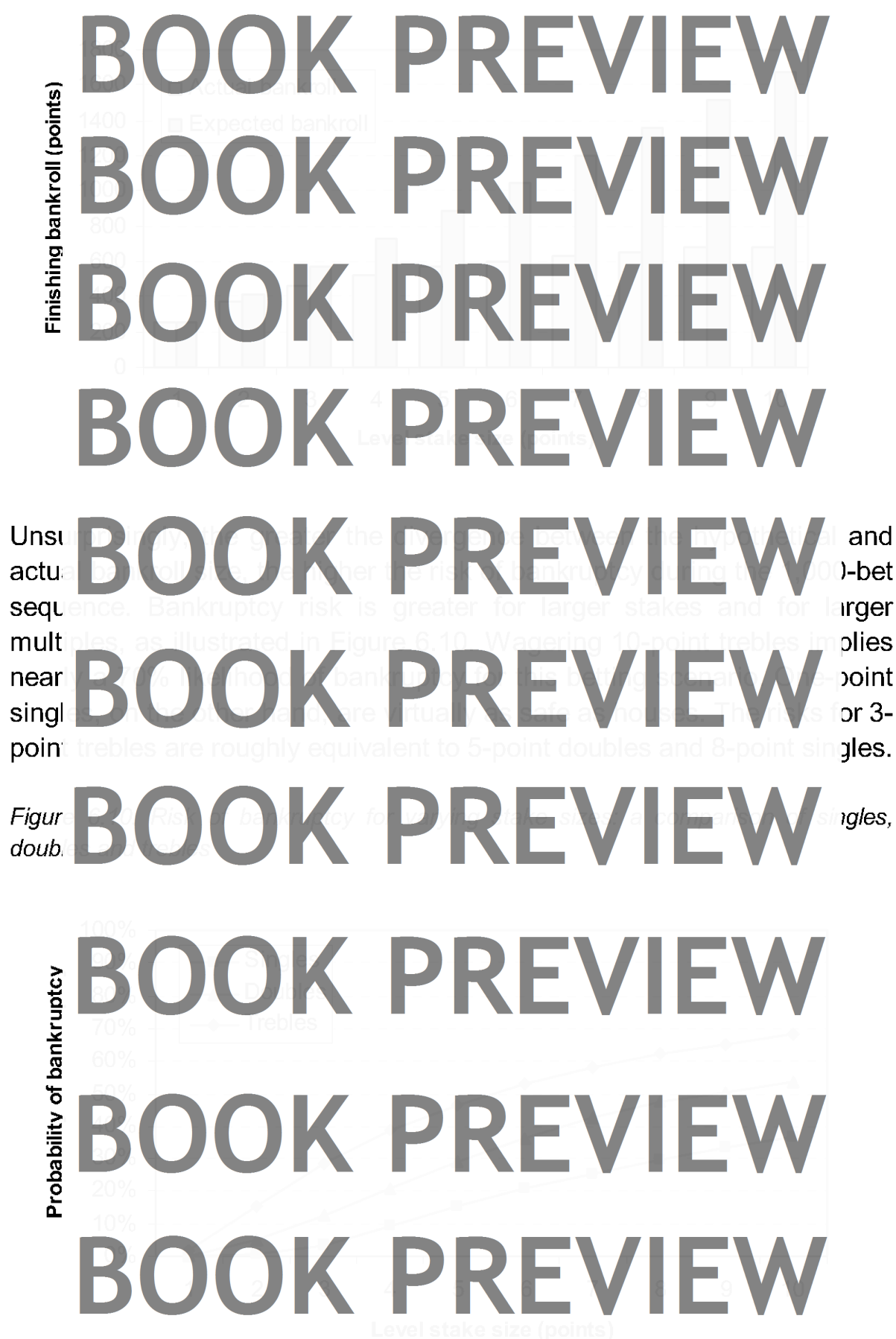
ts is oles, e nth ze of onte kroll age, tless e, a f the truer ving. r the , the s as ce is bles after

Figure 6.8. Increasing stake size on average finishing bankroll: singles



²⁹ The expected yield for singles is 5%, whilst that for doubles and trebles is 10.25% and 15.76% respectively.

Figure 6.9. Increasing stake size on average finishing bankroll: trebles



Clearly, one way to limit risk exposure is to reduce the size of the stakes on multiple bets, or for that matter, on higher priced singles. Unfortunately, this

BOOK PREVIEW

exist

BOOK PREVIEW

nece

BOOK PREVIEW

impc

BOOK PREVIEW

posit

BOOK PREVIEW

win I

BOOK PREVIEW

misf

BOOK PREVIEW

pote

BOOK PREVIEW

the I

BOOK PREVIEW

acce

BOOK PREVIEW

seek

BOOK PREVIEW

Whil

BOOK PREVIEW

proa

BOOK PREVIEW

odds

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

³⁰ A successful punter is here defined as one who has gained an edge over the bookmaker, confirmed through analysis of his long-term betting record.

Staking Strategy and Money Management

What

BOOK PREVIEW

There find how

BOOK PREVIEW

use a system section

BOOK PREVIEW

The or the necessary basic

BOOK PREVIEW

learn strategy practice

BOOK PREVIEW

While betting so, Establish a man consistent man elements

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

There include Rollin the

BOOK PREVIEW

staking. In the main they are successful, but for many, with an unacceptable increase in risk.

Broader
category:

Fixed
even
odds
all o
punt
their
odds
wins
amo
This

Perce
stake
time
to th
perc
the
book
inter

Final
size
reco
Mart
Ther
shar
com
asse
chap

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

rent

which
tting
which
many
ze of
their
it he
; will
vary.

f the
t the
onal
nple
ding
the
This

take
w to
The
sers.
y all
nore
risk
ious
may

also wish to refer to Stuart Holland's e-book, *Successful Staking Strategies for the Gambler*,³¹ upon which much of the risk analysis in this chapter

A common misconception amongst less-experienced punters is that some staking strategies, in particular the proportional staking strategy, can turn loss-representative betting into a profitable one. In fact, the only way to turn a losing strategy into a winning one is by changing the odds, not the strategy. It can be both mathematically proven and empirically tested that the Martingale strategy, and indeed any other strategy that involves doubling the bet after a loss, should accept that where a punter cannot gain a long-term edge and profit from level staking, he would be unable to profit from fixed odds betting.

Staking
The problem, from a statistical perspective, is that to test any staking strategy one needs to have a reasonable number of results with which to work. The difficulty is that the number of results required is often very large, and the work involved in obtaining them is often prohibitive. A more practical approach is to use a simulation, which is a random permutation of all possible betting histories due to the inherent randomness or noisiness in the way sporting results sequence themselves. This is not a very accurate representation of the real world, but it is a necessary evidence of a flawed one, although the punter will be tempted to give it up. To circumvent this difficulty, we must resort to a statistical method, such as the Monte Carlo simulation, introduced in the preceding chapter. This method involves taking a large number of random sequences of betting results, and using these to estimate the probability distributions like the binomial will largely be unable to help us. Instead, the Monte Carlo simulation, introduced in the preceding chapter, lends itself as the most suitable technique.

The chapter are based on what might be considered to be a realistic collection of betting sequences. Each sequence consists of 250 win-only single bets, and the results are based on what might be considered to be a realistic collection of betting sequences. Each sequence consists of 250 win-only single bets, and the results are based on what might be considered to be a realistic collection of betting sequences.

³¹ <http://homepage.ntlworld.com/fcp.online/sss.htm>

of bets a typical sports bettor or advisory service might wager during the course of a year or sports season. For each staking plan simulation, infor

BOOK PREVIEW

BOOK PREVIEW

For betti BOOK PREVIEW is of

BOOK PREVIEW

BOOK PREVIEW

Betti the l assu book betti BOOK PREVIEW je to was the rage d for

³² The reader should recall that the values calculated for the finishing bankrolls for each staking plan a range of possibl the ex simulate the course, that is why we are running the simulation, and the values of the average finishing bankroll, as well a the probabilities of bankruptcy and no profit, are thus empirical estimates.

BOOK PREVIEW

³³ The value. values statist avera makin erage most des a ut the profit

BOOK PREVIEW

³⁴ The edge coin, others (whilst some will possess no value at all), with the long-term average described by a singles level stakes yield. The punter, like the bookmaker, cannot be right all the time.

BOOK PREVIEW

any bet was 1.36 (or 36%), whilst the minimum was 0.88 (or -12%), with 49.6% of the bets having an edge greater than 1.1. The complete betting edge

BOOK PREVIEW

er al
ed in
Tabl

BOOK PREVIEW

Average	BOOK PREVIEW	20
Maximum		44
Minimum		935
% below		3%
Standard	BOOK PREVIEW	093

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

35 **A** **BOOK PREVIEW**), for
exampl e, means the bookmaker has priced the bet at 6/4 or 2.5. Thus, if the betting edg e was
1.1, the true win expectancy for the punter is $1.1 \times 0.4 = 0.44$ or 44%, with fair odds of 2.273.

Table 7.2. Characteristics of the bookmaker's expectancy scenarios used for the staking plan simulations

[illegible]

BOOK PREVIEW

³⁷ An edge of 1.2 over a price of 1.1, for example, would imply a true expectancy of 109.1%, a logical impossibility.

Table 7.3. Correlation between betting edge and bookmaker's expectancy

Bo	BOOK PREVIEW	.2
ex	BOOK PREVIEW	.77
	BOOK PREVIEW	.137
	BOOK PREVIEW	.002
	BOOK PREVIEW	.009
	BOOK PREVIEW	.019

Each BOOK PREVIEW

- Level staking
- Percentage staking
- Fixed profits staking
- Martingale staking
- Pyramid staking
- Kelly staking

For each staking plan, 5 different sizes of stake were compared, the sizes of stake were 1 point, 3 points, 5 points, 7 points and 9 points, 3 points, 5 points and 7 points, whilst for percentage bank staking, they were 1%, 2%, 3%, 5% and 10% of the betting bankroll at the time the bets were placed. The bets were truncated and the final bankroll taken to be 0 points, which was included in the average finishing bankroll calculation. In total, 930 Monte Carlo simulations were processed, each consisting of 10,000 bets.

BOOK PREVIEW

BOOK PREVIEW

³⁸ Kelly staking, furthermore, identifies what the hypothetically correct stake sizes should be for every bet, and therefore no stake size comparisons are made for this strategy.

Level Staking

Level staking is a betting strategy where the size of the bet is fixed as a percentage of the current bankroll. This is often quoted as a percentage, but should not be confused with percentage bank staking, which calculates the size of the bet on the basis of the percentage of the bankroll that is currently in play. For novices, level staking should be the first staking plan they consider. Its chief advantage is that it requires no additional thought or calculation. It is a simple, easy-to-understand strategy that will ensure that the bettor does not lose more than they can afford to lose. It is a good idea to start with a small bankroll and to increase it as the bettor becomes more experienced. It is also a good idea to keep a record of the results of the bets and to adjust the staking plan accordingly. Level staking is a good way to manage risk and to ensure that the bettor is always in control of their bankroll. It is a simple, easy-to-understand strategy that will ensure that the bettor does not lose more than they can afford to lose. It is a good idea to start with a small bankroll and to increase it as the bettor becomes more experienced. It is also a good idea to keep a record of the results of the bets and to adjust the staking plan accordingly. Level staking is a good way to manage risk and to ensure that the bettor is always in control of their bankroll.

Table 7.4.1 shows the results of the level staking simulation analysis. The average finishing bankroll (7.4.1), the standard deviation of the finishing bankroll (7.4.2), the probability of bankruptcy (7.4.3) and the probability of bankruptcy (7.4.4) are all shown. The subsequent paragraphs summarise the main conclusions that can be drawn from the results of the level staking simulation analysis, and provide support for the conclusions that have been reached. The reader should keep in mind that the conclusions for level staking (and for other staking plans examined later in the chapter) are applicable to all betting systems and to all betting markets. The conclusions are also applicable to all betting systems and to all betting markets.

The results of the level staking simulation analysis show that level staking is a good way to manage risk and to ensure that the bettor is always in control of their bankroll. It is a simple, easy-to-understand strategy that will ensure that the bettor does not lose more than they can afford to lose. It is a good idea to start with a small bankroll and to increase it as the bettor becomes more experienced. It is also a good idea to keep a record of the results of the bets and to adjust the staking plan accordingly. Level staking is a good way to manage risk and to ensure that the bettor is always in control of their bankroll. It is a simple, easy-to-understand strategy that will ensure that the bettor does not lose more than they can afford to lose. It is a good idea to start with a small bankroll and to increase it as the bettor becomes more experienced. It is also a good idea to keep a record of the results of the bets and to adjust the staking plan accordingly. Level staking is a good way to manage risk and to ensure that the bettor is always in control of their bankroll. It is a simple, easy-to-understand strategy that will ensure that the bettor does not lose more than they can afford to lose. It is a good idea to start with a small bankroll and to increase it as the bettor becomes more experienced. It is also a good idea to keep a record of the results of the bets and to adjust the staking plan accordingly. Level staking is a good way to manage risk and to ensure that the bettor is always in control of their bankroll.

BOOK PREVIEW

Table 7.4.1. Average finishing bankroll (points) after 250 level stake singles

Stake	1	2	3	4	5	10
BOOK PREVIEW	5.0	6.1	7.4	8.9	10.2	11.6
BOOK PREVIEW	6.0	7.1	8.4	9.9	11.2	12.6
BOOK PREVIEW	7.0	8.1	9.4	10.9	12.2	13.6
BOOK PREVIEW	8.0	9.1	10.4	11.9	13.2	14.6
BOOK PREVIEW	9.0	10.1	11.4	12.9	14.2	15.6
BOOK PREVIEW	10.0	11.1	12.4	13.9	15.2	16.6
BOOK PREVIEW	11.0	12.1	13.4	14.9	16.2	17.6
BOOK PREVIEW	12.0	13.1	14.4	15.9	17.2	18.6
BOOK PREVIEW	13.0	14.1	15.4	16.9	18.2	19.6
BOOK PREVIEW	14.0	15.1	16.4	17.9	19.2	20.6
BOOK PREVIEW	15.0	16.1	17.4	18.9	20.2	21.6
BOOK PREVIEW	16.0	17.1	18.4	19.9	21.2	22.6
BOOK PREVIEW	17.0	18.1	19.4	20.9	22.2	23.6
BOOK PREVIEW	18.0	19.1	20.4	21.9	23.2	24.6
BOOK PREVIEW	19.0	20.1	21.4	22.9	24.2	25.6
BOOK PREVIEW	20.0	21.1	22.4	23.9	25.2	26.6
BOOK PREVIEW	21.0	22.1	23.4	24.9	26.2	27.6
BOOK PREVIEW	22.0	23.1	24.4	25.9	27.2	28.6
BOOK PREVIEW	23.0	24.1	25.4	26.9	28.2	29.6
BOOK PREVIEW	24.0	25.1	26.4	27.9	29.2	30.6
BOOK PREVIEW	25.0	26.1	27.4	28.9	30.2	31.6
BOOK PREVIEW	26.0	27.1	28.4	29.9	31.2	32.6
BOOK PREVIEW	27.0	28.1	29.4	30.9	32.2	33.6
BOOK PREVIEW	28.0	29.1	30.4	31.9	33.2	34.6
BOOK PREVIEW	29.0	30.1	31.4	32.9	34.2	35.6
BOOK PREVIEW	30.0	31.1	32.4	33.9	35.2	36.6
BOOK PREVIEW	31.0	32.1	33.4	34.9	36.2	37.6
BOOK PREVIEW	32.0	33.1	34.4	35.9	37.2	38.6
BOOK PREVIEW	33.0	34.1	35.4	36.9	38.2	39.6
BOOK PREVIEW	34.0	35.1	36.4	37.9	39.2	40.6
BOOK PREVIEW	35.0	36.1	37.4	38.9	40.2	41.6
BOOK PREVIEW	36.0	37.1	38.4	39.9	41.2	42.6
BOOK PREVIEW	37.0	38.1	39.4	40.9	42.2	43.6
BOOK PREVIEW	38.0	39.1	40.4	41.9	43.2	44.6
BOOK PREVIEW	39.0	40.1	41.4	42.9	44.2	45.6
BOOK PREVIEW	40.0	41.1	42.4	43.9	45.2	46.6
BOOK PREVIEW	41.0	42.1	43.4	44.9	46.2	47.6
BOOK PREVIEW	42.0	43.1	44.4	45.9	47.2	48.6
BOOK PREVIEW	43.0	44.1	45.4	46.9	48.2	49.6
BOOK PREVIEW	44.0	45.1	46.4	47.9	49.2	50.6
BOOK PREVIEW	45.0	46.1	47.4	48.9	50.2	51.6
BOOK PREVIEW	46.0	47.1	48.4	49.9	51.2	52.6
BOOK PREVIEW	47.0	48.1	49.4	50.9	52.2	53.6
BOOK PREVIEW	48.0	49.1	50.4	51.9	53.2	54.6
BOOK PREVIEW	49.0	50.1	51.4	52.9	54.2	55.6
BOOK PREVIEW	50.0	51.1	52.4	53.9	55.2	56.6
BOOK PREVIEW	51.0	52.1	53.4	54.9	56.2	57.6
BOOK PREVIEW	52.0	53.1	54.4	55.9	57.2	58.6
BOOK PREVIEW	53.0	54.1	55.4	56.9	58.2	59.6
BOOK PREVIEW	54.0	55.1	56.4	57.9	59.2	60.6
BOOK PREVIEW	55.0	56.1	57.4	58.9	60.2	61.6
BOOK PREVIEW	56.0	57.1	58.4	59.9	61.2	62.6
BOOK PREVIEW	57.0	58.1	59.4	60.9	62.2	63.6
BOOK PREVIEW	58.0	59.1	60.4	61.9	63.2	64.6
BOOK PREVIEW	59.0	60.1	61.4	62.9	64.2	65.6
BOOK PREVIEW	60.0	61.1	62.4	63.9	65.2	66.6
BOOK PREVIEW	61.0	62.1	63.4	64.9	66.2	67.6
BOOK PREVIEW	62.0	63.1	64.4	65.9	67.2	68.6
BOOK PREVIEW	63.0	64.1	65.4	66.9	68.2	69.6
BOOK PREVIEW	64.0	65.1	66.4	67.9	69.2	70.6
BOOK PREVIEW	65.0	66.1	67.4	68.9	70.2	71.6
BOOK PREVIEW	66.0	67.1	68.4	69.9	71.2	72.6
BOOK PREVIEW	67.0	68.1	69.4	70.9	72.2	73.6
BOOK PREVIEW	68.0	69.1	70.4	71.9	73.2	74.6
BOOK PREVIEW	69.0	70.1	71.4	72.9	74.2	75.6
BOOK PREVIEW	70.0	71.1	72.4	73.9	75.2	76.6
BOOK PREVIEW	71.0	72.1	73.4	74.9	76.2	77.6
BOOK PREVIEW	72.0	73.1	74.4	75.9	77.2	78.6
BOOK PREVIEW	73.0	74.1	75.4	76.9	78.2	79.6
BOOK PREVIEW	74.0	75.1	76.4	77.9	79.2	80.6
BOOK PREVIEW	75.0	76.1	77.4	78.9	80.2	81.6
BOOK PREVIEW	76.0	77.1	78.4	79.9	81.2	82.6
BOOK PREVIEW	77.0	78.1	79.4	80.9	82.2	83.6
BOOK PREVIEW	78.0	79.1	80.4	81.9	83.2	84.6
BOOK PREVIEW	79.0	80.1	81.4	82.9	84.2	85.6
BOOK PREVIEW	80.0	81.1	82.4	83.9	85.2	86.6
BOOK PREVIEW	81.0	82.1	83.4	84.9	86.2	87.6
BOOK PREVIEW	82.0	83.1	84.4	85.9	87.2	88.6
BOOK PREVIEW	83.0	84.1	85.4	86.9	88.2	89.6
BOOK PREVIEW	84.0	85.1	86.4	87.9	89.2	90.6
BOOK PREVIEW	85.0	86.1	87.4	88.9	90.2	91.6
BOOK PREVIEW	86.0	87.1	88.4	89.9	91.2	92.6
BOOK PREVIEW	87.0	88.1	89.4	90.9	92.2	93.6
BOOK PREVIEW	88.0	89.1	90.4	91.9	93.2	94.6
BOOK PREVIEW	89.0	90.1	91.4	92.9	94.2	95.6
BOOK PREVIEW	90.0	91.1	92.4	93.9	95.2	96.6
BOOK PREVIEW	91.0	92.1	93.4	94.9	96.2	97.6
BOOK PREVIEW	92.0	93.1	94.4	95.9	97.2	98.6
BOOK PREVIEW	93.0	94.1	95.4	96.9	98.2	99.6
BOOK PREVIEW	94.0	95.1	96.4	97.9	99.2	100.6
BOOK PREVIEW	95.0	96.1	97.4	98.9	100.2	101.6
BOOK PREVIEW	96.0	97.1	98.4	99.9	101.2	102.6
BOOK PREVIEW	97.0	98.1	99.4	100.9	102.2	103.6
BOOK PREVIEW	98.0	99.1	100.4	101.9	103.2	104.6
BOOK PREVIEW	99.0	100.1	101.4	102.9	104.2	105.6
BOOK PREVIEW	100.0	101.1	102.4	103.9	105.2	106.6
BOOK PREVIEW	101.0	102.1	103.4	104.9	106.2	107.6
BOOK PREVIEW	102.0	103.1	104.4	105.9	107.2	108.6
BOOK PREVIEW	103.0	104.1	105.4	106.9	108.2	109.6
BOOK PREVIEW	104.0	105.1	106.4	107.9	109.2	110.6
BOOK PREVIEW	105.0	106.1	107.4	108.9	110.2	111.6
BOOK PREVIEW	106.0	107.1	108.4	109.9	111.2	112.6
BOOK PREVIEW	107.0	108.1	109.4	110.9	112.2	113.6
BOOK PREVIEW	108.0	109.1	110.4	111.9	113.2	114.6
BOOK PREVIEW	109.0	110.1	111.4	112.9	114.2	115.6
BOOK PREVIEW	110.0	111.1	112.4	113.9	115.2	116.6
BOOK PREVIEW	111.0	112.1	113.4	114.9	116.2	117.6
BOOK PREVIEW	112.0	113.1	114.4	115.9	117.2	118.6
BOOK PREVIEW	113.0	114.1	115.4	116.9	118.2	119.6
BOOK PREVIEW	114.0	115.1	116.4	117.9	119.2	120.6
BOOK PREVIEW	115.0	116.1	117.4	118.9	120.2	121.6
BOOK PREVIEW	116.0	117.1	118.4	119.9	121.2	122.6
BOOK PREVIEW	117.0	118.1	119.4	120.9	122.2	123.6
BOOK PREVIEW	118.0	119.1	120.4	121.9	123.2	124.6
BOOK PREVIEW	119.0	120.1	121.4	122.9	124.2	125.6
BOOK PREVIEW	120.0	121.1	122.4	123.9	125.2	126.6
BOOK PREVIEW	121.0	122.1	123.4	124.9	126.2	127.6
BOOK PREVIEW	122.0	123.1	124.4	125.9	127.2	128.6
BOOK PREVIEW	123.0	124.1	125.4	126.9	128.2	129.6
BOOK PREVIEW	124.0	125.1	126.4	127.9	129.2	130.6
BOOK PREVIEW	125.0	126.1	127.4	128.9	130.2	131.6
BOOK PREVIEW	126.0	127.1	128.4	129.9	131.2	132.6
BOOK PREVIEW	127.0	128.1	129.4	130.9	132.2	133.6
BOOK PREVIEW	128.0	129.1	130.4	131.9	133.2	134.6
BOOK PREVIEW	129.0	130.1	131.4	132.9	134.2	135.6
BOOK PREVIEW	130.0	131.1	132.4	133.9	135.2	136.6
BOOK PREVIEW	131.0	132.1	133.4	134.9	136.2	137.6
BOOK PREVIEW	132.0	133.1	134.4	135.9	137.2	138.6
BOOK PREVIEW	133.0	134.1	135.4	136.9	138.2	139.6
BOOK PREVIEW	134.0	135.1	136.4	137.9	139.2	140.6
BOOK PREVIEW	135.0	136.1	137.4	138.9	140.2	141.6
BOOK PREVIEW	136.0	137.1	138.4	139.9	141.2	142.6
BOOK PREVIEW	137.0	138.1	139.4	140.9	142.2	143.6
BOOK PREVIEW	138.0	139.1	140.4	141.9	143.2	144.6
BOOK PREVIEW	139.0	140.1	141.4	142.9	144.2	145.6
BOOK PREVIEW	140.0	141.1	142.4	143.9	145.2	146.6
BOOK PREVIEW	141.0	142.1	143.4	144.9	146.2	147.6
BOOK PREVIEW	142.0	143.1	144.4	145.9	147.2	148.6
BOOK PREVIEW	143.0	144.1	145.4	146.9	148.2	149.6
BOOK PREVIEW	144.0	145.1	146.4	147.9	149.2	150.6
BOOK PREVIEW	145.0	146.1	147.4	148.9	150.2	151.6
BOOK PREVIEW	146.0	147.1	148.4	149.9	151.2	152.6
BOOK PREVIEW	147.0	148.1	149.4	150.9	152.2	153.6
BOOK PREVIEW	148.0	149.1	150.4	151.9	153.2	154.6
BOOK PREVIEW	149.0	150.1	151.4	152.9	154.2	155.6
BOOK PREVIEW	150.0	151.1	152.4	153.9	155.2	156.6
BOOK PREVIEW	151.0	152.1	153.4	154.9	156.2	157.6
BOOK PREVIEW	152.0	153.1	154.4	155.9	157.2	158.6
BOOK PREVIEW	153.0	154.1	155.4	156.9	158.2	159.6
BOOK PREVIEW	154.0	155.1	156.4	157.9	159.2	160.6
BOOK PREVIEW	155.0	156.1	157.4	158.9	160.2	161.6
BOOK PREVIEW	156.0	157.1	158.4	159.9	161.2	162.6
BOOK PREVIEW	157.0	158.1	159.4	160.9	162.2	163.6
BOOK PREVIEW	158.0	159.1	160.4	161.9	163.2	164.6
BOOK PREVIEW	159.0	160.1	161.4	162.9	164.2	165.6
BOOK PREVIEW	160.0	161.1	162.4	163.9	165.2	166.6
BOOK PREVIEW	161.0	162.1	163.4	164.9	166.2	167.6
BOOK PREVIEW	162.0	163.1	164.4	165.9	167.2	168.6
BOOK PREVIEW	163.0	164.1	165.4	166.9	168.2	169.6
BOOK PREVIEW	164.0	165.1	166.4	167.9	169.2	170.6
BOOK PREVIEW	165.0	166.1	167.4	168.9	170.2	171.6
BOOK PREVIEW	166.0	167.1	168.4	169.9	171.2	172.6
BOOK PREVIEW	167.0	168.1	169.4	170.9	172.2	173.6
BOOK PREVIEW	168.0	169.1	170.4	171.9	173.2	174.6
BOOK PREVIEW	169.0	170.1	171.4	172.9	174.2	175.6
BOOK PREVIEW	170.0	171.1	172.4	173.9	175.2	176.6
BOOK PREVIEW	171.0	172.1	173.4	174.9	176.2	177.6
BOOK PREVIEW	172.0	173.1	174.4	175.9	177.2	178.6
BOOK PREVIEW	173.0	174.1	175.4	176.9	178.2	179.6
BOOK PREVIEW	174.0	175.1	176.4	177.9	179.2	180.6
BOOK PREVIEW	175.0	176.1	177.4	178.9	180.2	181.6
BOOK PREVIEW	176.0	177.1	178.4	179.9	181.2	182.6
BOOK PREVIEW	177.0					

Table 7.4.2. Standard deviation in finishing bankroll (points) after 250 level stake singles

Stake	BOOK PREVIEW						
	1	2	3	4	5	6	
1 point	0.9	34.9	25.2	20.1	16.5	13.7	5
	1.05	37.0	26.6	21.0	16.6	13.8	7
	1.1	37.9	27.0	21.0	16.7	13.9	7
	1.15	38.4	27.1	21.1	16.8	14.0	6
	1.2	39.0	27.2	21.2	16.9	14.1	3
2 points	0.9	59.7	45.2	37.6	31.8	26.9	1
	1.05	62.3	47.8	39.2	33.4	28.5	8
	1.1	63.0	48.5	40.0	34.1	29.2	4
	1.15	63.7	49.2	40.7	34.8	29.9	9
	1.2	64.4	50.0	41.5	35.6	30.7	6
3 points	0.95	87.9	67.0	55.7	46.5	39.5	3
	1.05	92.0	71.1	59.8	50.6	43.6	8
	1.1	95.1	74.2	62.9	53.7	46.7	8
	1.15	98.2	77.3	66.0	56.8	49.8	2
	1.2	101.3	80.4	69.1	59.9	52.9	5
5 points	0.9	133.5	101.1	83.1	68.1	53.1	3
	1.05	140.6	108.2	90.2	75.2	60.2	6
	1.1	147.7	115.3	97.3	82.3	67.3	7
	1.15	154.8	122.4	104.4	89.4	74.4	7
	1.2	161.9	129.5	111.5	96.5	81.5	4
10 points	0.9	221.9	149.6	108.7	83.0	62.2	8
	1.05	234.3	162.0	121.1	95.4	74.6	2
	1.1	246.7	174.4	133.5	107.8	87.0	2
	1.15	259.1	186.8	145.9	120.2	99.4	1
	1.2	271.5	199.2	158.3	132.6	111.8	6
100 points	0.9	344.3	289.3	243.3	195.4	151.2	.2
	1.05	366.7	311.7	265.7	217.8	173.6	.7
	1.1	389.1	334.1	288.1	240.2	196.0	.2
	1.15	411.5	356.5	310.5	262.6	218.4	.2
	1.2	433.9	378.9	332.9	285.0	240.8	.2

Table 7.4.3. Probability of bankruptcy after 250 level stake singles

Stake	1	2	3	5	10
1	0.95	0.95	0.95	0.95	0.95
2	0.95	0.95	0.95	0.95	0.95
3	0.95	0.95	0.95	0.95	0.95
5	0.95	0.95	0.95	0.95	0.95
10	0.95	0.95	0.95	0.95	0.95
15	0.95	0.95	0.95	0.95	0.95
20	0.95	0.95	0.95	0.95	0.95
25	0.95	0.95	0.95	0.95	0.95
30	0.95	0.95	0.95	0.95	0.95
35	0.95	0.95	0.95	0.95	0.95
40	0.95	0.95	0.95	0.95	0.95
45	0.95	0.95	0.95	0.95	0.95
50	0.95	0.95	0.95	0.95	0.95
55	0.95	0.95	0.95	0.95	0.95
60	0.95	0.95	0.95	0.95	0.95
65	0.95	0.95	0.95	0.95	0.95
70	0.95	0.95	0.95	0.95	0.95
75	0.95	0.95	0.95	0.95	0.95
80	0.95	0.95	0.95	0.95	0.95
85	0.95	0.95	0.95	0.95	0.95
90	0.95	0.95	0.95	0.95	0.95
95	0.95	0.95	0.95	0.95	0.95
100	0.95	0.95	0.95	0.95	0.95
105	0.95	0.95	0.95	0.95	0.95
110	0.95	0.95	0.95	0.95	0.95
115	0.95	0.95	0.95	0.95	0.95
120	0.95	0.95	0.95	0.95	0.95
125	0.95	0.95	0.95	0.95	0.95
130	0.95	0.95	0.95	0.95	0.95
135	0.95	0.95	0.95	0.95	0.95
140	0.95	0.95	0.95	0.95	0.95
145	0.95	0.95	0.95	0.95	0.95
150	0.95	0.95	0.95	0.95	0.95
155	0.95	0.95	0.95	0.95	0.95
160	0.95	0.95	0.95	0.95	0.95
165	0.95	0.95	0.95	0.95	0.95
170	0.95	0.95	0.95	0.95	0.95
175	0.95	0.95	0.95	0.95	0.95
180	0.95	0.95	0.95	0.95	0.95
185	0.95	0.95	0.95	0.95	0.95
190	0.95	0.95	0.95	0.95	0.95
195	0.95	0.95	0.95	0.95	0.95
200	0.95	0.95	0.95	0.95	0.95
205	0.95	0.95	0.95	0.95	0.95
210	0.95	0.95	0.95	0.95	0.95
215	0.95	0.95	0.95	0.95	0.95
220	0.95	0.95	0.95	0.95	0.95
225	0.95	0.95	0.95	0.95	0.95
230	0.95	0.95	0.95	0.95	0.95
235	0.95	0.95	0.95	0.95	0.95
240	0.95	0.95	0.95	0.95	0.95
245	0.95	0.95	0.95	0.95	0.95
250	0.95	0.95	0.95	0.95	0.95

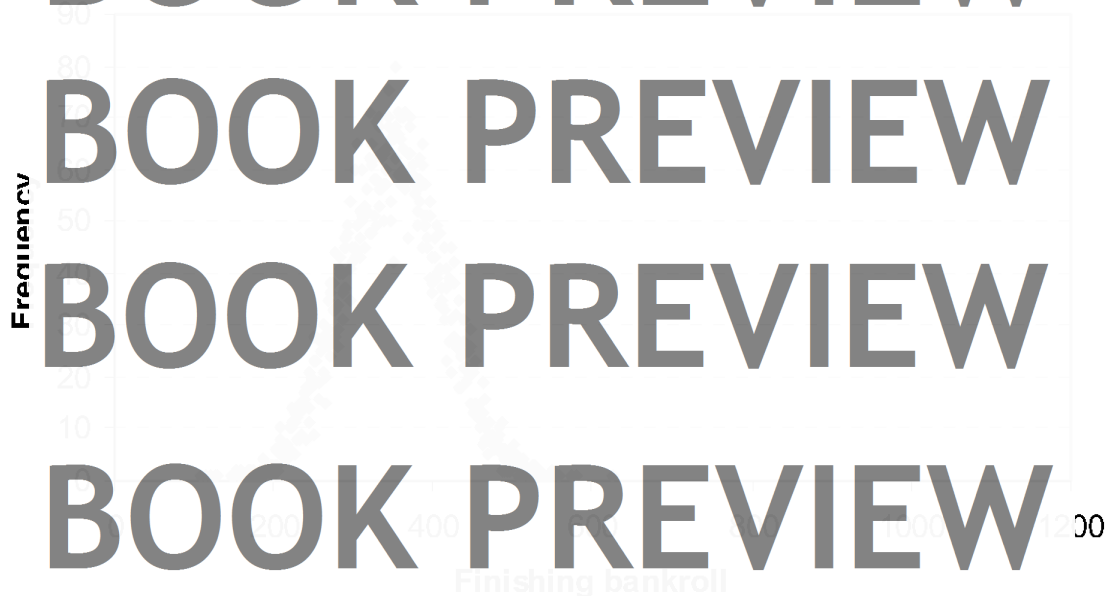
Table 7.4.4. Probability of not making a profit after 250 level stake singles

Stake	1.0	1.1	1.2	1.3	1.4	1.5
1	100.0%	99.9%	99.7%	99.4%	98.9%	98.2%
2	100.0%	99.8%	99.4%	98.7%	97.6%	96.1%
3	100.0%	99.5%	98.8%	97.4%	95.1%	91.8%
5	100.0%	98.9%	97.4%	94.8%	90.8%	84.5%
10	100.0%	97.8%	95.2%	90.8%	84.5%	74.1%
15	100.0%	96.5%	92.4%	86.1%	77.3%	63.1%
20	100.0%	95.2%	89.5%	81.2%	70.1%	53.2%
25	100.0%	93.9%	86.8%	76.1%	62.8%	43.1%
30	100.0%	92.6%	84.1%	71.8%	57.1%	34.8%
40	100.0%	89.5%	79.4%	65.1%	48.1%	24.1%
50	100.0%	86.5%	74.8%	58.1%	40.1%	16.1%
60	100.0%	83.8%	70.4%	52.1%	34.1%	11.1%
70	100.0%	81.2%	66.1%	46.1%	28.1%	7.1%
80	100.0%	78.7%	62.1%	41.1%	24.1%	4.1%
90	100.0%	76.1%	58.1%	37.1%	21.1%	2.1%
100	100.0%	73.1%	54.1%	33.1%	18.1%	1.1%

Conclusion 1

There is a lot of noise, or variability, in the size of the finishing bankroll. This (Table 7.4.1) shows a scenario is shown in Table 7.4.1 but this is, of course, just one of a whole range of statistically possible finishing bankrolls. The question is, how much variability is there in the finishing bankroll? The answer is, a lot. In the simulation, the finishing bankroll is just one of a whole range of possible outcomes. The average finishing bankroll is 350, with an average bookmaker's expectancy of 0.5, and an average punter's edge of 1.2. The finishing bankroll is closely described by a binomial, or normal, distribution. The average finishing bankroll for this scenario is 350 and the standard deviation is 62.

Figure 7.4.1: A histogram of finishing bankrolls from 10,000 model runs, for 5-point stakes, average bookmaker's expectancy 0.5, and punter's edge 1.2, for a 5-point level.



⁴⁰ For the normal distribution, the distribution is sometimes described as bell-shaped. The reader may recall the discussion on the binomial distribution in the last chapter, and in particular the shape of its curve in Figure 6.2.

Explanation

Variability in the finishing bankroll is naturally greater for higher odds because the variability, purely because larger profits are being made. Similarly, the standard deviation will be greater for the higher odds, and the variability in the finishing bankroll will be greater for the higher odds.

Conclusion

For a bettor who is not a professional, the average, result in a failure to make a profit. At best, a sequence of bets with a 50:50 chance of finishing ahead, where the punter's estimation of the margin is 0.6, will result in a failure to make a profit.

Explanation

This and the other bets may have a 50% chance of profiting is simply the influence of chance.

Conclusion

A punter who bets larger stakes will lose proportionally more of his bankroll than a punter who bets smaller stakes. This is illustrated by Figure 7.3, which uses a logarithmic scale to emphasise the effect of losing systems on the finishing bankroll. For example, a punter who bets 10-point stakes, a bookmaker's expectancy of 0.6 and an edge of 0.9 is only 6 points, since so many will have experienced bankruptcy.

Explanation

The more money staked on a losing system, the more money should be lost. Betting at higher odds on a losing system may be preferable to betting at lower odds, but only if the punter is not a professional. Betting at higher odds on a losing system may be preferable to betting at lower odds, but only if the punter is not a professional.

Conclusion

Consequently, a punter who bets larger stakes will lose proportionally more of his bankroll than a punter who bets smaller stakes. This is illustrated by Figure 7.3, which uses a logarithmic scale to emphasise the effect of losing systems on the finishing bankroll.

stakes greater than 3 points, proportionally more for shorter prices, since bankruptcy rates decrease dramatically as the odds shorten (Table 7.4.3).

Figur
bank

BOOK PREVIEW

shing

Finishing bankroll (points)

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

Expl
The
won.
beca
a dis
of 5
large
8/11
mea

BOOK PREVIEW

d be
able
es of
size
as
ce of
turn,

BOOK PREVIEW

BOOK PREVIEW

Con
The
punt
of 0.
250

BOOK PREVIEW

of a
edge
ce of
le.

Expl
This
ultim

BOOK PREVIEW

will

Conclusion 7

The probability of bankruptcy is dependent on the stake size. The larger the stake, the greater the probability of bankruptcy. This is because the larger the stake, the more the bookmaker's edge is exposed. The bookmaker's edge is the difference between the bookmaker's odds and the true probability of an event occurring. The bookmaker's edge is usually small, but it can be significant if the bookmaker is not careful. The bookmaker's edge is the difference between the bookmaker's odds and the true probability of an event occurring. The bookmaker's edge is usually small, but it can be significant if the bookmaker is not careful.

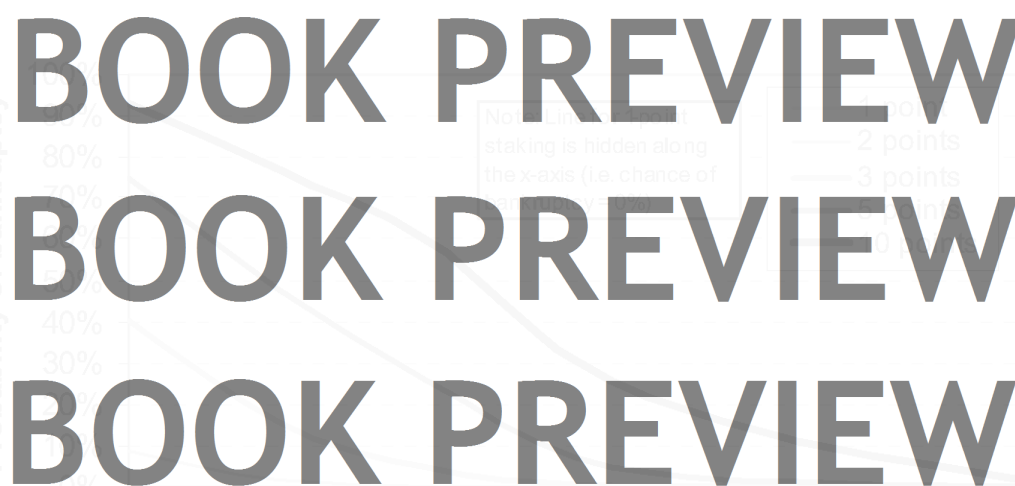
Expl

Clear staking edge. The probability of bankruptcy is dependent on the stake size. The larger the stake, the greater the probability of bankruptcy. This is because the larger the stake, the more the bookmaker's edge is exposed. The bookmaker's edge is the difference between the bookmaker's odds and the true probability of an event occurring. The bookmaker's edge is usually small, but it can be significant if the bookmaker is not careful.

Figur

bankruptcy, with average bookmaker's expectancy 0.5, for level staking

Probability of bankruptcy



BOOK PREVIEW

Conclusion 8

The probability of bankruptcy also increases with lengthening odds, as illustrated in Figure 7.5. The probability of bankruptcy is dependent on the stake size. The larger the stake, the greater the probability of bankruptcy. This is because the larger the stake, the more the bookmaker's edge is exposed. The bookmaker's edge is the difference between the bookmaker's odds and the true probability of an event occurring. The bookmaker's edge is usually small, but it can be significant if the bookmaker is not careful.

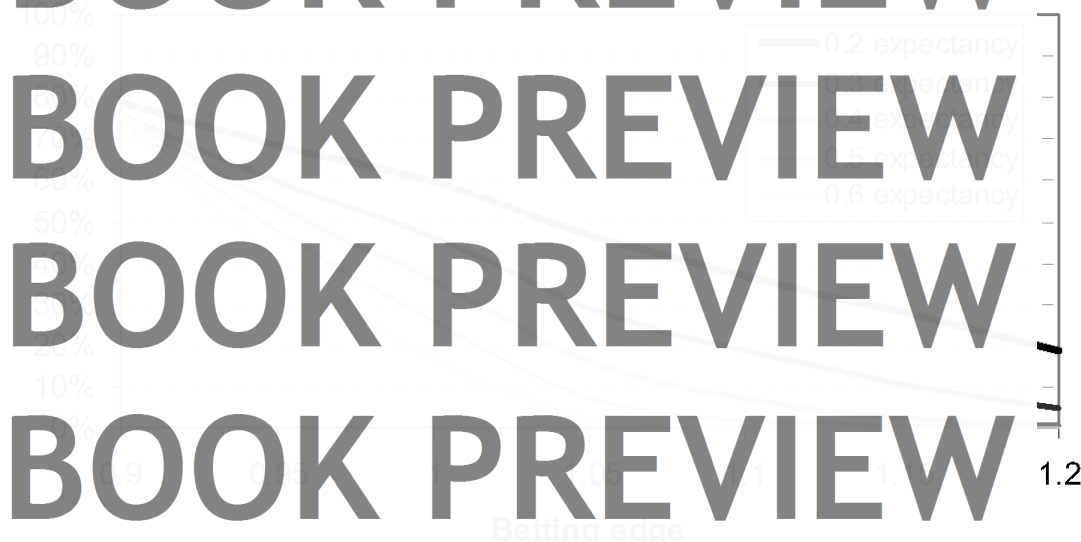
BOOK PREVIEW

Explanation

Since losing runs are more probable for higher odds betting, the risks will be greater.

Figure 7.5. The influence of odds and betting edge on the probability of bankruptcy, with stakes of 5 points, for level staking.

Probability of bankruptcy



Conclusion: The probability of not making a profit is highly dependent on the available punter's edge. Generally speaking, where the punter has an edge, the risk of bankruptcy is lower. However, where the punter has no edge, the risk of bankruptcy is greater.

Explanation: This is unlikely for a punter to profit from a losing system. Since bankruptcy is more probable for higher stakes, this increases the likelihood that a profit will not be made, even for winning systems.

Conclusion: For winning systems, the probability of not making a profit increases with longer betting odds. Conversely, it decreases where the punter fails to find a profitable bet.

Explanation

This is a reiteration of Conclusions 4 and 5. Profitable systems show small lead, when the lower variability in losses for losing systems makes a profit propositionally less likely to come to them for a short betting period.

Figure
return

a profit, for the 5-point level staking plan



Man
by p
anal
of th
over
Foot
infla
none
cons
pote
bank
ever
250
dout
16%
take

Man by p anal of th over Foot infla none cons pote bank ever 250 dout 16% take

made and many yield table y be can fully the d of point ce of nost oll to as to his

attitudes towards gambling. Nevertheless, the informed punter is always more likely to make the correct decision appropriate to his betting preferences.

Furthermore, punters who prefer betting at longer odds, either on horses or for events where the size of the field limits the availability of bets, might prefer to bet on longer odds. In tennis, for example, the odds for a particular player to win a match might be anything from 3/1 to 10/1 or even higher. For such a bet, the risk is high, but the potential reward is also high. If the odds are 10/1, a 2% risk suddenly rises to 27% or more, simply because the odds are so high. By reducing the stake, the risk is reduced, but the potential reward is also reduced. For example, if the odds are 10/1 and the stake is 100, the potential profit is 900. If the stake is reduced to 50, the potential profit is 450. This is a trade-off between risk and reward. The punter must decide whether the potential reward is worth the risk. In general, the punter should be encouraged to concentrate on bets where the odds are not too high, and where the potential reward is not too small. This is a more conservative approach, but it is also a more profitable one in the long run.

It should be clear to the reader that with level staking there is no easy way to make large profits by gambling more of the bankroll. The trade-off for greater profits is a higher risk. The punter must decide whether the potential reward is worth the risk. In general, the punter should be encouraged to concentrate on bets where the odds are not too high, and where the potential reward is not too small. This is a more conservative approach, but it is also a more profitable one in the long run. The punter should also be encouraged to bet on events where the odds are not too high, and where the potential reward is not too small. This is a more conservative approach, but it is also a more profitable one in the long run. The punter should also be encouraged to bet on events where the odds are not too high, and where the potential reward is not too small. This is a more conservative approach, but it is also a more profitable one in the long run.

Percentage Staking

There are two main methods of staking. The first is level staking, where the size of the stake is fixed. The second is percentage staking, where the size of the stake is a fixed proportion of the initial bankroll. For percentage staking, the stake size will increase with the size of the bankroll, and decrease as the bankroll decreases. This is a more conservative approach, but it is also a more profitable one in the long run. The punter should be encouraged to concentrate on bets where the odds are not too high, and where the potential reward is not too small. This is a more conservative approach, but it is also a more profitable one in the long run.

The advantage, in theory, of percentage bank staking is that it is not possible to lose your betting bank. In practice, a losing system will see the bank as to likely this limit

BOOK PREVIEW

BOOK PREVIEW

A second advantage is that profits are gradually increased above those level when would Mille timir mak you will v cons strat the s to ea

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

Table 7.5.1 to Table 7.5.4 summarises the outputs of the Monte Carlo simulations for percentage bank staking: average finishing bank (7.5.1), the bank Com bank initia purp shel pres mini – at only will t

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

⁴¹ <http://www.professionalgambler.com/>

Table 7.5.1. Average finishing bankroll (points) after 250 percentage bank singles

St	BOOK PREVIEW	5
		8
		1
		.0
		.3
		.4
		.2
		.6
		4
		6
		9
		.2
		.7
		.7
		.6
		9
		2
		7
		.1
		.2
		.4
		.2
		2
		7
		2
		.4
		.1
		.0
		.2
		7
		4
		1
		.7
		1.8
		3.4
		6.3

Table 7.5.2. Standard deviation in finishing bankroll (points) after 250 percentage bank singles

St	BOOK PREVIEW	5
	BOOK PREVIEW	5
	BOOK PREVIEW	9
	BOOK PREVIEW	4
	BOOK PREVIEW	0
	BOOK PREVIEW	7
	BOOK PREVIEW	5
	BOOK PREVIEW	5
	BOOK PREVIEW	5
	BOOK PREVIEW	2
	BOOK PREVIEW	0
	BOOK PREVIEW	4
	BOOK PREVIEW	2
	BOOK PREVIEW	0
	BOOK PREVIEW	1
	BOOK PREVIEW	7
	BOOK PREVIEW	6
	BOOK PREVIEW	4
	BOOK PREVIEW	4
	BOOK PREVIEW	6
	BOOK PREVIEW	3
	BOOK PREVIEW	7
	BOOK PREVIEW	3
	BOOK PREVIEW	8
	BOOK PREVIEW	9
	BOOK PREVIEW	6
	BOOK PREVIEW	0
	BOOK PREVIEW	1
	BOOK PREVIEW	4
	BOOK PREVIEW	3
	BOOK PREVIEW	9
	BOOK PREVIEW	6
	BOOK PREVIEW	7
	BOOK PREVIEW	3
	BOOK PREVIEW	7
	BOOK PREVIEW	3
	BOOK PREVIEW	7
	BOOK PREVIEW	8
	BOOK PREVIEW	9

Table 7.5.3. Probability of bankruptcy after 250 percentage bank singles

[illegible]

Table 7.5.4. Probability of not making a profit after 250 percentage bank singles

State	Age	2012	2013	2014	2015	2016
Alabama	18-24	82.3%	87.3%	81.2%	84.3%	87.7%
	25-34	71.6%	74.2%	77.5%	80.0%	84.1%
Alaska	18-24	31.1%	35.2%	31.1%	35.5%	39.1%
	25-34	1.1%	31.8%	21.4%	13.7%	7.5%
Arizona	18-24	20.9%	10.2%	4.6%	1.5%	0.1%
	25-34	88.4%	90.2%	93.0%	93.2%	97.7%
Arkansas	18-24	77.2%	78.0%	80.4%	82.5%	85.1%
	25-34	66.5%	65.1%	64.1%	65.2%	63.7%
California	18-24	25.7%	12.8%	5.5%	1.7%	0.2%
	25-34	44.5%	32.8%	34.8%	39.0%	38.3%
Colorado	18-24	82.3%	81.4%	83.0%	84.5%	87.1%
	25-34	71.5%	66.4%	63.2%	59.8%	57.1%
Connecticut	18-24	31.7%	15.3%	6.9%	2.2%	0.3%
	25-34	1.1%	20.1%	18.1%	10.2%	5.1%
Delaware	18-24	20.8%	7.0%	1.7%	0.2%	0.0%
	25-34	81.6%	87.2%	89.3%	91.6%	91.9%
Florida	18-24	81.3%	72.1%	10.6%	39.2%	63.3%
	25-34	70.4%	57.7%	47.2%	37.5%	27.1%
Georgia	18-24	57.8%	38.8%	24.5%	13.5%	5.1%
	25-34	83.9%	99.2%	99.4%	99.5%	99.6%
Hawaii	18-24	53.3%	10.0%	2.6%	0.1%	0.0%
	25-34	99.2%	98.9%	98.9%	98.9%	99.1%
Idaho	18-24	97.8%	96.3%	95.0%	94.3%	95.1%
	25-34	99.0%	98.1%	96.1%	95.0%	94.0%
Illinois	18-24	82.1%	62.3%	12.4%	7.1%	1.0%
	25-34	71.8%	44.0%	21.5%	7.1%	1.2%
Indiana	18-24	59.7%	26.7%	7.5%	4.2%	0.7%
	25-34	99.2%	99.2%	99.2%	99.2%	99.2%

In general, profit potential and the risk of bankruptcy for percentage bank staking are once more dependent on edge, stake size and betting odds, altho

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

Figur
stake
perce

BOOK PREVIEW

5%-
for



⁴² The shape of this distribution for a 5% stakes even money betting system with no significant edge clearly deviates significantly from the perfect bell-shaped curve of the normal distribution.

Figure 7.8. The influence of betting edge and stake size on average finishing bankroll, with average bookmaker's expectancy 0.5, for percentage bank staking

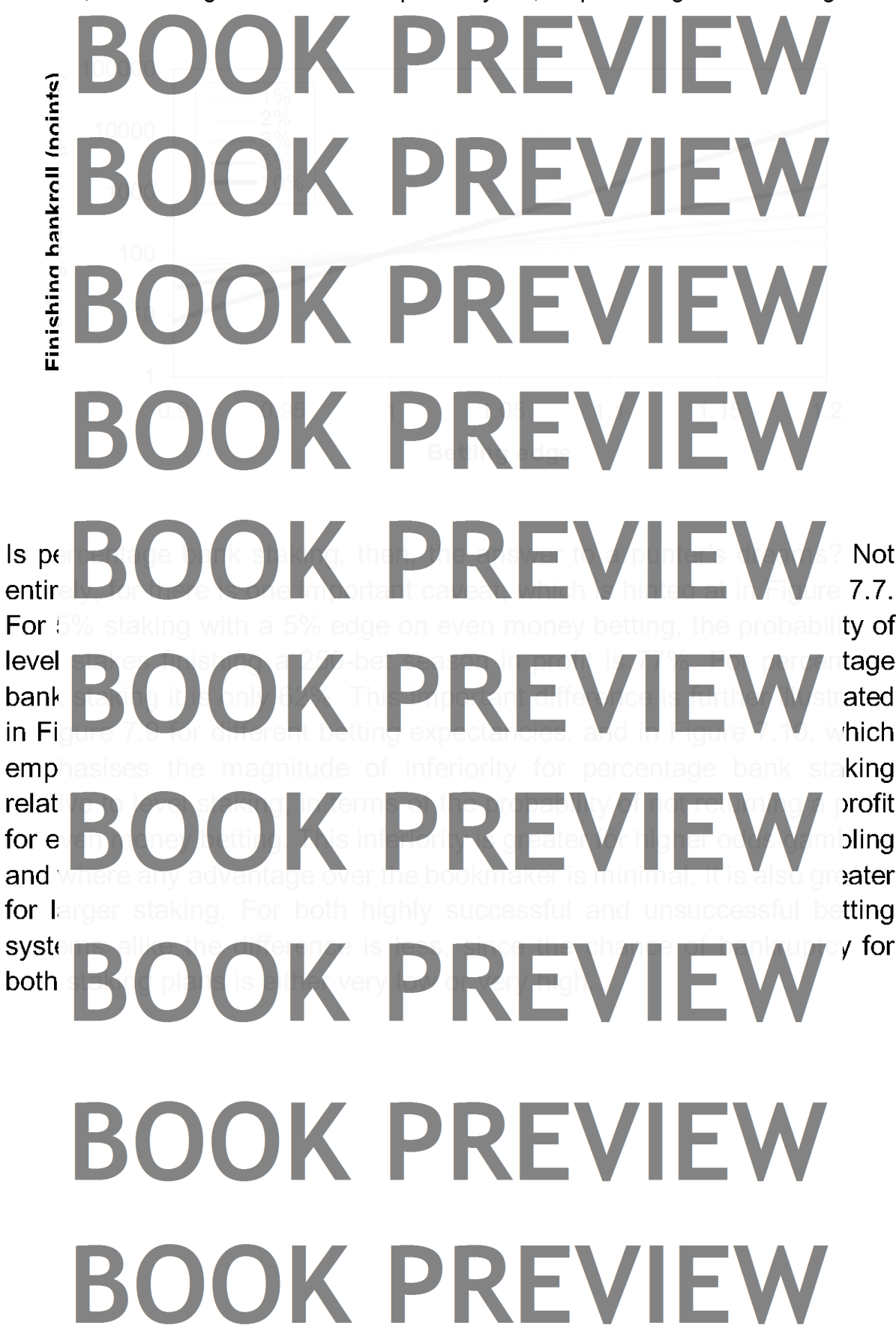


Figure 7.9. The influence of odds and betting edge on the probability of failing to return a profit, for the 5% percentage bank staking plan

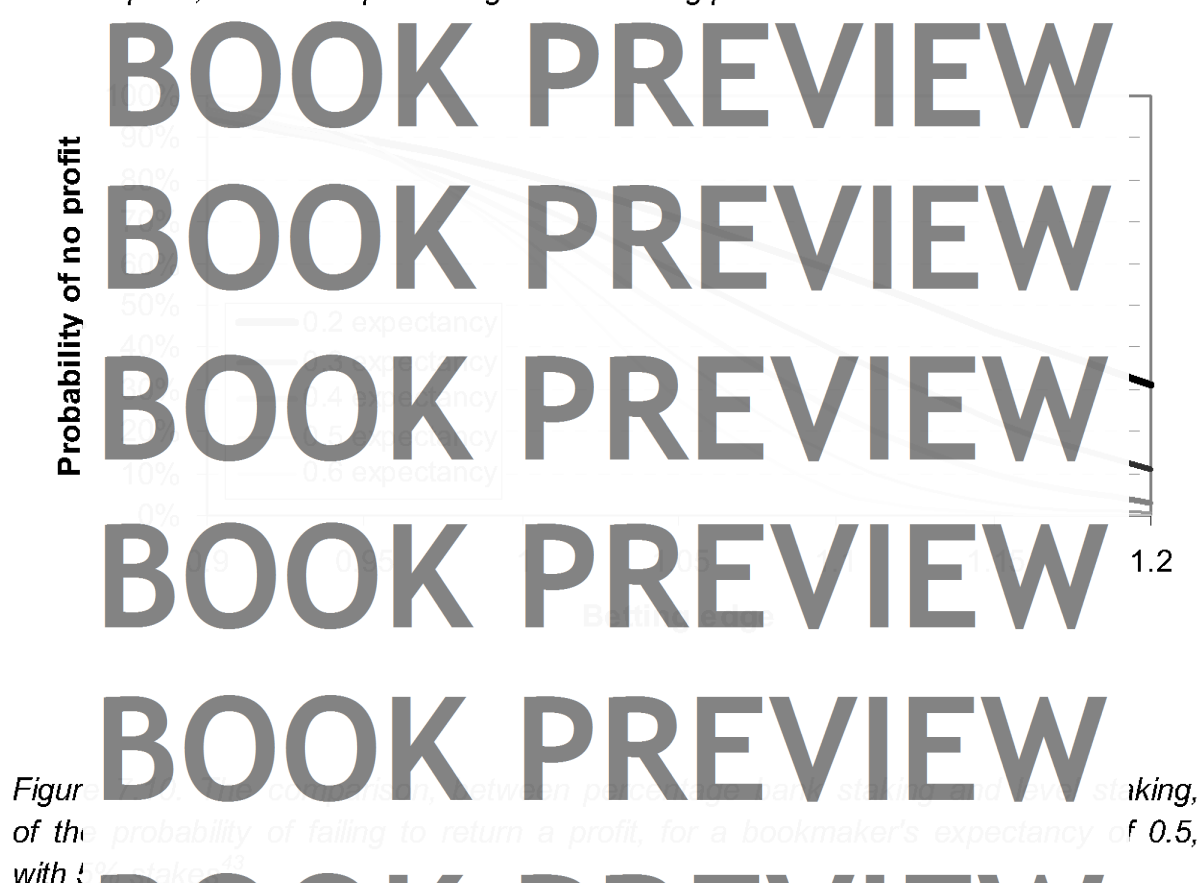
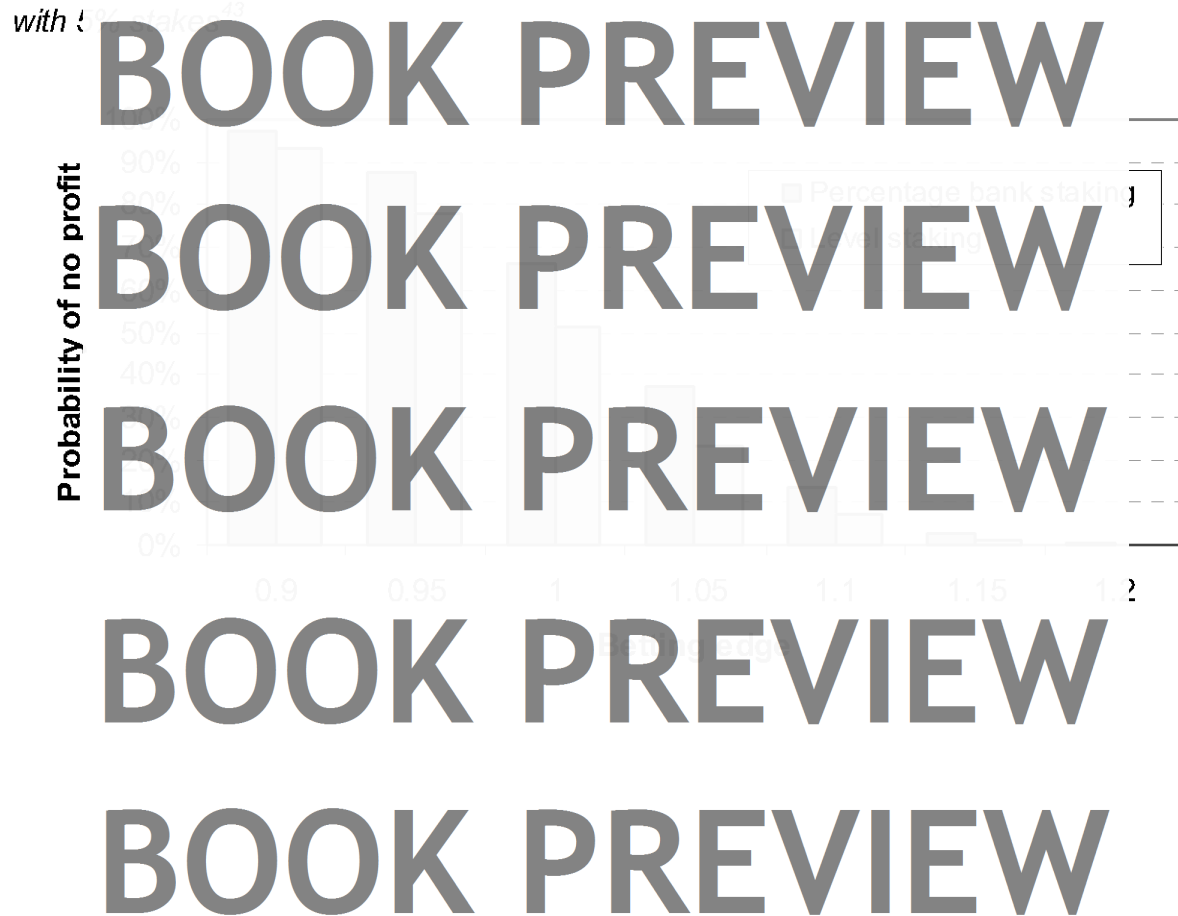


Figure 7.10. The influence of odds and betting edge on the probability of failing to return a profit, for a bookmaker's expectancy of 0.5, with level staking



⁴³ For level staking this is 5% of the initial bankroll, i.e. 5 points.

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

Fixed Odds

Where the level staking places the same-size wager on every bet, fixed odds betting seeks to win the same amount for every gamble. Where the odds are 10 to 1, a £10 stake will return £110 should the horse win. Where the odds are 50/1, a £10 stake would return £510. In reality, however, the odds are limited, although so too are the potential gains. Although the profit expectancy for the 50/1 shot is now 50 times smaller than for a

BOOK PREVIEW

⁴⁴ Profitability is the amount one expects to multiplied by the true probability of winning, less the amount that can be lost multiplied by the true probability of losing (see Chapter

Table 7.6.1. Average finishing bankroll (points) after 250 fixed profit singles

A sta	BOOK PREVIEW					3
1	BOOK PREVIEW					2
	BOOK PREVIEW					8
	BOOK PREVIEW					.6
	BOOK PREVIEW					.8
2	BOOK PREVIEW					.5
	BOOK PREVIEW					.2
	BOOK PREVIEW					.6
	BOOK PREVIEW					5
3	BOOK PREVIEW					6
	BOOK PREVIEW					.2
	BOOK PREVIEW					.7
	BOOK PREVIEW					.9
4	BOOK PREVIEW					.4
	BOOK PREVIEW					.1
	BOOK PREVIEW					7
	BOOK PREVIEW					8
5	BOOK PREVIEW					.7
	BOOK PREVIEW					.5
	BOOK PREVIEW					.4
	BOOK PREVIEW					.7
6	BOOK PREVIEW					3
	BOOK PREVIEW					.1
	BOOK PREVIEW					.9
	BOOK PREVIEW					.3
7	BOOK PREVIEW					.1
	BOOK PREVIEW					.8
	BOOK PREVIEW					3
	BOOK PREVIEW					1
8	BOOK PREVIEW					4
	BOOK PREVIEW					.3
	BOOK PREVIEW					.8
	BOOK PREVIEW					.7
9	BOOK PREVIEW					.5
	BOOK PREVIEW					
	BOOK PREVIEW					
	BOOK PREVIEW					

Table 7.6.2. Standard deviation in finishing bankroll (points) after 250 fixed profit singles

Average stake size	BOOK PREVIEW					Standard deviation
	0.2	0.3	0.4	0.5	0.6	
1 point	29.2	31.6	34.0	36.5	39.0	3
	18.5	19.8	21.1	22.4	23.7	1
	7.1	30.4	23.2	18.3	14.9	7
	1.05	30.7	23.3	18.5	14.7	5
	1.2	31.2	23.8	18.8	14.4	0
2 points	1.5	31.7	24.3	19.1	14.2	5
	1.2	32.2	23.9	18.4	13.9	0
	0.9	31.9	24.6	19.6	15.5	3
	1.5	36.5	33.8	31.1	28.4	2
	1.1	42.1	36.6	31.9	23.5	5
3 points	1.05	62.0	46.6	37.0	29.5	0
	1.5	42.9	37.3	31.8	23.9	1
	1.5	43.9	38.4	32.9	25.4	9
	1.5	43.5	38.8	33.6	27.3	1
	0.9	59.8	48.8	41.7	35.6	5
4 points	1.1	97.3	72.4	55.4	43.2	3
	1.2	99.4	74.3	57.3	45.1	4
	1.2	99.5	74.8	57.8	45.6	1
	1.0	100.0	75.3	58.3	46.1	1
	0.95	101.4	84.3	70.1	57.7	7
5 points	1.1	125.2	105.9	88.3	73.1	0
	1.5	151.5	129.1	109.6	89.4	1
	1.4	172.2	149.6	129.4	109.5	3
	1.15	178.7	129.1	95.3	71.7	3
	1.2	180.8	126.5	92.8	69.8	2
10 points	1.5	244.6	209.3	174.0	138.7	9
	1.5	244.6	209.3	174.0	138.7	7
	1.4	263.7	221.4	188.5	158.6	0
	1.05	263.7	221.4	188.5	158.6	1
	1.1	312.9	263.4	219.4	169.1	2
100 points	1.5	300.8	252.8	206.6	158.6	7
	1.2	319.1	274.5	224.7	167.7	7

Table 7.6.3. Probability of bankruptcy after 250 fixed profit singles

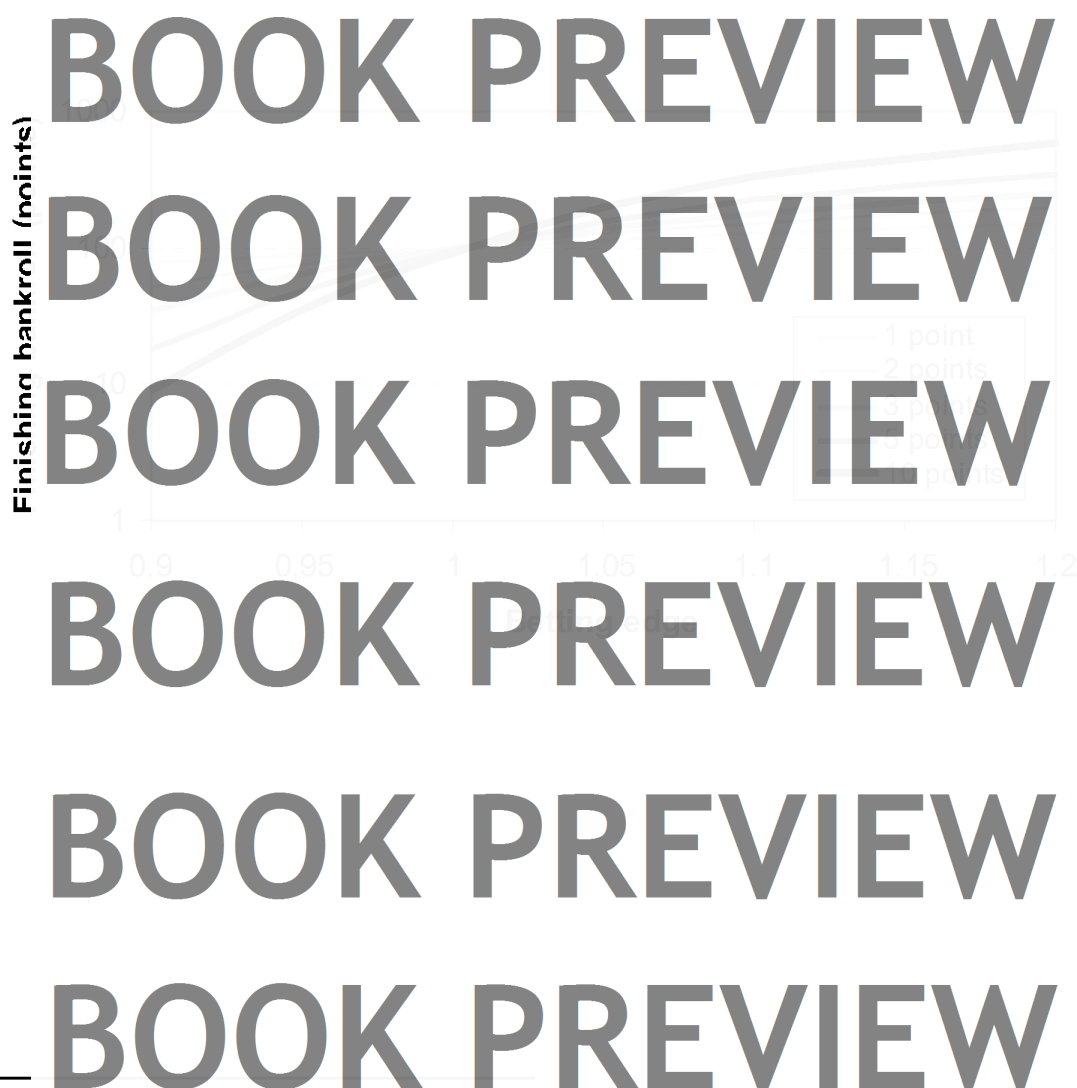
A's state	BOOK PREVIEW					
	0.9	0.8%	0.1%	0.0%	0.0%	0.0%
1 point	0.95	0.2%	0.0%	0.0%	0.0%	0.0%
	1.05	0.0%	0.0%	0.0%	0.0%	0.0%
	1.1	0.0%	0.0%	0.0%	0.0%	0.0%
	1.15	0.0%	0.0%	0.0%	0.0%	0.0%
	1.2	0.0%	0.0%	0.0%	0.0%	0.0%
2	0.9	31.0%	19.9%	11.7%	5.6%	2.6%
	0.95	1.4%	7.0%	3.1%	1.6%	0.8%
	1.05	0.6%	3.0%	1.1%	0.6%	0.3%
	1.1	0.4%	2.0%	0.7%	0.4%	0.2%
	1.15	1.9%	0.3%	0.0%	0.0%	0.0%
3	0.9	51.3%	49.0%	41.6%	33.0%	28.1%
	0.95	40.5%	26.7%	19.3%	13.0%	6.5%
	1.05	17.7%	10.0%	5.4%	3.4%	1.0%
	1.1	9.3%	2.0%	0.3%	0.0%	0.0%
	1.15	5.4%	0.7%	0.0%	0.0%	0.0%
5 points	0.9	79.3%	74.0%	61.1%	47.2%	37.1%
	0.95	64.5%	50.3%	39.3%	28.7%	19.9%
	1.05	54.9%	39.4%	28.7%	21.2%	9.9%
	1.1	36.4%	21.8%	11.7%	5.6%	2.6%
	1.15	21.2%	11.7%	5.6%	2.6%	1.0%
10	0.9	92.1%	91.7%	91.4%	92.6%	94.1%
	0.95	88.0%	87.2%	86.2%	87.4%	88.4%
	1.05	84.4%	83.4%	81.7%	83.4%	84.4%
	1.1	76.2%	49.5%	27.4%	14.4%	7.4%
	1.15	53.9%	38.9%	23.0%	10.4%	3.0%
	1.2	45.8%	25.6%	12.6%	4.7%	0.5%
	1.25	33.0%	14.4%	4.4%	1.7%	0.0%

Table 7.6.4. Probability of not making a profit after 250 fixed profit singles

A's state	BOOK PREVIEW					%
	0.9	1.05	1.1	1.15	1.2	
1 point	82.1%	87.1%	90.7%	94.5%	97.0%	100%
	67.9%	73.8%	78.3%	82.1%	85.0%	87.9%
	53.1%	58.8%	63.3%	67.0%	70.0%	72.9%
	38.1%	43.0%	47.3%	50.7%	53.6%	56.0%
	23.0%	28.8%	33.0%	36.7%	39.6%	41.9%
2 points	21.0%	25.3%	28.8%	31.6%	33.9%	35.7%
	15.3%	18.6%	21.1%	23.0%	24.5%	25.9%
	8.6%	10.3%	11.5%	12.5%	13.3%	14.0%
	4.3%	5.0%	5.5%	5.9%	6.2%	6.5%
	1.5%	1.8%	2.1%	2.3%	2.5%	2.7%
3 points	1.1%	1.3%	1.5%	1.7%	1.9%	2.1%
	0.9%	1.1%	1.3%	1.5%	1.7%	1.9%
	0.7%	0.9%	1.1%	1.3%	1.5%	1.7%
	0.5%	0.7%	0.9%	1.1%	1.3%	1.5%
	0.3%	0.5%	0.7%	0.9%	1.1%	1.3%
5 points	0.9%	1.1%	1.3%	1.5%	1.7%	1.9%
	0.7%	0.9%	1.1%	1.3%	1.5%	1.7%
	0.5%	0.7%	0.9%	1.1%	1.3%	1.5%
	0.3%	0.5%	0.7%	0.9%	1.1%	1.3%
	0.1%	0.3%	0.5%	0.7%	0.9%	1.1%
10 points	0.9%	1.1%	1.3%	1.5%	1.7%	1.9%
	0.7%	0.9%	1.1%	1.3%	1.5%	1.7%
	0.5%	0.7%	0.9%	1.1%	1.3%	1.5%
	0.3%	0.5%	0.7%	0.9%	1.1%	1.3%
	0.1%	0.3%	0.5%	0.7%	0.9%	1.1%

The relationships between stake size, odds and betting edge on the one hand and finishing bankroll on the other for fixed profits staking is broadly very similar to that for the equivalent level stakes scenario (see Figure 7.14). This is surprising, for in contrast to the level stakes scenario, the relationships between stake size, odds and betting edge on the one hand and finishing bankroll on the other for fixed profits staking are, however, some very subtle, but important differences, which arise because of the way in which the average stake size varies according to the odds of each bet. This is illustrated more thoroughly in Figure 7.15, which shows the relationship between the average stake size and the average finishing bankroll, with average bookmaker's expectancy 0.5, for fixed profits staking.

Figure 7.15: The relationship between the average stake size and the average finishing bankroll, with average bookmaker's expectancy 0.5, for fixed profits staking.



⁴⁵ For fixed profits staking, the points size refers to the size of the average stake, which varies according to the odds of each bet.

Figure 7.12. The influence of stake size and betting edge on the probability of bankruptcy, with average bookmaker's expectancy 0.5, for fixed profits staking.

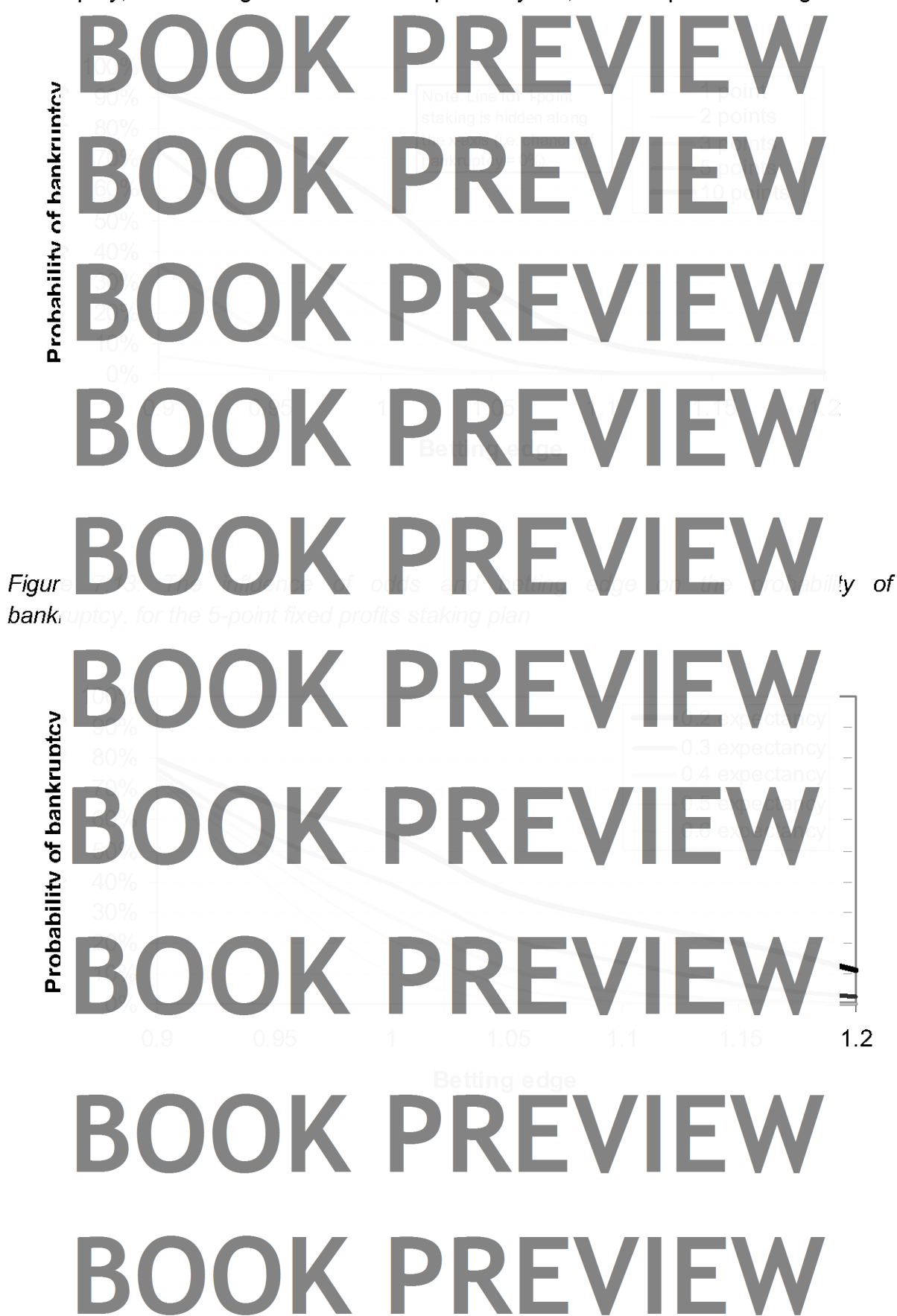
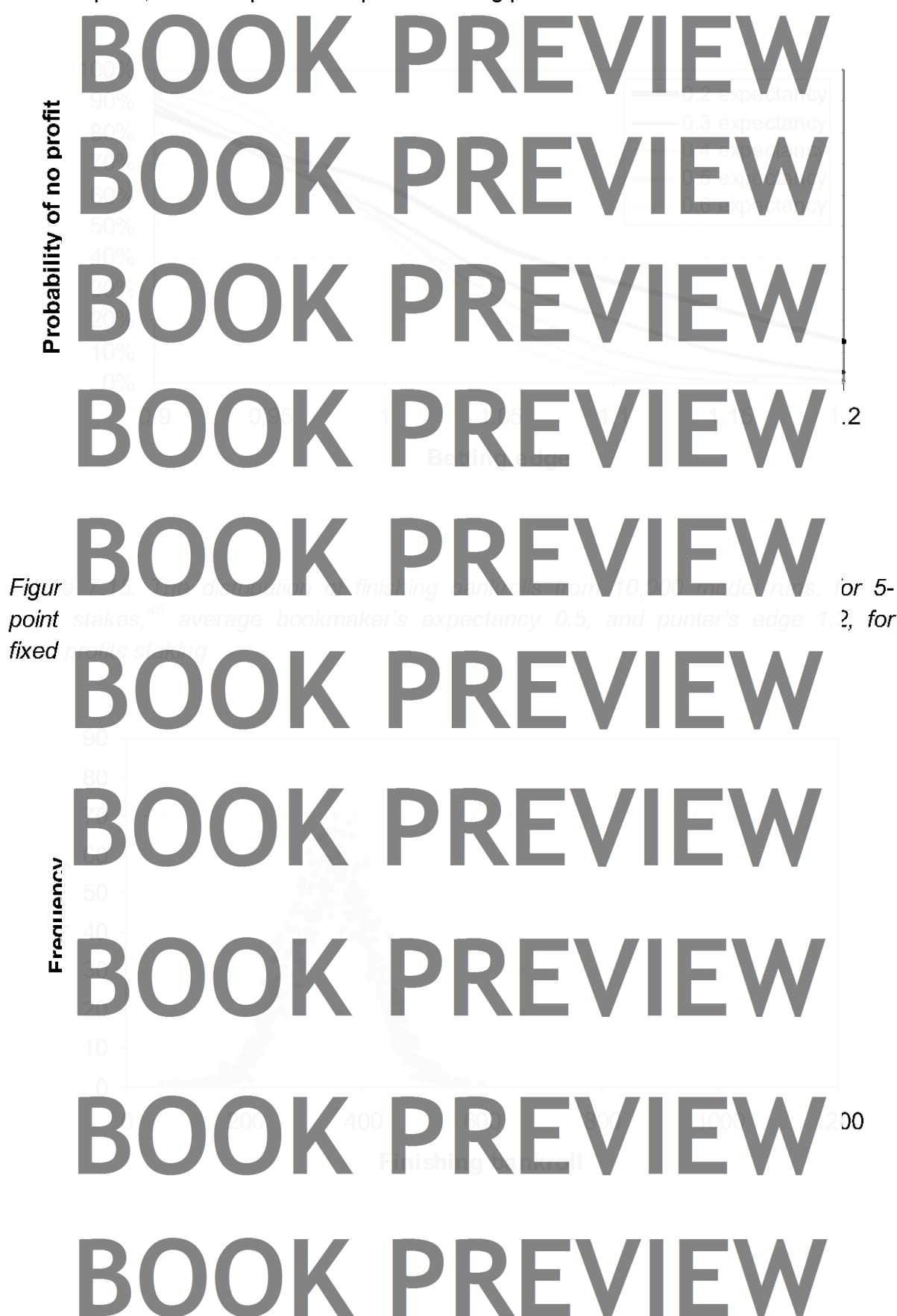
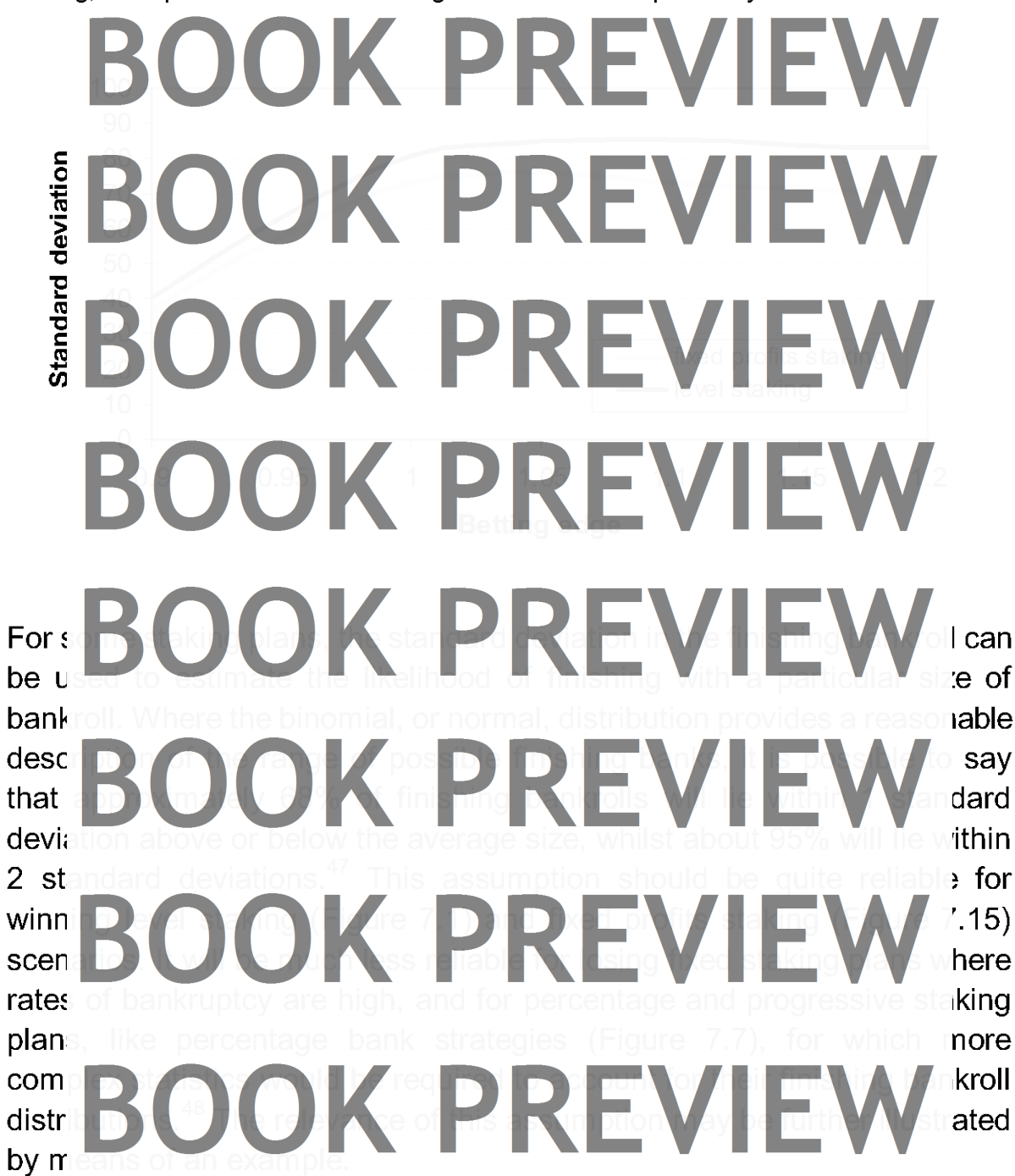


Figure 7.14. The influence of odds and betting edge on the probability of failing to return a profit, for the 5-point fixed profits staking plan



⁴⁶ For fixed profits staking this is an average stake size of 5 points.

Figure 7.16. Variability (standard deviation) in finishing bankroll for fixed and level staking, for 5-point stakes and average bookmaker's expectancy 0.5



BOOK PREVIEW

BOOK PREVIEW

48 The distribution of finishing bankrolls from percentage bank staking, since the distribution of the **logarithms** of these finishing bankrolls is approximately normal.

that described by the normal distribution. With an average finishing bankroll of 224 and a standard deviation of 86, this informs us that about two-thirds of a normally distributed set of data can allow one to calculate the chance of obtaining a particular outcome. For this betting system, the size of the average bankroll is 224 and the standard deviation is 86. Using these data and normal distribution (or Z) tables, or a simple computer program,⁴⁹ we can calculate the probability of bankruptcy. The probability of bankruptcy is 0.001, which is equivalent to the Monte Carlo simulation, 7.3% and 1.8% respectively. The high consistency of the empirical value for the probability of bankruptcy is likely to be a result of the large number of simulations. There is no opportunity for recovery from a lost bankroll. A calculation from first principles into

The significant feature of Figure 7.16 is that the standard deviation in the finishing level is 86, which is almost the same, unsurprisingly, as the standard deviation for a random betting system. For example, if the average bank is 226, which is almost the same, unsurprisingly, as the average bankroll, then the standard deviation is 86. This is equivalent to the Monte Carlo simulation, 7.3% and 1.8% respectively. The high consistency of the empirical value for the probability of bankruptcy is likely to be a result of the large number of simulations. There is no opportunity for recovery from a lost bankroll. A calculation from first principles into

For a profitable betting system, that is, one with an edge greater than 1, the probability of bankruptcy is 0.001, which is equivalent to the Monte Carlo simulation, 7.3% and 1.8% respectively. The high consistency of the empirical value for the probability of bankruptcy is likely to be a result of the large number of simulations. There is no opportunity for recovery from a lost bankroll. A calculation from first principles into

⁴⁹ http://davidmlane.com/hyperstat/z_table.html. Z_{no profit} for the example here is -1.44 whilst Z_{bankruptcy} is -2.60.

or loss, bankroll preservation or bankruptcy, particularly for higher odds and larger stakes gambling, where substantial risks exist even for profit. The risk of bankruptcy is reduced by the reduction in the variance of the bankroll, which is achieved by the high probability of profit and potential profit growth less erratic, and a minimisation of losses on losses. The probability of bankruptcy is reduced by the reduction in the variance of the bankroll, which is achieved by the high probability of profit and potential profit growth less erratic, and a minimisation of losses on losses.

Figure 7.17. The comparison, between fixed profits staking and level staking, of the probability of bankruptcy for a bookmaker's bankroll of £100,000, with a 5% betting edge.

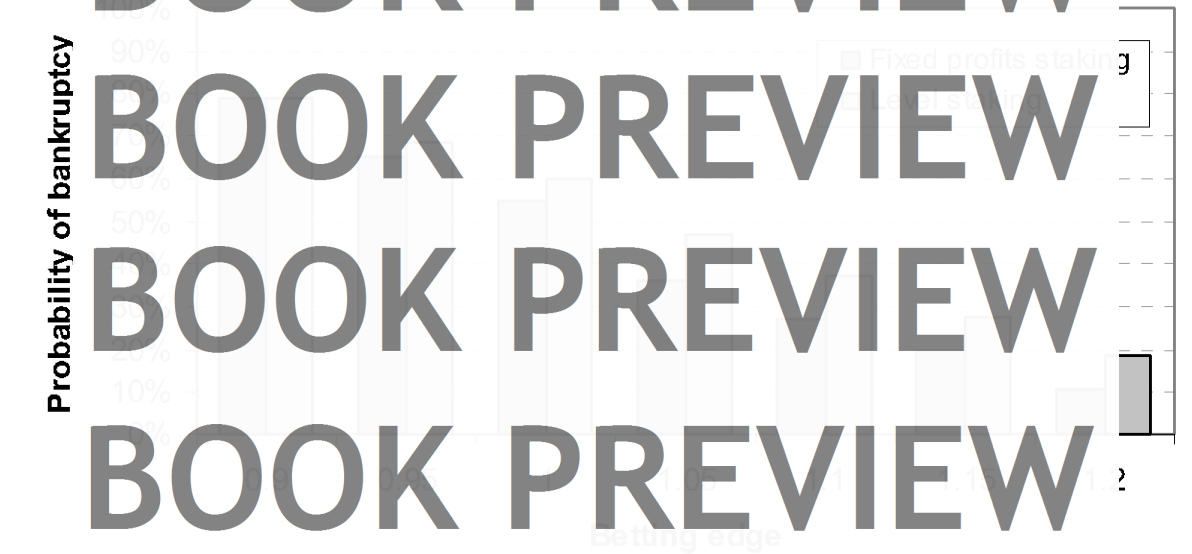


Figure 7.18. The comparison, between fixed profits staking and level staking, of the probability of bankruptcy for a bookmaker's bankroll of £100,000, with a 5% betting edge.



The Martingale

The in pa red-l eithe of th behi retur reco the f

BOOK PREVIEW

and el is d on ence idea and s are t, as

Whe

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

Mart he is frequ losse how strat incre succ to w limit the f quite its m

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

here more ding ader, rous soon s in just pted le, is its is port

BOOK PREVIEW

⁵⁰ Where the ball lands on zero (and also double zero in American casinos), a bet on either red or black will lose, and this where the casino gains the advantage.

Stuart Holland, in *Successful Staking Strategies*, provides an excellent and thorough proof of why Martingale is unable to make something out of nothing. The 8 possible outcomes, each of which is as likely as any other. Table 7.7 shows the profit expectancy for each of the 8 permutations.

Table 7.8. Permutations and profit expectancy for red-black roulette after 3 spins for Martingale staking

Permutation	Outcome	Level stakes	Profit	Total	Change	Profit expectancy
1	R, R, R	B, B, B	1, 2, 4	-1, -2, -4	-7	0.125
2	R, R, R	R, B, B	1, 1, 2	+1, -1, -2	-2	0.125
3	R, R, R	R, R, B	1, 1, 1	+1, +1, +1	+3	0.125
4	R, R, R	R, R, R	1, 1, 1	+1, +1, +1	+3	0.125
5	R, R, R	R, B, B	1, 1, 2	+1, -1, -2	-2	0.125
6	R, R, R	R, B, R	1, 1, 1	+1, -1, +1	+1	0.125
7	R, R, R	R, R, B	1, 1, 1	+1, +1, -1	+1	0.125
8	R, R, R	R, R, R	1, 1, 1	+1, +1, +1	+3	0.125
Total			36	0	1	0

Overall, the profit expectancy is 0. In other words, with no edge over the roulette wheel, all we can hope for over the long term is to break even. A similar result is obtained for level staking (Table 7.8).

Table 7.8. Permutations and profit expectancy for red-black roulette after 3 spins for level staking

Permutation	Outcome	Level stakes	Profit	Total	Change	Profit expectancy
1	R, R, R	B, B, B	1, 1, 1	-1, -1, -1	-3	0.125
2	R, R, R	R, B, B	1, 1, 1	+1, -1, -1	-1	0.125
3	R, R, R	R, R, B	1, 1, 1	+1, +1, -1	+1	0.125
4	R, R, R	R, R, R	1, 1, 1	+1, +1, +1	+3	0.125
5	R, R, R	R, B, B	1, 1, 1	+1, -1, -1	-1	0.125
6	R, R, R	R, B, R	1, 1, 1	+1, -1, +1	+1	0.125
7	R, R, R	R, R, B	1, 1, 1	+1, +1, -1	+1	0.125
8	R, R, R	R, R, R	1, 1, 1	+1, +1, +1	+3	0.125
Total			24	0	1	0

All Martingale has achieved is an increase in the number of times we can expect to make a profit, in this example from 4 with level staking to 5.

Unfortunately, the size of the profit is dismissed out of hand completely, however, it is nonetheless worthwhile to explain how it compares to the other staking systems that have been

For the purposes of the Monte Carlo simulations, a more appropriate staking system can be used. The suggestion is to use a dependent staking system on the size of the odds, as illustrated in Table 7.9 by the following example sequence of bets.

Table

Bet	Target	Stake	Result	Profit/Loss	Balance
1	1.30	1.00	Win	+0.30	1.30
2	1.96	2.479	Lose	-2.479	-3.479
3	2.93	4.764	Lose	-4.764	-8.243
4	4.39	15.33	Lose	-15.33	-20.72
5	6.58	0.92	Lose	-0.92	-21.64
6	2.70	1.153	Win	+1.960	-19.68
7	1.79	1.00	Win	+0.790	-18.89
8	2.72	0.92	Lose	-0.92	-19.81
9	4.01	2.479	Lose	-2.479	-22.29
10	3.23	1.307	Win	+4.030	-18.26

For the purpose of the simulation, the profit target is set at 1.00. If the bet is lost, the profit target is set at 1.96. The aim, then, is to win back all that is lost, plus the identified target as profit, for each and every bet. The size of each stake is determined by the amount that needs to be won and the odds of the bet.

$$S_n = \{[L_{n-1}] + T_n\} / \{O_n - 1\}$$

where L_{n-1} is the loss from the previous bet, T_n is the profit target, and O_n is the odds of the bet.

(decimal) odds respectively for the n^{th} bet. For $n = 1$, the first bet, the running total of losses is obviously 0, and is 0 after every winning bet.

After
for t
abov
for b
loss
when
bet,
the t
winn
durin
conv
of cc
bank
calcu

Tabl
simu
stan
bank
Onc

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

odds
ence
target
ter a
bet),
 $(n - 1)^{\text{th}}$
ieve
r the
set
little
eans
etting
s as
Carlo
, the
y of
0.4).
s.

Table 7.10.1. Average finishing bankroll (points) after 250 Martingale singles

S sta	BOOK PREVIEW					
1	BOOK PREVIEW					5
	BOOK PREVIEW					4
	BOOK PREVIEW					0
	BOOK PREVIEW					.8
	BOOK PREVIEW					.7
2	BOOK PREVIEW					.7
	BOOK PREVIEW					.0
	BOOK PREVIEW					.1
	BOOK PREVIEW					.1
	BOOK PREVIEW					.3
3	BOOK PREVIEW					.1
	BOOK PREVIEW					.6
	BOOK PREVIEW					.3
	BOOK PREVIEW					.6
	BOOK PREVIEW					.3
5	BOOK PREVIEW					.4
	BOOK PREVIEW					.5
	BOOK PREVIEW					.5
	BOOK PREVIEW					.7
	BOOK PREVIEW					.9
10	BOOK PREVIEW					.4
	BOOK PREVIEW					.2
	BOOK PREVIEW					.9
	BOOK PREVIEW					.6
	BOOK PREVIEW					.4
	BOOK PREVIEW					.4
	BOOK PREVIEW					.5

Table 7.10.2. Standard deviation in finishing bankroll (points) after 250 Martingale singles

Stake size	BOOK PREVIEW						Standard deviation
	0.2	0.3	0.4	0.5	0.6	0.7	
1 point	100.9	109.7	118.5	127.3	136.1	144.9	5.6
	101.5	110.3	119.1	127.9	136.7	145.5	5.8
	102.1	110.9	119.7	128.5	137.3	146.1	6.0
	102.7	111.5	120.3	129.1	137.9	146.7	6.2
	103.3	112.1	120.9	129.7	138.5	147.3	6.4
	103.9	112.7	121.5	130.3	139.1	147.9	6.6
	104.5	113.3	122.1	130.9	139.7	148.5	6.8
	105.1	113.9	122.7	131.5	140.3	149.1	7.0
	105.7	114.5	123.3	132.1	140.9	149.7	7.2
	106.3	115.1	123.9	132.7	141.5	150.3	7.4
	106.9	115.7	124.5	133.3	142.1	150.9	7.6
	107.5	116.3	125.1	133.9	142.7	151.5	7.8
	108.1	116.9	125.7	134.5	143.3	152.1	8.0
	108.7	117.5	126.3	135.1	143.9	152.7	8.2
	109.3	118.1	126.9	135.7	144.5	153.3	8.4
	109.9	118.7	127.5	136.3	145.1	153.9	8.6
	110.5	119.3	128.1	136.9	145.7	154.5	8.8
	111.1	119.9	128.7	137.5	146.3	155.1	9.0
	111.7	120.5	129.3	138.1	146.9	155.7	9.2
	112.3	121.1	129.9	138.7	147.5	156.3	9.4
	112.9	121.7	130.5	139.3	148.1	156.9	9.6
	113.5	122.3	131.1	139.9	148.7	157.5	9.8
	114.1	122.9	131.7	140.5	149.3	158.1	10.0
	114.7	123.5	132.3	141.1	149.9	158.7	10.2
	115.3	124.1	132.9	141.7	150.5	159.3	10.4
	115.9	124.7	133.5	142.3	151.1	159.9	10.6
	116.5	125.3	134.1	142.9	151.7	160.5	10.8
	117.1	125.9	134.7	143.5	152.3	161.1	11.0
	117.7	126.5	135.3	144.1	152.9	161.7	11.2
	118.3	127.1	135.9	144.7	153.5	162.3	11.4
	118.9	127.7	136.5	145.3	154.1	162.9	11.6
	119.5	128.3	137.1	145.9	154.7	163.5	11.8
	120.1	128.9	137.7	146.5	155.3	164.1	12.0
	120.7	129.5	138.3	147.1	155.9	164.7	12.2
	121.3	130.1	138.9	147.7	156.5	165.3	12.4
	121.9	130.7	139.5	148.3	157.1	165.9	12.6
	122.5	131.3	140.1	148.9	157.7	166.5	12.8
	123.1	131.9	140.7	149.5	158.3	167.1	13.0
	123.7	132.5	141.3	150.1	158.9	167.7	13.2
	124.3	133.1	141.9	150.7	159.5	168.3	13.4
	124.9	133.7	142.5	151.3	160.1	168.9	13.6
	125.5	134.3	143.1	151.9	160.7	169.5	13.8
	126.1	134.9	143.7	152.5	161.3	170.1	14.0
	126.7	135.5	144.3	153.1	161.9	170.7	14.2
	127.3	136.1	144.9	153.7	162.5	171.3	14.4
	127.9	136.7	145.5	154.3	163.1	171.9	14.6
	128.5	137.3	146.1	154.9	163.7	172.5	14.8
	129.1	137.9	146.7	155.5	164.3	173.1	15.0
	129.7	138.5	147.3	156.1	164.9	173.7	15.2
	130.3	139.1	147.9	156.7	165.5	174.3	15.4
	130.9	139.7	148.5	157.3	166.1	174.9	15.6
	131.5	140.3	149.1	157.9	166.7	175.5	15.8
	132.1	140.9	149.7	158.5	167.3	176.1	16.0
	132.7	141.5	150.3	159.1	167.9	176.7	16.2
	133.3	142.1	150.9	159.7	168.5	177.3	16.4
	133.9	142.7	151.5	160.3	169.1	177.9	16.6
	134.5	143.3	152.1	160.9	169.7	178.5	16.8
	135.1	143.9	152.7	161.5	170.3	179.1	17.0
	135.7	144.5	153.3	162.1	170.9	179.7	17.2
	136.3	145.1	153.9	162.7	171.5	180.3	17.4
	136.9	145.7	154.5	163.3	172.1	180.9	17.6
	137.5	146.3	155.1	163.9	172.7	181.5	17.8
	138.1	146.9	155.7	164.5	173.3	182.1	18.0
	138.7	147.5	156.3	165.1	173.9	182.7	18.2
	139.3	148.1	156.9	165.7	174.5	183.3	18.4
	139.9	148.7	157.5	166.3	175.1	183.9	18.6
	140.5	149.3	158.1	166.9	175.7	184.5	18.8
	141.1	149.9	158.7	167.5	176.3	185.1	19.0
	141.7	150.5	159.3	168.1	176.9	185.7	19.2
	142.3	151.1	159.9	168.7	177.5	186.3	19.4
	142.9	151.7	160.5	169.3	178.1	186.9	19.6
	143.5	152.3	161.1	169.9	178.7	187.5	19.8
	144.1	152.9	161.7	170.5	179.3	188.1	20.0
	144.7	153.5	162.3	171.1	179.9	188.7	20.2
	145.3	154.1	162.9	171.7	180.5	189.3	20.4
	145.9	154.7	163.5	172.3	181.1	189.9	20.6
	146.5	155.3	164.1	172.9	181.7	190.5	20.8
	147.1	155.9	164.7	173.5	182.3	191.1	21.0
	147.7	156.5	165.3	174.1	182.9	191.7	21.2
	148.3	157.1	165.9	174.7	183.5	192.3	21.4
	148.9	157.7	166.5	175.3	184.1	192.9	21.6
	149.5	158.3	167.1	175.9	184.7	193.5	21.8
	150.1	158.9	167.7	176.5	185.3	194.1	22.0
	150.7	159.5	168.3	177.1	185.9	194.7	22.2
	151.3	160.1	168.9	177.7	186.5	195.3	22.4
	151.9	160.7	169.5	178.3	187.1	195.9	22.6
	152.5	161.3	170.1	178.9	187.7	196.5	22.8
	153.1	161.9	170.7	179.5	188.3	197.1	23.0
	153.7	162.5	171.3	180.1	188.9	197.7	23.2
	154.3	163.1	171.9	180.7	189.5	198.3	23.4
	154.9	163.7	172.5	181.3	190.1	198.9	23.6
	155.5	164.3	173.1	181.9	190.7	199.5	23.8
	156.1	164.9	173.7	182.5	191.3	200.1	24.0
	156.7	165.5	174.3	183.1	191.9	200.7	24.2
	157.3	166.1	174.9	183.7	192.5	201.3	24.4
	157.9	166.7	175.5	184.3	193.1	201.9	24.6
	158.5	167.3	176.1	184.9	193.7	202.5	24.8
	159.1	167.9	176.7	185.5	194.3	203.1	25.0
	159.7	168.5	177.3	186.1	194.9	203.7	25.2
	160.3	169.1	177.9	186.7	195.5	204.3	25.4
	160.9	169.7	178.5	187.3	196.1	204.9	25.6
	161.5	170.3	179.1	187.9	196.7	205.5	25.8
	162.1	170.9	179.7	188.5	197.3	206.1	26.0
	162.7	171.5	180.3	189.1	197.9	206.7	26.2
	163.3	172.1	180.9	189.7	198.5	207.3	26.4
	163.9	172.7	181.5	190.3	199.1	207.9	26.6
	164.5	173.3	182.1	190.9	199.7	208.5	26.8
	165.1	173.9	182.7	191.5	200.3	209.1	27.0
	165.7	174.5	183.3	192.1	200.9	209.7	27.2
	166.3	175.1	183.9	192.7	201.5	210.3	27.4
	166.9	175.7	184.5	193.3	202.1	210.9	27.6
	167.5	176.3	185.1	193.9	202.7	211.5	27.8
	168.1	176.9	185.7	194.5	203.3	212.1	28.0
	168.7	177.5	186.3	195.1	203.9	212.7	28.2
	169.3	178.1	186.9	195.7	204.5	213.3	28.4
	169.9	178.7	187.5	196.3	205.1	213.9	28.6
	170.5	179.3	188.1	196.9	205.7	214.5	28.8
	171.1	179.9	188.7	197.5	206.3	215.1	29.0
	171.7	180.5	189.3	198.1	206.9	215.7	29.2
	172.3	181.1	189.9	198.7	207.5	216.3	29.4
	172.9	181.7	190.5	199.3	208.1	216.9	29.6
	173.5	182.3	191.1	199.9	208.7	217.5	29.8
	174.1	182.9	191.7	200.5	209.3	218.1	30.0
	174.7	183.5	192.3	201.1	209.9	218.7	30.2
	175.3	184.1	192.9	201.7	210.5	219.3	30.4
	175.9	184.7	193.5	202.3	211.1	219.9	30.6
	176.5	185.3	194.1	202.9	211.7	220.5	30.8
	177.1	185.9	194.7	203.5	212.3	221.1	31.0
	177.7	186.5	195.3	204.1	212.9	221.7	31.2
	178.3	187.1	195.9	204.7	213.5	222.3	31.4
	178.9	187.7	196.5	205.3	214.1	222.9	31.6
	179.5	188.3	197.1	205.9	214.7	223.5	31.8
	180.1	188.9	197.7	206.5	215.3	224.1	32.0
	180.7	189.5	198.3	207.1	215.9	224.7	32.2
	181.3	190.1	198.9	207.7	216.5	225.3	32.4
	181.9	190.7	199.5	208.3	217.1	225.9	32.6
	182.5	191.3	200.1	208.9	217.7	226.5	32.8
	183.1	191.9	200.7	209.5	218.3	227.1	33.0
	183.7	192.5	201.3	210.1	218.9	227.7	33.2
	184.3	193.1	201.9	210.7	219.5	228.3	33.4
	184.9	193.7	202.5	211.3	220.1	228.9	33.6
	185.5	194.3	203.1	211.9	220.7	229.5	33.8
	186.1	194.9	203.7	212.5	221.3	230.1	34.0
	186.7	195.5	204.3	213.1	221.9	230.7	34.2
	187.3	196.1	204.9	213.7	222.5	231.3	34.4
	187.9	196.7	205.5	214.3	223.1	231.9	34.6
	188.5	197.3	206.1	214.9	223.7	232.5	34.8
	189.1	197.9	206.7	215.5	224.3	233.1	35.0
	189.7	198.5	207.3	216.1	224.9	233.7	35.2
	190.3	199.1	207.9	216.7	225.5	234.3	35.4
	190.9	199.7	208.5	217.3	226.1	234.9	35.6
	191.5	200.3	209.1	217.9	226.7	235.5	35.8
	192.1	200.9	209.7	218.5	227.3	236.1	3

Table 7.10.3. Probability of bankruptcy after 250 Martingale singles

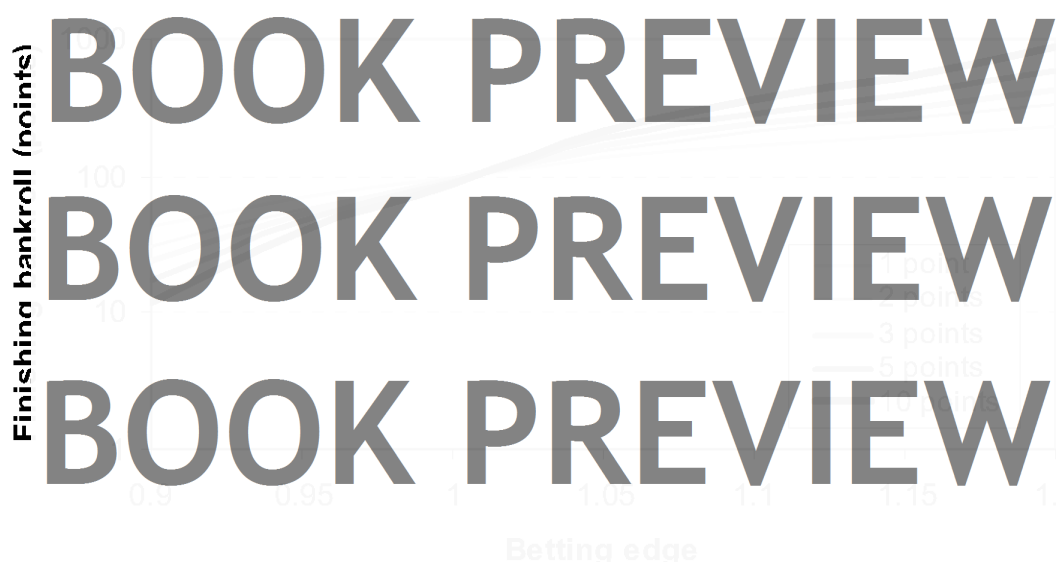
Stake	BOOK PREVIEW					5
	0.9	0.95	1.0	1.05	1.1	
1 point	85.4%	80.7%	78.1%	77.5%	75.0%	50.0%
	85.4%	80.7%	78.1%	77.5%	75.0%	50.0%
	85.4%	80.7%	78.1%	77.5%	75.0%	50.0%
	85.4%	80.7%	78.1%	77.5%	75.0%	50.0%
	85.4%	80.7%	78.1%	77.5%	75.0%	50.0%
2 points	64.2%	54.4%	46.1%	38.2%	29.0%	10.0%
	64.2%	54.4%	46.1%	38.2%	29.0%	10.0%
	64.2%	54.4%	46.1%	38.2%	29.0%	10.0%
	64.2%	54.4%	46.1%	38.2%	29.0%	10.0%
	64.2%	54.4%	46.1%	38.2%	29.0%	10.0%
3 points	93.3%	90.6%	89.5%	89.6%	89.0%	80.0%
	93.3%	90.6%	89.5%	89.6%	89.0%	80.0%
	93.3%	90.6%	89.5%	89.6%	89.0%	80.0%
	93.3%	90.6%	89.5%	89.6%	89.0%	80.0%
	93.3%	90.6%	89.5%	89.6%	89.0%	80.0%
5 points	92.7%	89.8%	88.0%	87.6%	84.0%	70.0%
	92.7%	89.8%	88.0%	87.6%	84.0%	70.0%
	92.7%	89.8%	88.0%	87.6%	84.0%	70.0%
	92.7%	89.8%	88.0%	87.6%	84.0%	70.0%
	92.7%	89.8%	88.0%	87.6%	84.0%	70.0%
10 points	99.0%	98.6%	98.7%	98.9%	98.0%	90.0%
	99.0%	98.6%	98.7%	98.9%	98.0%	90.0%
	99.0%	98.6%	98.7%	98.9%	98.0%	90.0%
	99.0%	98.6%	98.7%	98.9%	98.0%	90.0%
	99.0%	98.6%	98.7%	98.9%	98.0%	90.0%

Table 7.10.4. Probability of not making a profit after 250 Martingale singles

Stake	BOOK PREVIEW					5
	0.9	0.95	1.0	1.05	1.1	
1 point	85.7%	81.5%	79.9%	79.7%	79.0%	100%
	85.8%	81.6%	79.9%	79.7%	79.0%	100%
	85.9%	81.7%	80.0%	79.8%	79.1%	100%
	86.0%	81.8%	80.1%	79.9%	79.2%	100%
	86.1%	81.9%	80.2%	80.0%	79.3%	100%
2 points	64.5%	55.1%	47.6%	40.2%	33.0%	100%
	64.6%	55.2%	47.7%	40.3%	33.1%	100%
	64.7%	55.3%	47.8%	40.4%	33.2%	100%
	64.8%	55.4%	47.9%	40.5%	33.3%	100%
	64.9%	55.5%	48.0%	40.6%	33.4%	100%
3 points	93.4%	90.7%	89.8%	90.2%	90.0%	100%
	93.5%	90.8%	89.9%	90.3%	90.1%	100%
	93.6%	90.9%	90.0%	90.4%	90.2%	100%
	93.7%	91.0%	90.1%	90.5%	90.3%	100%
	93.8%	91.1%	90.2%	90.6%	90.4%	100%
5 points	74.1%	63.9%	52.8%	43.6%	32.0%	100%
	74.2%	64.0%	52.9%	43.7%	32.1%	100%
	74.3%	64.1%	53.0%	43.8%	32.2%	100%
	74.4%	64.2%	53.1%	43.9%	32.3%	100%
	74.5%	64.3%	53.2%	44.0%	32.4%	100%
10 points	99.0%	98.6%	98.7%	98.9%	99.0%	100%
	99.1%	98.7%	98.8%	99.0%	99.1%	100%
	99.2%	98.8%	98.9%	99.1%	99.2%	100%
	99.3%	98.9%	99.0%	99.2%	99.3%	100%
	99.4%	99.0%	99.1%	99.3%	99.4%	100%

What a disaster! As for other staking plans, where the punter has found an edge, a profit can potentially be made, greater for larger stakes and shorter odds, but the safest scenarios, however, unless stakes are small enough, the odds are not enough to overcome the bookmaker's edge (Figure 7.21). Figure 7.22 illustrates just how dangerous Martingale betting can be in comparison to a comparable level staking strategy. The chances of returning the bankroll to the starting level are very small, and the system, when the edge is less than 1, are unable to turn losses into profits.

Figure 7.21: The Martingale betting strategy. The graph shows the bankroll over time for a Martingale betting strategy with a 1% edge. The bankroll starts at 100 and increases over time, but the growth is very slow. The graph also shows the expected return for a Martingale betting strategy with a 1% edge, which is 1.01.



⁵¹ For Martingale staking, the points size refers to the size of the first stake in every betting sequence, and the stake size after every winning bet.

Figure 7.20. The influence of stake size and betting edge on the probability of bankruptcy, with average bookmaker's expectancy 0.5, for Martingale staking

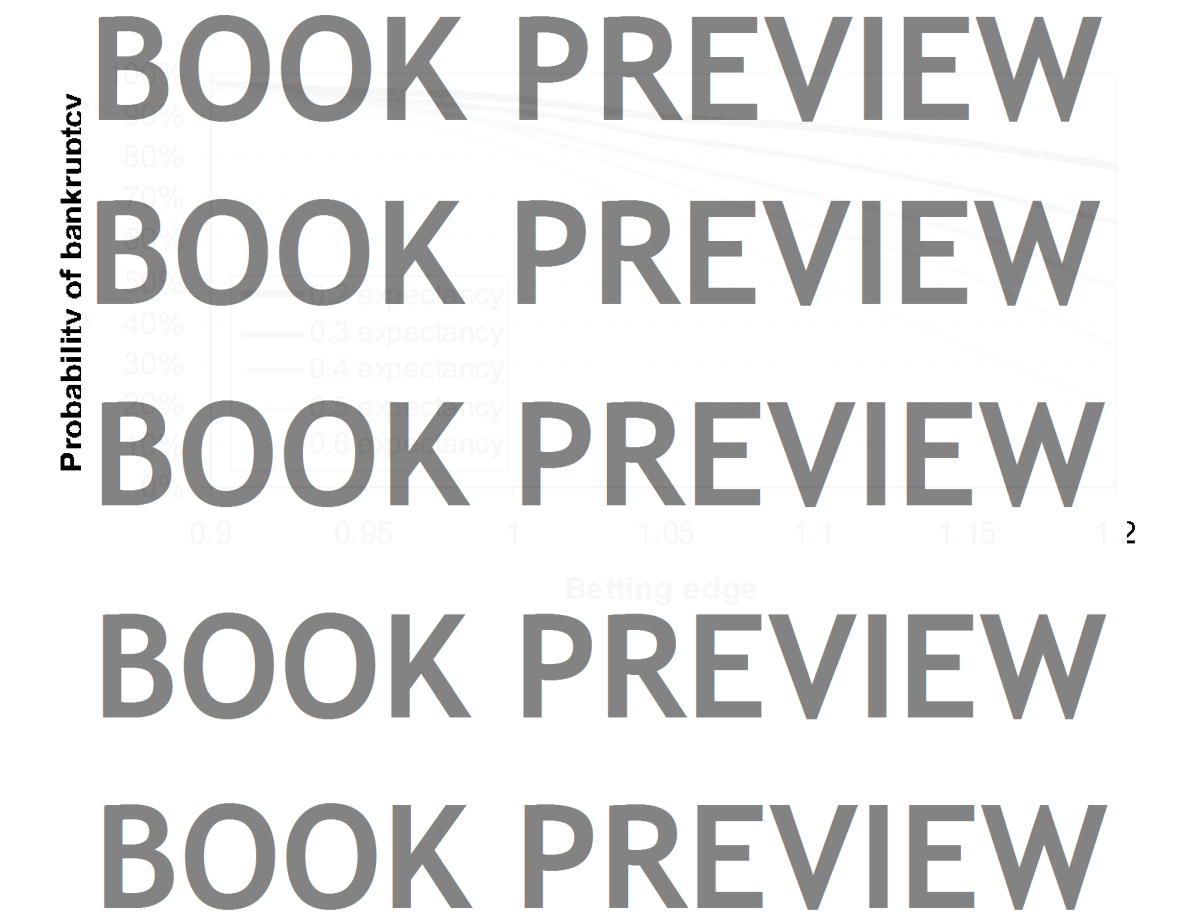
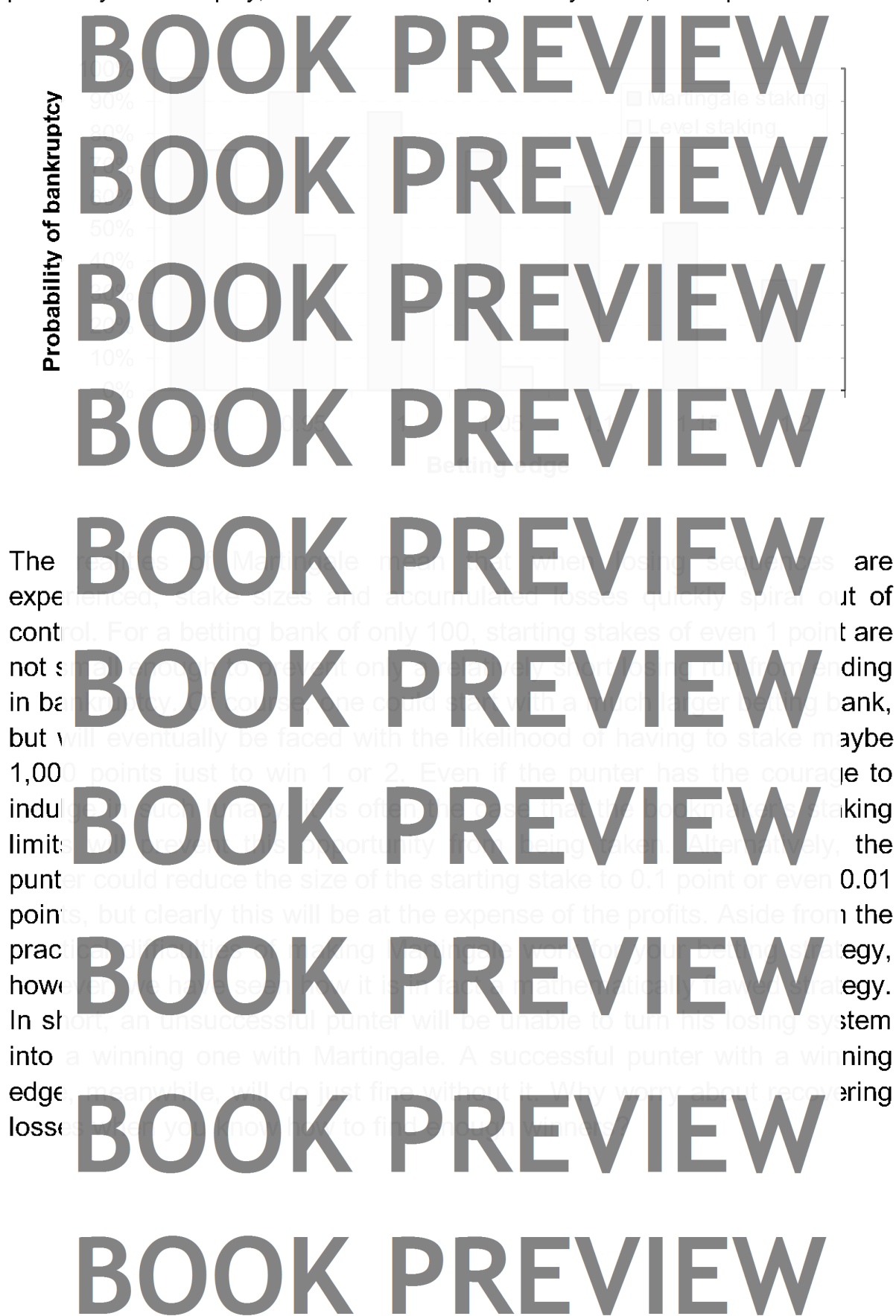


Figure 7.22. The comparison, between Martingale staking and level staking, of the probability of bankruptcy, for a bookmaker's expectancy of 0.5, with 5-point stakes



The
expe
cont
not s
in ba
but v
1,00
indu
limit
punt
poin
prac
how
In st
into
edge
loss

are
it of
t are
ding
ank,
aybe
je to
king
the
0.01
n the
egy,
egy.
stem
ning
aring

The Pyramid Plan

The prog D'Alembert System, is somewhat more conservative in the way that it incre plan decr way, with Alth that som falla

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

Table spins

BOOK PREVIEW

Pern	u-	Bet	Outcome	Pyramid	Profit	Total	Chance	Pro	fit
tati									ec.
1				1					'5
2				1, 3					0
3		R, R, R	B, R, B	1, 2, 1	-1, +2, -1	0	0.125	0	
4		R, R, R	R, R, R	1, 2, 1	-1, +2, +1	+2	0.125	+0.25	
5		R, R, R	R, R, R	1, 2, 1	-1, +2, +1	+2	0.125	+0.25	
6		R, R, R	R, R, R	1, 2, 1	-1, +2, +1	+2	0.125	+0.25	
7		R, R, R	R, R, B	1, 1, 1	+1, +1, -1	+1	0.125	+0.25	
8		R, R, R	R, R, R	1, 1, 1	+1, +1, +1	+3	0.125	+0.375	
Total									

No expe defir Mon

BOOK PREVIEW

BOOK PREVIEW

⁵² The D'Alembert System is somewhat more conservative in the way that it incre plan decr way, with Alth that som falla

BOOK PREVIEW

⁵³ The D'Alembert System is somewhat more conservative in the way that it incre plan decr way, with Alth that som falla

BOOK PREVIEW

For the 1-point plan, stakes are increased by 1 after every loss, and reduced, to a minimum of 1 point, by an amount equivalent to the decimal odds minus 1 after a win. The stake is increased by 1 after a loss, and reduced by 1 after a win, to a minimum of 1 point. The stake is increased by 1 after a loss, and reduced by 1 after a win, to a minimum of 1 point. The stake is increased by 1 after a loss, and reduced by 1 after a win, to a minimum of 1 point.

Table 7.13.1

Be	Odds	Stake	Result	Profit	Running total
1	1.12	1	Win	+0.12	1.12
2	1.96	1	Win	+0.96	2.08
3	1.33	1	Win	+0.33	2.41
4	1.63	4	Win	+2.52	-3.48
5	1.33	4	Win	+5.32	-3.48
6	1.70	4	Win	+6.58	-3.48
7	1.67	4	Win	+6.68	-3.48
8	1.92	1.88	Lose	-1.88	0.81
9	1.88	1.88	Lose	-1.88	-0.07
10	1.23	1	Win	+0.23	-0.07

Table 7.13.1 to Table 7.13.4 summarises the outputs of the Monte Carlo simulation, the probability of making a profit (7.13.1), the probability of not making a profit (7.13.2), the probability of making a profit (7.13.3) and the probability of not making a profit (7.13.4).

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

Table 7.13.1. Average finishing bankroll (points) after 250 Pyramid singles

S sta	BOOK PREVIEW					
1	BOOK PREVIEW					5
	BOOK PREVIEW					5
	BOOK PREVIEW					1
	BOOK PREVIEW					.6
	BOOK PREVIEW					.2
2	BOOK PREVIEW					.5
	BOOK PREVIEW					.7
	BOOK PREVIEW					.3
	BOOK PREVIEW					.4
	BOOK PREVIEW					.9
3	BOOK PREVIEW					.6
	BOOK PREVIEW					.7
	BOOK PREVIEW					.8
	BOOK PREVIEW					.2
	BOOK PREVIEW					.6
5	BOOK PREVIEW					.4
	BOOK PREVIEW					.2
	BOOK PREVIEW					.7
	BOOK PREVIEW					.1
	BOOK PREVIEW					.5
10	BOOK PREVIEW					.4
	BOOK PREVIEW					.0
	BOOK PREVIEW					.1
	BOOK PREVIEW					.9
	BOOK PREVIEW					.7
	BOOK PREVIEW					.5
	BOOK PREVIEW					.1
	BOOK PREVIEW					.5
	BOOK PREVIEW					.9
	BOOK PREVIEW					.3
	BOOK PREVIEW					1.7
	BOOK PREVIEW					.9
	BOOK PREVIEW					.9
	BOOK PREVIEW					.3
	BOOK PREVIEW					.7

Table 7.13.2. Standard deviation in finishing bankroll (points) after 250 Pyramid singles

Stake size	BOOK PREVIEW						Standard deviation
	0.2	0.3	0.4	0.5	0.6	0.7	
1 point	22.2	33.3	44.4	55.5	66.6	77.7	3
	100.0	150.0	200.0	250.0	300.0	350.0	4
	247.3	370.9	494.5	618.1	741.7	865.3	9
	1.05	1.575	2.10	2.625	3.15	3.675	5
	288.6	432.9	577.2	721.5	865.8	1010.1	9
2 points	27.5	41.25	54.99	68.74	82.48	96.23	1
	109.1	163.65	218.2	272.75	327.3	381.85	5
	276.9	415.35	553.8	692.25	830.7	969.15	7
	1.2	1.8	2.4	3.0	3.6	4.2	8
	376.9	565.35	753.8	942.25	1130.7	1319.15	4
3 points	28.2	42.3	56.4	70.5	84.6	98.7	1
	107.6	161.4	215.2	269.0	322.8	376.6	3
	274.9	412.35	549.8	687.25	824.7	962.15	1
	1.05	1.575	2.10	2.625	3.15	3.675	3
	441.5	662.25	883.0	1103.75	1324.5	1545.25	13
4 points	28.7	43.05	57.4	71.75	86.1	100.45	1
	108.2	162.3	216.4	270.5	324.6	378.7	2
	275.3	412.95	550.6	688.25	825.9	963.55	4
	1.1	1.65	2.2	2.75	3.3	3.85	1
	653.0	979.5	1306.0	1632.5	1959.0	2285.5	12
5 points	28.6	42.9	57.2	71.5	85.8	100.1	1
	107.7	161.55	215.4	269.25	323.1	376.95	9
	274.6	411.9	549.2	686.5	823.8	961.1	8
	0.95	1.425	1.9	2.375	2.85	3.325	2
	454.2	681.3	908.4	1135.5	1362.6	1589.7	11
6 points	28.5	42.75	57.0	71.25	85.5	99.75	1
	107.2	160.8	214.4	268.0	321.6	375.2	9
	274.1	411.15	548.2	685.25	822.3	959.35	9
	1.15	1.725	2.3	2.875	3.45	4.025	9
	1069.7	1604.55	2139.4	2674.25	3209.1	3744.0	17
7 points	28.4	42.6	56.8	71.0	85.2	99.4	1
	106.7	160.1	213.6	267.0	320.4	373.8	9
	273.6	410.4	547.6	684.5	821.4	958.8	8
	1.2	1.8	2.4	3.0	3.6	4.2	3
	1241.5	1862.25	2483.0	3103.75	3724.5	4345.25	13
10 points	28.0	42.0	56.0	70.0	84.0	98.0	5
	106.0	159.0	212.0	266.0	319.0	372.0	2
	272.0	408.0	544.0	680.0	816.0	952.0	2
	1.05	1.575	2.10	2.625	3.15	3.675	2
	1020.7	1531.05	2041.4	2551.75	3062.1	3572.45	12
10 points	1.1	1.65	2.2	2.75	3.3	3.85	6
	1316.3	1974.45	2632.6	3290.75	3948.9	4607.05	5
	1387.6	2081.4	2778.53	3466.06	4153.59	4841.12	3

Table 7.13.3. Probability of bankruptcy after 250 Pyramid singles

S sta	BOOK PREVIEW					5
	0.9	93.8%	91.6%	90.7%	89.6%	100%
1	1.05	91.1%	89.1%	87.7%	86.7%	100%
	1.1	89.5%	87.4%	85.3%	83.9%	100%
	1.15	87.8%	85.5%	83.6%	81.7%	100%
	1.2	86.0%	83.9%	82.1%	80.3%	100%
	1.25	84.2%	82.2%	80.5%	78.8%	100%
2	0.9	96.9%	96.1%	95.7%	95.3%	100%
	1.05	94.4%	93.9%	93.6%	93.3%	100%
	1.1	92.4%	92.0%	91.7%	91.4%	100%
	1.15	90.4%	89.9%	89.6%	89.3%	100%
	1.2	88.4%	87.9%	87.6%	87.3%	100%
3	0.95	96.6%	94.4%	92.8%	90.6%	100%
	1.05	94.0%	91.8%	90.2%	88.0%	100%
	1.1	91.8%	89.6%	88.0%	85.8%	100%
	1.15	89.6%	87.4%	85.8%	83.6%	100%
	1.2	87.4%	85.2%	83.6%	81.4%	100%
5	0.9	98.9%	98.9%	98.7%	98.5%	100%
	1.05	97.2%	94.4%	91.1%	87.6%	100%
	1.1	94.2%	88.6%	80.7%	69.7%	100%
	1.15	91.0%	84.0%	76.1%	65.1%	100%
	1.2	87.4%	80.4%	72.5%	61.5%	100%
10	0.9	99.5%	99.4%	99.4%	99.5%	100%
	1.05	99.2%	99.2%	99.2%	99.2%	100%
	1.1	98.7%	98.7%	98.7%	98.7%	100%
	1.15	98.2%	98.2%	98.2%	98.2%	100%
	1.2	97.7%	97.7%	97.7%	97.7%	100%

Table 7.13.4. Probability of not making a profit after 250 Pyramid singles

Stake	BOOK PREVIEW					5
	0.9	1.05	1.1	1.15	1.2	
1 point	94.0%	91.9%	91.6%	91.4%	93.0%	93.0%
	94.4%	92.2%	91.9%	91.6%	93.4%	93.4%
	94.7%	92.5%	92.2%	91.9%	93.7%	93.7%
	95.0%	92.8%	92.5%	92.2%	94.0%	94.0%
	95.3%	93.1%	92.8%	92.5%	94.3%	94.3%
2 points	97.0%	96.2%	96.0%	95.6%	96.0%	96.0%
	97.5%	96.7%	96.5%	96.1%	96.5%	96.5%
	98.0%	97.2%	97.0%	96.6%	97.0%	97.0%
	98.5%	97.7%	97.5%	97.1%	97.5%	97.5%
	99.0%	98.2%	98.0%	97.6%	98.0%	98.0%
3 points	98.1%	97.7%	97.6%	97.4%	97.8%	97.8%
	98.6%	98.2%	98.1%	97.9%	98.3%	98.3%
	99.1%	98.7%	98.6%	98.4%	98.8%	98.8%
	99.6%	99.2%	99.1%	98.9%	99.3%	99.3%
	100.0%	99.7%	99.6%	99.4%	99.8%	99.8%
5 points	99.2%	99.0%	98.9%	98.7%	99.1%	99.1%
	99.7%	99.5%	99.4%	99.2%	99.6%	99.6%
	100.0%	99.8%	99.7%	99.5%	99.9%	99.9%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
10 points	99.5%	99.4%	99.4%	99.5%	99.5%	99.5%
	99.9%	99.8%	99.8%	99.9%	99.9%	99.9%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
15 points	99.6%	99.5%	99.5%	99.6%	99.6%	99.6%
	99.9%	99.8%	99.8%	99.9%	99.9%	99.9%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

So much for being more conservative. Despite the less aggressive loss recovery strategy, the Pyramid staking plan performs little better than the Martingale strategy, with a probability of bankruptcy of 25).

Figure 7.23. The influence of betting strategy on the probability of bankruptcy.

Finishing bankroll (points)

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

Figure 7.24. The influence of stake size and betting edge on the probability of bankruptcy.

Probability of bankruptcy

BOOK PREVIEW

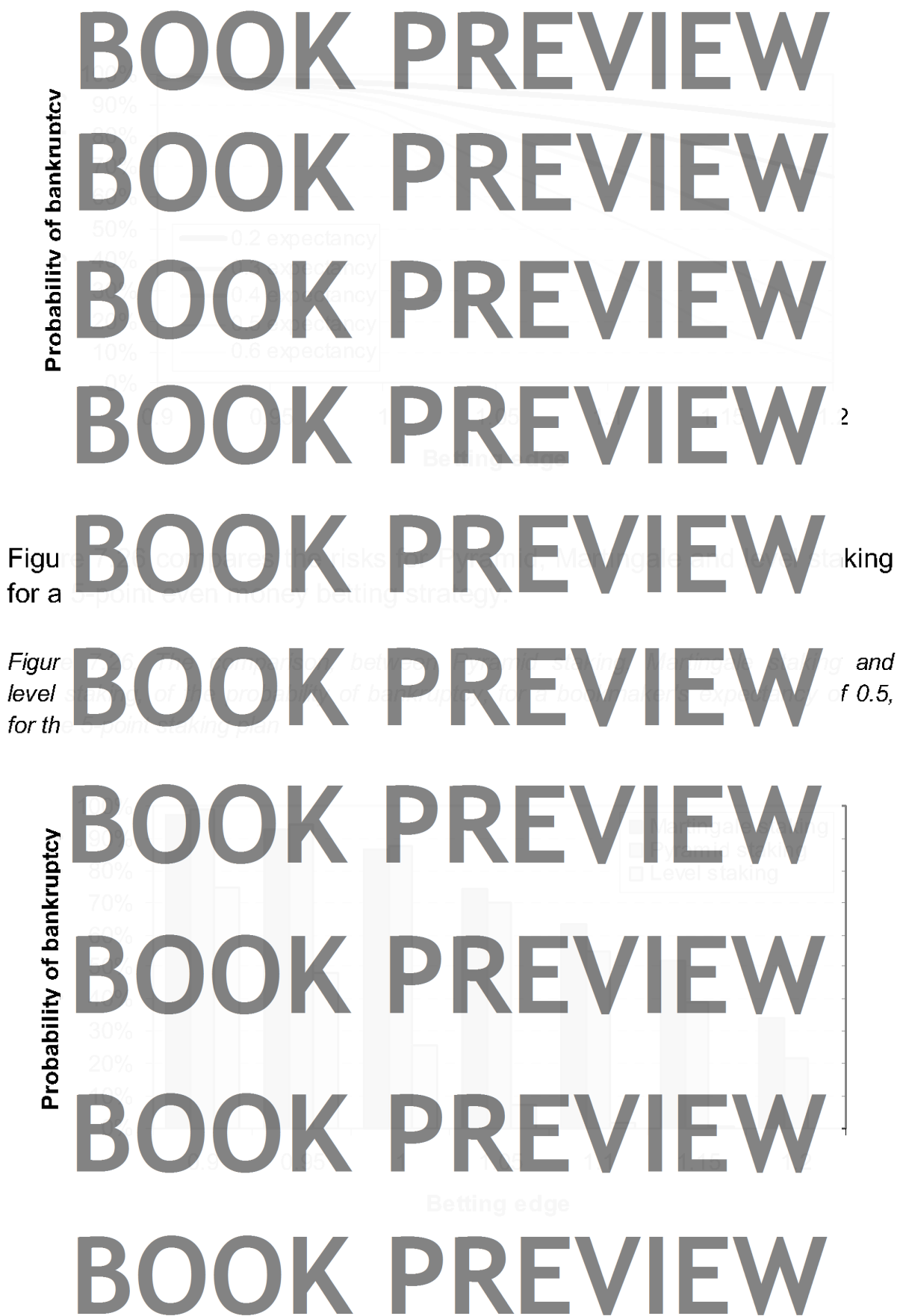
BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

⁵⁴ For Pyramid staking the points size refers to the size of the first stake, and the size by which the stake is increased after every loss.

Figure 7.25. The influence of odds and betting edge on the probability of bankruptcy, for the 5-point Pyramid staking plan



Kelly Staking

So far, we have seen how a fixed bank staking strategy can be used to ensure a long-term profit, but it is not the most efficient way of doing so. A more sophisticated approach, known as the Kelly Criterion, will allow a punter to achieve a long-term profit, whilst ensuring that the bankroll is not depleted. The Kelly Criterion is a mathematical formula that allows a punter to calculate the optimal size of bet to place, based on the punter's current bankroll and the odds of the event. By using the Kelly Criterion, a punter can ensure that their bankroll is growing at the fastest possible rate, whilst also ensuring that it is not being depleted. The Kelly Criterion is a mathematical formula that allows a punter to calculate the optimal size of bet to place, based on the punter's current bankroll and the odds of the event. By using the Kelly Criterion, a punter can ensure that their bankroll is growing at the fastest possible rate, whilst also ensuring that it is not being depleted.

Developed by John Kelly while working at AT&T's Bell Labs in 1956, the Kelly Criterion is a mathematical formula that allows a punter to calculate the optimal size of bet to place, based on the punter's current bankroll and the odds of the event. By using the Kelly Criterion, a punter can ensure that their bankroll is growing at the fastest possible rate, whilst also ensuring that it is not being depleted. The Kelly Criterion is a mathematical formula that allows a punter to calculate the optimal size of bet to place, based on the punter's current bankroll and the odds of the event. By using the Kelly Criterion, a punter can ensure that their bankroll is growing at the fastest possible rate, whilst also ensuring that it is not being depleted.

where $K = (E-1)/(O-1)$ ⁵⁵ is the Kelly stake as a decimal percentage of the bankroll, E is the decimal edge as presented throughout this book⁵⁶ and O represents the decimal odds.

BOOK PREVIEW

⁵⁵ According to Kelly, this equation strictly only applies when there is a "two-horse race", although it can be used for other events where there are only two possible outcomes, such as football matches. ⁵⁶ An edge of 0.1 represents a 10% advantage over the bookmaker, with those less than 1 representing an advantage for the bookmaker over the punter.

With the Kelly Criterion, one is always betting percentages of the bankroll, so as the bankroll grows, so does the size of the stakes. Likewise, when the bankroll shrinks, so does the size of the stakes. This is a fixed proportion of the bankroll, and crucially also the edge a punter has found. We know, of course, that estimating an edge on the bankroll is a difficult task, but this is no excuse for not doing a particular bet. The Kelly Criterion is a method of analysing a previous record of bets. If these are singles, the average edge can be calculated by taking the average of the edges found in each example.

Table 7.14 Some examples of Kelly stakes

Edge	Decimal	Stake (%)	Stake
1.1	1.5	0.1	0
1.0	1.5	0.0	0
1.1	1.5	0.033	33
1.02	5	0.025	56
1.07	10	0.075	33

With Kelly betting, it is theoretically possible to calculate the rate at which a bankroll will grow. For every bet, the growth expectancy factor by which the bankroll will grow is given by:

$$F_n = K_n (E_n - 1) + 1$$

which gives:

$$F_n = \frac{(E_n - 1)^2}{O_n - 1} + 1$$

where F_n is the bankroll growth factor for the bet. For a Kelly bet of 2% on a bet with edge 1.1, for example, the bankroll growth expectancy is 1.02. This means one can expect the bankroll to grow by 2% for such bets. On the other hand, if a bet is made with an edge of 1.01, the bankroll would grow by 0.01%.

in a single race, one of which may not represent value.

⁵⁷ Be
possib
7.7), t
value
comm
is the
will b
requir
⁵⁸ In t
are m
does

BOOK PREVIEW

Figure 10 shows the results of the simulation. The results show that the proposed method can effectively reduce the error of the simulation results. The error of the simulation results is reduced by 10% compared to the traditional method.

half or one-third of the suggested Kelly stakes. Such strategies will obviously have the benefit of reducing the probability of bankruptcy, although the choice of punt

To test the effect of such a strategy, the following table has been calculated for the purposes of calculating each stake size, for each of the 4

edges. For each edge, the average bet size for each edge has been calculated on the basis of an edge of 1.05 (or 5%). Although specific edges shown in the appendix

are assigned each a probability of 0.5, it will be impossible to be accurate in estimating his advantage. Furthermore, for some of the

betting scenarios, the average bet size has been assigned no value (see Table 7.1). Consequently, where the actual

is less than the optimal stake, the stake will be technically too large; where it is more, the stake will

manipulate the probability of bankruptcy. This analysis is in a realistic betting context.

Table 7.1: Average finishing bankroll (7.15.1), the standard deviation in finishing bankroll (7.15.2), the probability of bankruptcy (7.15.3) and the probability of not making a profit (7.15.4).

Table 7.1: Average finishing bankroll (7.15.1), the standard deviation in finishing bankroll (7.15.2), the probability of bankruptcy (7.15.3) and the probability of not making a profit (7.15.4).

	Bookmaker's expectancy				
Edge	0.2	0.3	0.4	0.5	0.6
1.05	119.8	134.3	153.0	187.4	266.1
1.10	119.8	134.3	153.0	187.4	266.1
1.15	119.8	134.3	153.0	187.4	266.1
1.20	119.8	134.3	153.0	187.4	266.1
1.25	119.8	134.3	153.0	187.4	266.1
1.30	119.8	134.3	153.0	187.4	266.1
1.35	119.8	134.3	153.0	187.4	266.1
1.40	119.8	134.3	153.0	187.4	266.1
1.45	119.8	134.3	153.0	187.4	266.1
1.50	119.8	134.3	153.0	187.4	266.1
1.55	119.8	134.3	153.0	187.4	266.1
1.60	119.8	134.3	153.0	187.4	266.1
1.65	119.8	134.3	153.0	187.4	266.1
1.70	119.8	134.3	153.0	187.4	266.1
1.75	119.8	134.3	153.0	187.4	266.1
1.80	119.8	134.3	153.0	187.4	266.1
1.85	119.8	134.3	153.0	187.4	266.1
1.90	119.8	134.3	153.0	187.4	266.1
1.95	119.8	134.3	153.0	187.4	266.1
2.00	119.8	134.3	153.0	187.4	266.1
2.05	119.8	134.3	153.0	187.4	266.1
2.10	119.8	134.3	153.0	187.4	266.1
2.15	119.8	134.3	153.0	187.4	266.1
2.20	119.8	134.3	153.0	187.4	266.1
2.25	119.8	134.3	153.0	187.4	266.1
2.30	119.8	134.3	153.0	187.4	266.1
2.35	119.8	134.3	153.0	187.4	266.1
2.40	119.8	134.3	153.0	187.4	266.1
2.45	119.8	134.3	153.0	187.4	266.1
2.50	119.8	134.3	153.0	187.4	266.1
2.55	119.8	134.3	153.0	187.4	266.1
2.60	119.8	134.3	153.0	187.4	266.1
2.65	119.8	134.3	153.0	187.4	266.1
2.70	119.8	134.3	153.0	187.4	266.1
2.75	119.8	134.3	153.0	187.4	266.1
2.80	119.8	134.3	153.0	187.4	266.1
2.85	119.8	134.3	153.0	187.4	266.1
2.90	119.8	134.3	153.0	187.4	266.1
2.95	119.8	134.3	153.0	187.4	266.1
3.00	119.8	134.3	153.0	187.4	266.1
3.05	119.8	134.3	153.0	187.4	266.1
3.10	119.8	134.3	153.0	187.4	266.1
3.15	119.8	134.3	153.0	187.4	266.1
3.20	119.8	134.3	153.0	187.4	266.1
3.25	119.8	134.3	153.0	187.4	266.1
3.30	119.8	134.3	153.0	187.4	266.1
3.35	119.8	134.3	153.0	187.4	266.1
3.40	119.8	134.3	153.0	187.4	266.1
3.45	119.8	134.3	153.0	187.4	266.1
3.50	119.8	134.3	153.0	187.4	266.1
3.55	119.8	134.3	153.0	187.4	266.1
3.60	119.8	134.3	153.0	187.4	266.1
3.65	119.8	134.3	153.0	187.4	266.1
3.70	119.8	134.3	153.0	187.4	266.1
3.75	119.8	134.3	153.0	187.4	266.1
3.80	119.8	134.3	153.0	187.4	266.1
3.85	119.8	134.3	153.0	187.4	266.1
3.90	119.8	134.3	153.0	187.4	266.1
3.95	119.8	134.3	153.0	187.4	266.1
4.00	119.8	134.3	153.0	187.4	266.1
4.05	119.8	134.3	153.0	187.4	266.1
4.10	119.8	134.3	153.0	187.4	266.1
4.15	119.8	134.3	153.0	187.4	266.1
4.20	119.8	134.3	153.0	187.4	266.1
4.25	119.8	134.3	153.0	187.4	266.1
4.30	119.8	134.3	153.0	187.4	266.1
4.35	119.8	134.3	153.0	187.4	266.1
4.40	119.8	134.3	153.0	187.4	266.1
4.45	119.8	134.3	153.0	187.4	266.1
4.50	119.8	134.3	153.0	187.4	266.1
4.55	119.8	134.3	153.0	187.4	266.1
4.60	119.8	134.3	153.0	187.4	266.1
4.65	119.8	134.3	153.0	187.4	266.1
4.70	119.8	134.3	153.0	187.4	266.1
4.75	119.8	134.3	153.0	187.4	266.1
4.80	119.8	134.3	153.0	187.4	266.1
4.85	119.8	134.3	153.0	187.4	266.1
4.90	119.8	134.3	153.0	187.4	266.1
4.95	119.8	134.3	153.0	187.4	266.1
5.00	119.8	134.3	153.0	187.4	266.1
5.05	119.8	134.3	153.0	187.4	266.1
5.10	119.8	134.3	153.0	187.4	266.1
5.15	119.8	134.3	153.0	187.4	266.1
5.20	119.8	134.3	153.0	187.4	266.1
5.25	119.8	134.3	153.0	187.4	266.1
5.30	119.8	134.3	153.0	187.4	266.1
5.35	119.8	134.3	153.0	187.4	266.1
5.40	119.8	134.3	153.0	187.4	266.1
5.45	119.8	134.3	153.0	187.4	266.1
5.50	119.8	134.3	153.0	187.4	266.1
5.55	119.8	134.3	153.0	187.4	266.1
5.60	119.8	134.3	153.0	187.4	266.1
5.65	119.8	134.3	153.0	187.4	266.1
5.70	119.8	134.3	153.0	187.4	266.1
5.75	119.8	134.3	153.0	187.4	266.1
5.80	119.8	134.3	153.0	187.4	266.1
5.85	119.8	134.3	153.0	187.4	266.1
5.90	119.8	134.3	153.0	187.4	266.1
5.95	119.8	134.3	153.0	187.4	266.1
6.00	119.8	134.3	153.0	187.4	266.1
6.05	119.8	134.3	153.0	187.4	266.1
6.10	119.8	134.3	153.0	187.4	266.1
6.15	119.8	134.3	153.0	187.4	266.1
6.20	119.8	134.3	153.0	187.4	266.1
6.25	119.8	134.3	153.0	187.4	266.1
6.30	119.8	134.3	153.0	187.4	266.1
6.35	119.8	134.3	153.0	187.4	266.1
6.40	119.8	134.3	153.0	187.4	266.1
6.45	119.8	134.3	153.0	187.4	266.1
6.50	119.8	134.3	153.0	187.4	266.1
6.55	119.8	134.3	153.0	187.4	266.1
6.60	119.8	134.3	153.0	187.4	266.1
6.65	119.8	134.3	153.0	187.4	266.1
6.70	119.8	134.3	153.0	187.4	266.1
6.75	119.8	134.3	153.0	187.4	266.1
6.80	119.8	134.3	153.0	187.4	266.1
6.85	119.8	134.3	153.0	187.4	266.1
6.90	119.8	134.3	153.0	187.4	266.1
6.95	119.8	134.3	153.0	187.4	266.1
7.00	119.8	134.3	153.0	187.4	266.1
7.05	119.8	134.3	153.0	187.4	266.1
7.10	119.8	134.3	153.0	187.4	266.1
7.15	119.8	134.3	153.0	187.4	266.1
7.20	119.8	134.3	153.0	187.4	266.1
7.25	119.8	134.3	153.0	187.4	266.1
7.30	119.8	134.3	153.0	187.4	266.1
7.35	119.8	134.3	153.0	187.4	266.1
7.40	119.8	134.3	153.0	187.4	266.1
7.45	119.8	134.3	153.0	187.4	266.1
7.50	119.8	134.3	153.0	187.4	266.1
7.55	119.8	134.3	153.0	187.4	266.1
7.60	119.8	134.3	153.0	187.4	266.1
7.65	119.8	134.3	153.0	187.4	266.1
7.70	119.8	134.3	153.0	187.4	266.1
7.75	119.8	134.3	153.0	187.4	266.1
7.80	119.8	134.3	153.0	187.4	266.1
7.85	119.8	134.3	153.0	187.4	266.1
7.90	119.8	134.3	153.0	187.4	266.1
7.95	119.8	134.3	153.0	187.4	266.1
8.00	119.8	134.3	153.0	187.4	266.1
8.05	119.8	134.3	153.0	187.4	266.1
8.10	119.8	134.3	153.0	187.4	266.1
8.15	119.8	134.3	153.0	187.4	266.1
8.20	119.8	134.3	153.0	187.4	266.1
8.25	119.8	134.3	153.0	187.4	266.1
8.30	119.8	134.3	153.0	187.4	266.1
8.35	119.8	134.3	153.0	187.4	266.1
8.40	119.8	134.3	153.0	187.4	266.1
8.45	119.8	134.3	153.0	187.4	266.1
8.50	119.8	134.3	153.0	187.4	266.1
8.55	119.8	134.3	153.0	187.4	266.1
8.60	119.8	134.3	153.0	187.4	266.1
8.65	119.8	134.3	153.0	187.4	266.1
8.70	119.8	134.3	153.0	187.4	266.1
8.75	119.8	134.3	153.0	187.4	266.1
8.80	119.8	134.3	153.0	187.4	266.1
8.85	119.8	134.3	153.0	187.4	266.1
8.90	119.8	134.3	153.0	187.4	266.1
8.95	119.8	134.3	153.0	187.4	266.1
9.00	119.8	134.3	153.0	187.4	266.1
9.05	119.8	134.3	153.0	187.4	266.1
9.10	119.8	134.3	153.0	187.4	266.1
9.15	119.8	134.3	153.0	187.4	266.1
9.20	119.8	134.3	153.0	187.4	266.1
9.25	119.8	134.3	153.0	187.4	266.1
9.30	119.8	134.3	153.0	187.4	266.1
9.35	119.8	134.3	153.0	187.4	266.1
9.40	119.8	134.3	153.0	187.4	266.1
9.45	119.8	134.3	153.0	187.4	266.1
9.50	119.8	134.3	153.0	187.4	266.1
9.55	119.8	134.3	153.0	187.4	266.1
9.60	119.8	134.3	153.0	187.4	266.1
9.65	119.8	134.3	153.0	187.4	266.1
9.70	119.8	134.3	153.0	187.4	266.1
9.75	119.8	134.3	153.0	187.4	266.1
9.80	119.8	134.3	153.0	187.4	266.1
9.85	119.8	134.3	153.0	187.4	266.1
9.90	119.8	134.3	153.0	187.4	266.1
9.95	119.8	134.3	153.0	187.4	266.1
10.00	119.8	134.3	153.0	187.4	266.1

Table 7.15.2. Standard deviation in finishing bankroll (points) after 250 Kelly stake singles

	BOOK PREVIEW						
Edge	0.2	0.3	0.4	0.5	0.6		
0.9	NA	NA	NA	NA	NA		
1.05	51.6	77.0	111.6	182.1	347.5		
1.1	201.8	428.2	1079.8	4394.4	3138.4		
1.15	51.6	3340.1	2298.5	298.5	16.6		43
1.2	51.6	4263.1	355.9	79.4	176.6		136

Table 7.15.3. Probability of bankruptcy after 250 Kelly stake singles

	BOOK PREVIEW						
Edge	0.2	0.3	0.4	0.5	0.6		
0.9	NA	NA	NA	NA	NA		
1.05	0.00%	0.00%	0.00%	0.00%	0.00%		%
1.1	0.00%	0.00%	0.00%	0.00%	0.00%		%
1.15	0.00%	0.02%	0.05%	0.13%	0.31%		%
1.2	0.00%	0.00%	0.12%	0.03%	0.01%		%

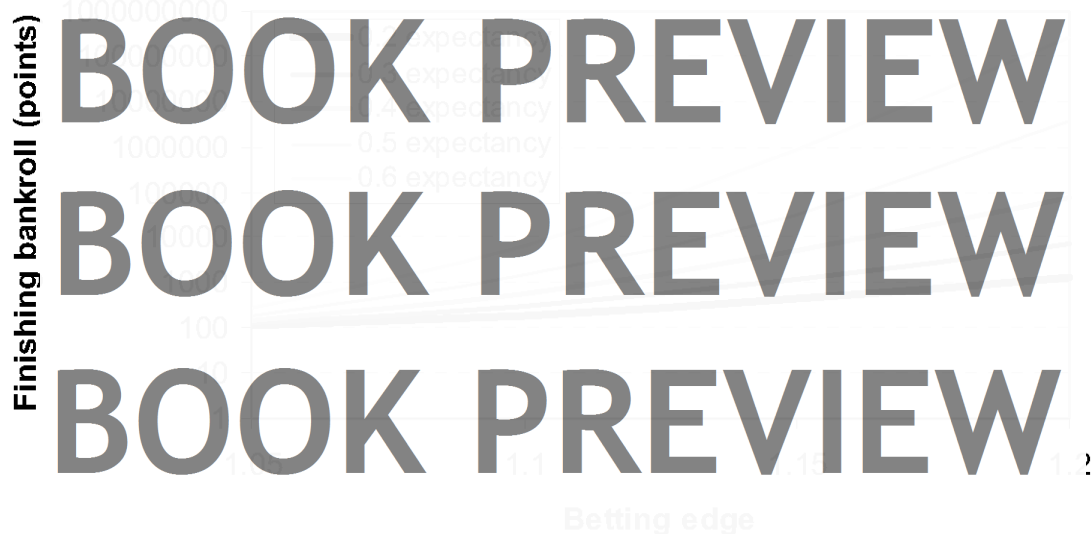
Table 7.15.4. Probability of making a profit after 250 Kelly stake singles

	BOOK PREVIEW						
Edge	0.2	0.3	0.4	0.5	0.6		
0.9	NA	NA	NA	NA	NA		
1.05	41.6%	38.6%	37.6%	35.7%	32.8%		%
1.1	35.0%	31.2%	24.9%	19.6%	14.0%		%
1.15	28.8%	21.9%	15.8%	11.1%	3.8%		%
1.2	16.1%	16.1%	11.1%	11.1%	3.8%		%

There is no doubt that Kelly staking can make a punter a lot of money, provided he can both gain an edge and be fairly accurate, on average. It also provides a truly remarkable opportunity to be profitable in the long run, given that there exists a small but significant probability of bankruptcy in the size of the finishing bankroll (Table 7.15.2), with the majority of

finishing bankrolls lower than the average value, a feature common to all percentage staking plans (see footnote 57 earlier). Figure 7.27 reveals that profi BOOK PREVIEW d on
 accc BOOK PREVIEW size
 of th BOOK PREVIEW odds
 sma BOOK PREVIEW e for
 ever BOOK PREVIEW e for
 shor

Figur BOOK PREVIEW k, for
 Kelly



Figur BOOK PREVIEW ng to
 return a profit, for Kelly staking



Using $B_n = B (F_1 F_2 F_3 \dots F_{250})$, it is possible to calculate the expected⁵⁹ size of the finishing bankroll for each scenario, assuming that the betting edge these expectations are based on is the actual edge for each bet. The difference between the expected and actual finishing bankroll means that the expected finishing bankroll is not a measure of the real scenario performance, but rather a measure of the margin of error in the assessment of the edge for each specific bet.⁶⁰

Table 7.17

Bookmaker's expectancy	0.3	0.4	0.5	0.6	0.7	0.8
0.95	NA	NA	NA	NA	NA	NA
1.0	NA	NA	NA	NA	NA	NA
1.05	NA	NA	NA	NA	NA	NA
1.1	NA	NA	NA	NA	NA	NA
1.15	442	1305	5681	45866	13291	86
1.2	1305	9410	124483	4765145	158356	1064

Table 7.18
after 250 Kelly stake singles

Bookmaker's expectancy	0.3	0.4	0.5	0.6	0.7	0.8
0.95	NA	NA	NA	NA	NA	NA
1.0	NA	NA	NA	NA	NA	NA
1.05	NA	NA	NA	NA	NA	NA
1.1	NA	NA	NA	NA	NA	NA
1.15	0.96	0.92	0.86	0.72	0.66	0.61
1.2	0.96	0.78	0.63	0.73	0.16	0.16

⁵⁹ Cor
⁶⁰ The
two-th
scena
actual
betting
punte
Readers may wish to refer back to Table 7.1 and also the appendix.

For the majority of betting scenarios, it is surprising how close the actual average finishing bankroll is to the expected finishing bank. The discrepancy is usually small, because the assessment of the specific edge for any bet will have a greater impact on the profit than the judgment of the bookmaker's edge. That is, the bookmaker's edge is the most important factor in determining the outcome of a bet.

Kelly staking is a method of betting that aims to maximize the long-term growth of a bankroll. It is based on the Kelly criterion, which is a mathematical formula that determines the optimal size of a bet. The Kelly criterion is based on the idea of maximizing the expected logarithm of the bankroll. This means that the bettor should bet a fraction of their bankroll that is proportional to their edge. If the edge is 1%, then the bettor should bet 1% of their bankroll. If the edge is 2%, then the bettor should bet 2% of their bankroll. The Kelly criterion is a powerful tool for bettors, but it is not perfect. It assumes that the bettor has a constant edge, which is not always the case. Additionally, it does not take into account the risk of ruin, which is the possibility of losing the entire bankroll. Despite these limitations, the Kelly criterion is still a valuable tool for bettors.

Table 7.18.1 to Table 7.18.4 summarises the outputs of the Monte Carlo simulations for Kelly staking, for scenarios where the punter has an edge. The results show that the average finishing bankroll is very close to the expected finishing bankroll. This is true for all scenarios, even for those where the edge is very small. The results also show that the standard deviation of the finishing bankroll is very small. This means that the results are very consistent. The Monte Carlo simulations are a powerful tool for bettors, as they allow them to see the results of their betting strategy over a large number of trials. This helps them to understand the long-term performance of their strategy and to make informed decisions about their betting.

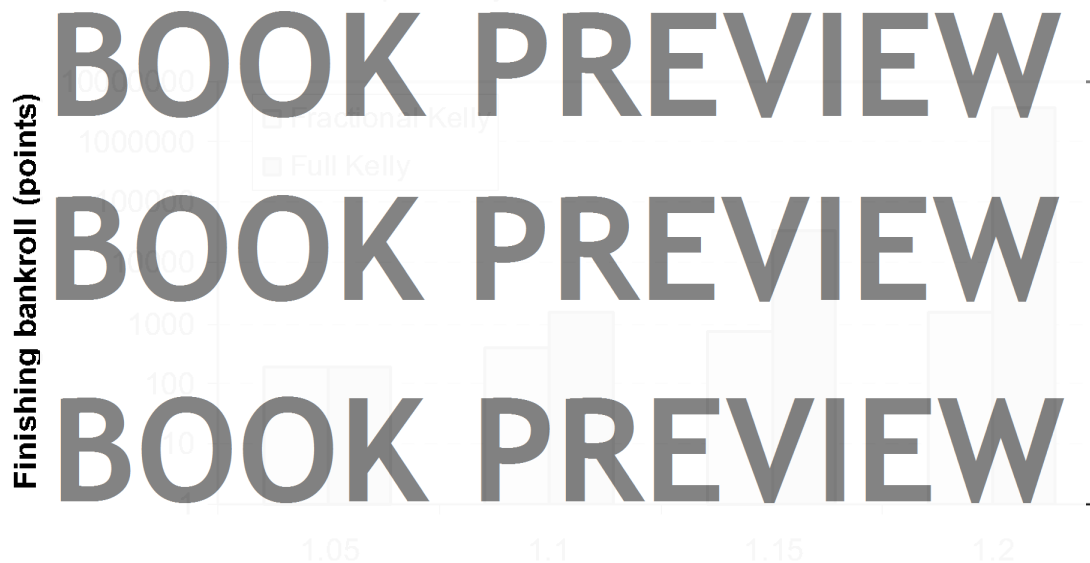
Table 7.18.1 Average finishing bankroll (p) after 200 Kelly stakes, for an edge estimate of 1.05

Bookmaker's expectancy	1.05	1.10	1.15	1.20	1.25	1.30
1	1.05	1.10	1.15	1.20	1.25	1.30
2	1.05	1.10	1.15	1.20	1.25	1.30
3	1.05	1.10	1.15	1.20	1.25	1.30
4	1.05	1.10	1.15	1.20	1.25	1.30
5	1.05	1.10	1.15	1.20	1.25	1.30
6	1.05	1.10	1.15	1.20	1.25	1.30
7	1.05	1.10	1.15	1.20	1.25	1.30
8	1.05	1.10	1.15	1.20	1.25	1.30
9	1.05	1.10	1.15	1.20	1.25	1.30
10	1.05	1.10	1.15	1.20	1.25	1.30
11	1.05	1.10	1.15	1.20	1.25	1.30
12	1.05	1.10	1.15	1.20	1.25	1.30
13	1.05	1.10	1.15	1.20	1.25	1.30
14	1.05	1.10	1.15	1.20	1.25	1.30
15	1.05	1.10	1.15	1.20	1.25	1.30
16	1.05	1.10	1.15	1.20	1.25	1.30
17	1.05	1.10	1.15	1.20	1.25	1.30
18	1.05	1.10	1.15	1.20	1.25	1.30
19	1.05	1.10	1.15	1.20	1.25	1.30
20	1.05	1.10	1.15	1.20	1.25	1.30
21	1.05	1.10	1.15	1.20	1.25	1.30
22	1.05	1.10	1.15	1.20	1.25	1.30
23	1.05	1.10	1.15	1.20	1.25	1.30
24	1.05	1.10	1.15	1.20	1.25	1.30
25	1.05	1.10	1.15	1.20	1.25	1.30
26	1.05	1.10	1.15	1.20	1.25	1.30
27	1.05	1.10	1.15	1.20	1.25	1.30
28	1.05	1.10	1.15	1.20	1.25	1.30
29	1.05	1.10	1.15	1.20	1.25	1.30
30	1.05	1.10	1.15	1.20	1.25	1.30
31	1.05	1.10	1.15	1.20	1.25	1.30
32	1.05	1.10	1.15	1.20	1.25	1.30
33	1.05	1.10	1.15	1.20	1.25	1.30
34	1.05	1.10	1.15	1.20	1.25	1.30
35	1.05	1.10	1.15	1.20	1.25	1.30
36	1.05	1.10	1.15	1.20	1.25	1.30
37	1.05	1.10	1.15	1.20	1.25	1.30
38	1.05	1.10	1.15	1.20	1.25	1.30
39	1.05	1.10	1.15	1.20	1.25	1.30
40	1.05	1.10	1.15	1.20	1.25	1.30
41	1.05	1.10	1.15	1.20	1.25	1.30
42	1.05	1.10	1.15	1.20	1.25	1.30
43	1.05	1.10	1.15	1.20	1.25	1.30
44	1.05	1.10	1.15	1.20	1.25	1.30
45	1.05	1.10	1.15	1.20	1.25	1.30
46	1.05	1.10	1.15	1.20	1.25	1.30
47	1.05	1.10	1.15	1.20	1.25	1.30
48	1.05	1.10	1.15	1.20	1.25	1.30
49	1.05	1.10	1.15	1.20	1.25	1.30
50	1.05	1.10	1.15	1.20	1.25	1.30
51	1.05	1.10	1.15	1.20	1.25	1.30
52	1.05	1.10	1.15	1.20	1.25	1.30
53	1.05	1.10	1.15	1.20	1.25	1.30
54	1.05	1.10	1.15	1.20	1.25	1.30
55	1.05	1.10	1.15	1.20	1.25	1.30
56	1.05	1.10	1.15	1.20	1.25	1.30
57	1.05	1.10	1.15	1.20	1.25	1.30
58	1.05	1.10	1.15	1.20	1.25	1.30
59	1.05	1.10	1.15	1.20	1.25	1.30
60	1.05	1.10	1.15	1.20	1.25	1.30
61	1.05	1.10	1.15	1.20	1.25	1.30
62	1.05	1.10	1.15	1.20	1.25	1.30
63	1.05	1.10	1.15	1.20	1.25	1.30
64	1.05	1.10	1.15	1.20	1.25	1.30
65	1.05	1.10	1.15	1.20	1.25	1.30
66	1.05	1.10	1.15	1.20	1.25	1.30
67	1.05	1.10	1.15	1.20	1.25	1.30
68	1.05	1.10	1.15	1.20	1.25	1.30
69	1.05	1.10	1.15	1.20	1.25	1.30
70	1.05	1.10	1.15	1.20	1.25	1.30
71	1.05	1.10	1.15	1.20	1.25	1.30
72	1.05	1.10	1.15	1.20	1.25	1.30
73	1.05	1.10	1.15	1.20	1.25	1.30
74	1.05	1.10	1.15	1.20	1.25	1.30
75	1.05	1.10	1.15	1.20	1.25	1.30
76	1.05	1.10	1.15	1.20	1.25	1.30
77	1.05	1.10	1.15	1.20	1.25	1.30
78	1.05	1.10	1.15	1.20	1.25	1.30
79	1.05	1.10	1.15	1.20	1.25	1.30
80	1.05	1.10	1.15	1.20	1.25	1.30
81	1.05	1.10	1.15	1.20	1.25	1.30
82	1.05	1.10	1.15	1.20	1.25	1.30
83	1.05	1.10	1.15	1.20	1.25	1.30
84	1.05	1.10	1.15	1.20	1.25	1.30
85	1.05	1.10	1.15	1.20	1.25	1.30
86	1.05	1.10	1.15	1.20	1.25	1.30
87	1.05	1.10	1.15	1.20	1.25	1.30
88	1.05	1.10	1.15	1.20	1.25	1.30
89	1.05	1.10	1.15	1.20	1.25	1.30
90	1.05	1.10	1.15	1.20	1.25	1.30
91	1.05	1.10	1.15	1.20	1.25	1.30
92	1.05	1.10	1.15	1.20	1.25	1.30
93	1.05	1.10	1.15	1.20	1.25	1.30
94	1.05	1.10	1.15	1.20	1.25	1.30
95	1.05	1.10	1.15	1.20	1.25	1.30
96	1.05	1.10	1.15	1.20	1.25	1.30
97	1.05	1.10	1.15	1.20	1.25	1.30
98	1.05	1.10	1.15	1.20	1.25	1.30
99	1.05	1.10	1.15	1.20	1.25	1.30
100	1.05	1.10	1.15	1.20	1.25	1.30

Figure 7.30. The influence of odds and betting edge on the probability of failing to return a profit, for Kelly staking with an edge estimate of 1.05

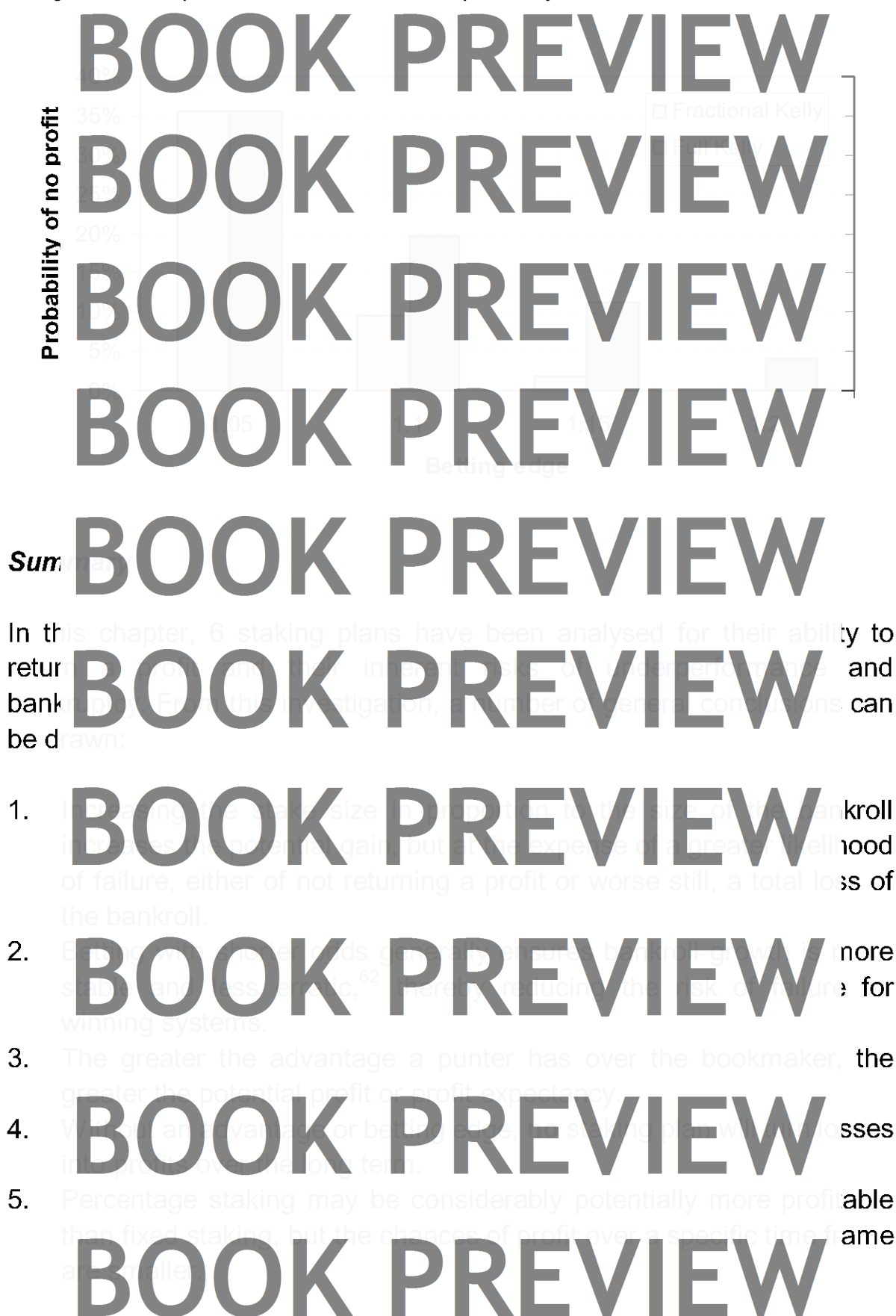


Figure 7.31. A comparison of full and fractional Kelly staking for average finishing bankroll, for a bookmaker's expectancy of 0.5



⁶¹ Betting edge estimated as 1.05.

Figure 7.32. A comparison of full and fractional Kelly staking for the probability of failing to return a profit, for a bookmaker's expectancy of 0.5



⁶² This is explored further in the final chapter.

6. It is preferable to wager smaller stakes where the odds are longer (e.g. fixed profits staking).

7. **BOOK PREVIEW** as a
je to
ers.

8. **BOOK PREVIEW** g the
the
ified
his
nefit

What
gam **BOOK PREVIEW** as to

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

A Winning System?

Dev

BOOK PREVIEW

It is a
long
think
reas
impe
perti

BOOK PREVIEW

BOOK PREVIEW

The
spor
unfa
to o
more
run
likeli
strat

BOOK PREVIEW

BOOK PREVIEW

Beat
and
strat
bett
stak
runs
Man
strat
rand
spor
plan
shov
adv

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

The
atter
succ
stak
reliab

BOOK PREVIEW

bettor has failed to establish an edge. If a punter is to show any long-term viability with his betting, rejecting any such lack of discipline is imperative.

If the
the r
least
ever
date
book
bett
book
syste
alon
safe
allow
diffe
risk.
anal
benc
punt
a ne

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

Sinc
book
som
to c
wher
Foot
betti
dispr
long
punt
poss
over
over
no s
book
able
for €

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

it is
very
and
I the
the
alue
the
tting
ation
how
ore,
ng to
ising
ways
the
with a
tem;
the
as to
inter
ably
aker.
ports
ker's
able
eld a
h as
imal
With
it is
treet
ll be
odds
king

strategy will be higher,⁶³ since losing runs will be more commonplace. Any punter choosing to focus on correct score football betting would be wise to keep as well as when through Asian handicap betting in football, match betting in tennis, darts, and over the top of the bookmaker's odds, since there are only 2 possible outcomes to an

It is doubtful whether enhanced influence over the course of a match will be of much man- iced in the long run. Of the many possibilities, the most likely will be its

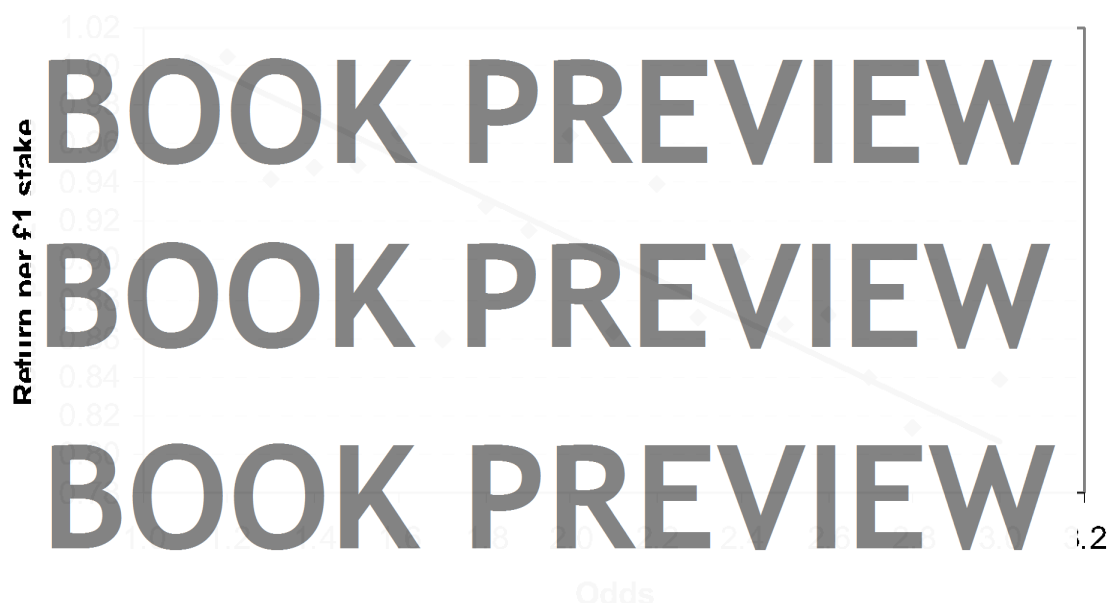
Back A frequent argument amongst punters is whether to concentrate on a favorite or an underdog. In recent years, many betting experts have claimed that betting on underdogs will secure a return in the long run, provided that you have the necessary patience to wait for the surprising results to occur. The explanation often proposed for this is that the majority of punters tend to back favorites, which in a sense creates a liability. In reality, however, both theory and evidence point to the complete opposite.

In the long run, the market is concentrated on the higher odds. With superior value in the short term, the potential for gaining an edge, if not additional profit, may be very well served. A

⁶³ The reader may wish to refer back to some of the staking plan analyses presented in the previous chapter.

typical bookmaker's overround for a football match bet is about 112% to 116%, depending on the league. A detailed analysis of nearly 12,000 games from the 1995-96 season to the 2000-01 season, on average, found that the bookmaker's overround was 112.5% (or 1/1.15) for every £1 staked. By contrast, backing the home team and averaging prices greater than 2/1 would have returned only 20 pence for every £1 staked. Backing the away team would have lost only 4 pence for every £1. Since the home team in football is more likely to win than the away team, the bookmaker's overround was considerably smaller than if backing the away wins (10 pence per £1 stake). A more precise breakdown for odds up to 2/1 is shown in Figure 8.1.

Figure 8.1 Relationship between odds and returns from blind betting for odds up to 2/1 (1995-96 to 2000-01)



The customer demand is not in itself a mistaken one. Fixed odds with Internet bookmakers fluctuate, sometimes quite considerably for popular contests, and the relationship between the odds and the return is as expected, relative to the favourite as a consequence of such price movement.

however, the assumption must be that both favourite and underdog were priced with no bias to begin with, that is, with the same measure of book that proportionally less worse to level stakes than he will backing underpres before account.

For a hard week more sure more long fund With very y be /1 is at is write—is a

A number of academic papers⁶⁴ have been written during the last decade or so in which phenomenon has been provided. Since a £1 bet on a horse at 3/1 expc hors him ach more the t play: expc Con: book spor

⁶⁴ For example, Fingleton, J. & Waldron, P. (revised 2001). Optimal Determination of Bookmakers' Betting Odds: Theory and Tests. Trinity Economic Paper Series Technical No. 9 some 1505 efficie on of Paper y are (11), market

Consider an imaginary bookmaker offering odds for Michael Schumacher versus the rest of the field to win the Formula 1 motor racing world championship. Schumacher has won the title 75% of the time, with yet another title in 2000. The bookmaker's assessment of the true result expectancies is 25%. Consequently the fair odds for a Schumacher win are 1.33 and 4 respectively. To investigate how the bookmaker will price the bet, let us suppose that the bookmaker has made an error of judgement in the assessment of the true result expectancies. Instead, the bookmaker has assessed the true result expectancies for Schumacher as 30% and 20% respectively. How much error of judgement will the bookmaker make if he prices the bet on the basis of his assessment of the true result expectancies? The answer is 0%.

• BOOK PREVIEW
•
•

Table 1.1. The bookmaker's assessment of the true result expectancies for Michael Schumacher and the rest of the field to win the Formula 1 motor racing world championship. The bookmaker's assessment of the true result expectancies is 25%. Consequently the fair odds for a Schumacher win are 1.33 and 4 respectively. To investigate how the bookmaker will price the bet, let us suppose that the bookmaker has made an error of judgement in the assessment of the true result expectancies. Instead, the bookmaker has assessed the true result expectancies for Schumacher as 30% and 20% respectively. How much error of judgement will the bookmaker make if he prices the bet on the basis of his assessment of the true result expectancies? The answer is 0%.

Table 1.1. The bookmaker's assessment of the true result expectancies for Michael Schumacher and the rest of the field to win the Formula 1 motor racing world championship. The bookmaker's assessment of the true result expectancies is 25%. Consequently the fair odds for a Schumacher win are 1.33 and 4 respectively. To investigate how the bookmaker will price the bet, let us suppose that the bookmaker has made an error of judgement in the assessment of the true result expectancies. Instead, the bookmaker has assessed the true result expectancies for Schumacher as 30% and 20% respectively. How much error of judgement will the bookmaker make if he prices the bet on the basis of his assessment of the true result expectancies? The answer is 0%.

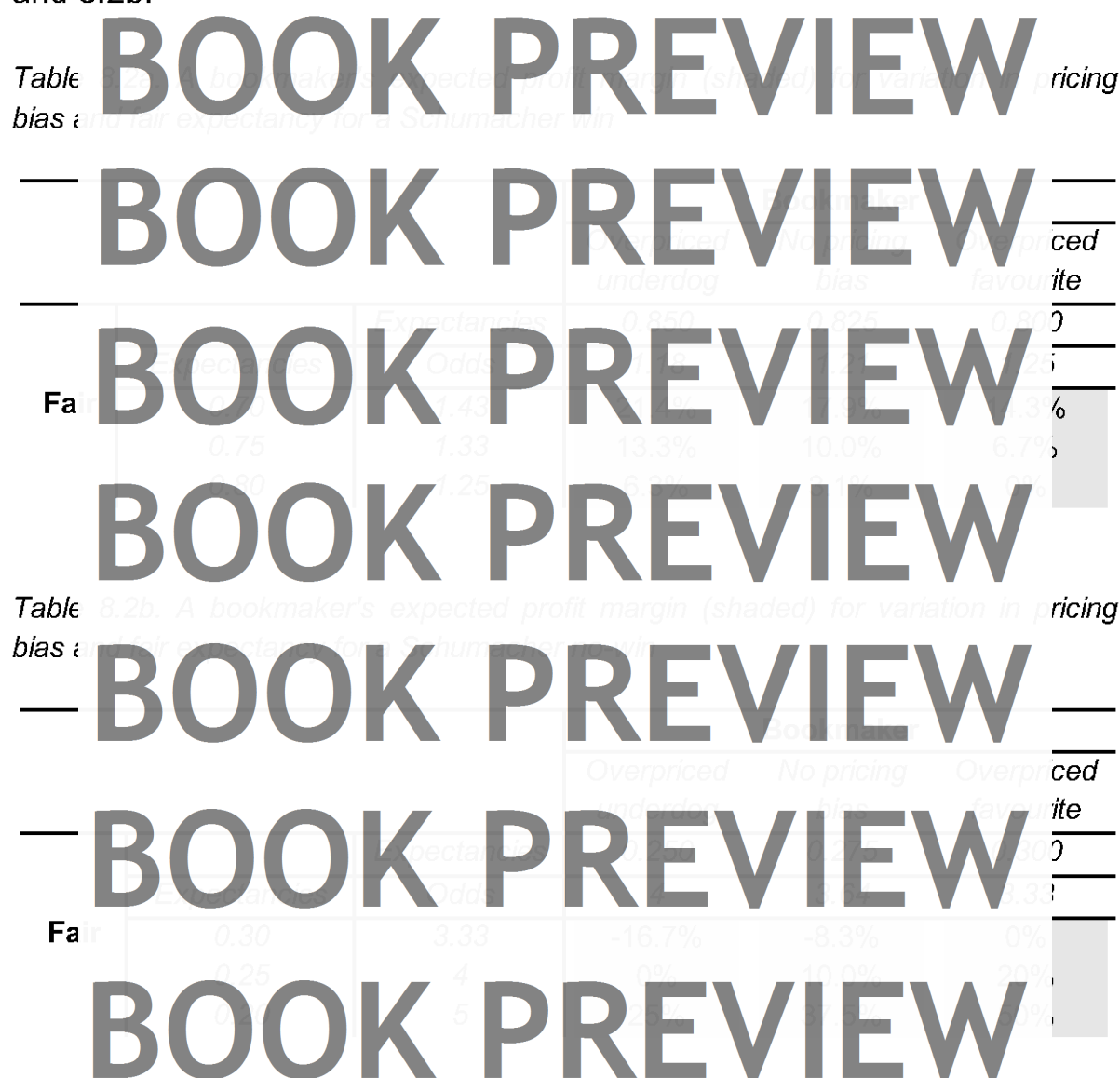
Table 1.1. The bookmaker's assessment of the true result expectancies for Michael Schumacher and the rest of the field to win the Formula 1 motor racing world championship. The bookmaker's assessment of the true result expectancies is 25%. Consequently the fair odds for a Schumacher win are 1.33 and 4 respectively. To investigate how the bookmaker will price the bet, let us suppose that the bookmaker has made an error of judgement in the assessment of the true result expectancies. Instead, the bookmaker has assessed the true result expectancies for Schumacher as 30% and 20% respectively. How much error of judgement will the bookmaker make if he prices the bet on the basis of his assessment of the true result expectancies? The answer is 0%.

Table 1.1. The bookmaker's assessment of the true result expectancies for Michael Schumacher and the rest of the field to win the Formula 1 motor racing world championship. The bookmaker's assessment of the true result expectancies is 25%. Consequently the fair odds for a Schumacher win are 1.33 and 4 respectively. To investigate how the bookmaker will price the bet, let us suppose that the bookmaker has made an error of judgement in the assessment of the true result expectancies. Instead, the bookmaker has assessed the true result expectancies for Schumacher as 30% and 20% respectively. How much error of judgement will the bookmaker make if he prices the bet on the basis of his assessment of the true result expectancies? The answer is 0%.

Table 1.1. The bookmaker's assessment of the true result expectancies for Michael Schumacher and the rest of the field to win the Formula 1 motor racing world championship. The bookmaker's assessment of the true result expectancies is 25%. Consequently the fair odds for a Schumacher win are 1.33 and 4 respectively. To investigate how the bookmaker will price the bet, let us suppose that the bookmaker has made an error of judgement in the assessment of the true result expectancies. Instead, the bookmaker has assessed the true result expectancies for Schumacher as 30% and 20% respectively. How much error of judgement will the bookmaker make if he prices the bet on the basis of his assessment of the true result expectancies? The answer is 0%.

Now let us suppose that the bookmaker has made an error of judgement in the assessment of the true result expectancies. Instead, the bookmaker has assessed the true result expectancies for Schumacher as 30% and 20% respectively. How much error of judgement will the bookmaker make if he prices the bet on the basis of his assessment of the true result expectancies? The answer is 0%.

will affect the bookmaker's exposure to risk is illustrated in Tables 8.2a and 8.2b.



For an overpriced favourite, even where the bookmaker has bid a price that is above the true expectancy, the expected profit is increased to 14.3%. This is at the expense of a reduction in profit from underdog wagers, but principally because the bookmaker's assessment of the fair odds could expose him to considerable risk on the underdog. Of course, where the underdog is overpriced, the bookmaker's exposure to risk is reduced, but the bookmaker's assessment of the fair odds could expose him to considerable risk on the underdog. Of course, where the underdog is overpriced, the bookmaker's exposure to risk is reduced, but the bookmaker's assessment of the fair odds could expose him to considerable risk on the underdog.

sporting outcome. For the scenarios presented above, the only way to achieve this level of risk management is to overprice the favourite.⁶⁵

For the
grea
will
punt
may
ever
prop
risk-
subs
outc
over
130%
Aust
marl
least
adv

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

The
expl
and
strai
com
supp
5/2,
subs
The
was

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

A fu
that
be €
expl

BOOK PREVIEW

⁶⁵ Ob
his cu
of a p
fundamental rationale behind a favourite-longshot bias will remain essentially unchanged.

BOOK PREVIEW

nally
dog,
t the
at he
over,
have
er is
the
sible
the
% to
ween
-way
s, at
ised

able
odds
t as
odds
ty of
than
been
ook.
ound

st is
may
was
, the

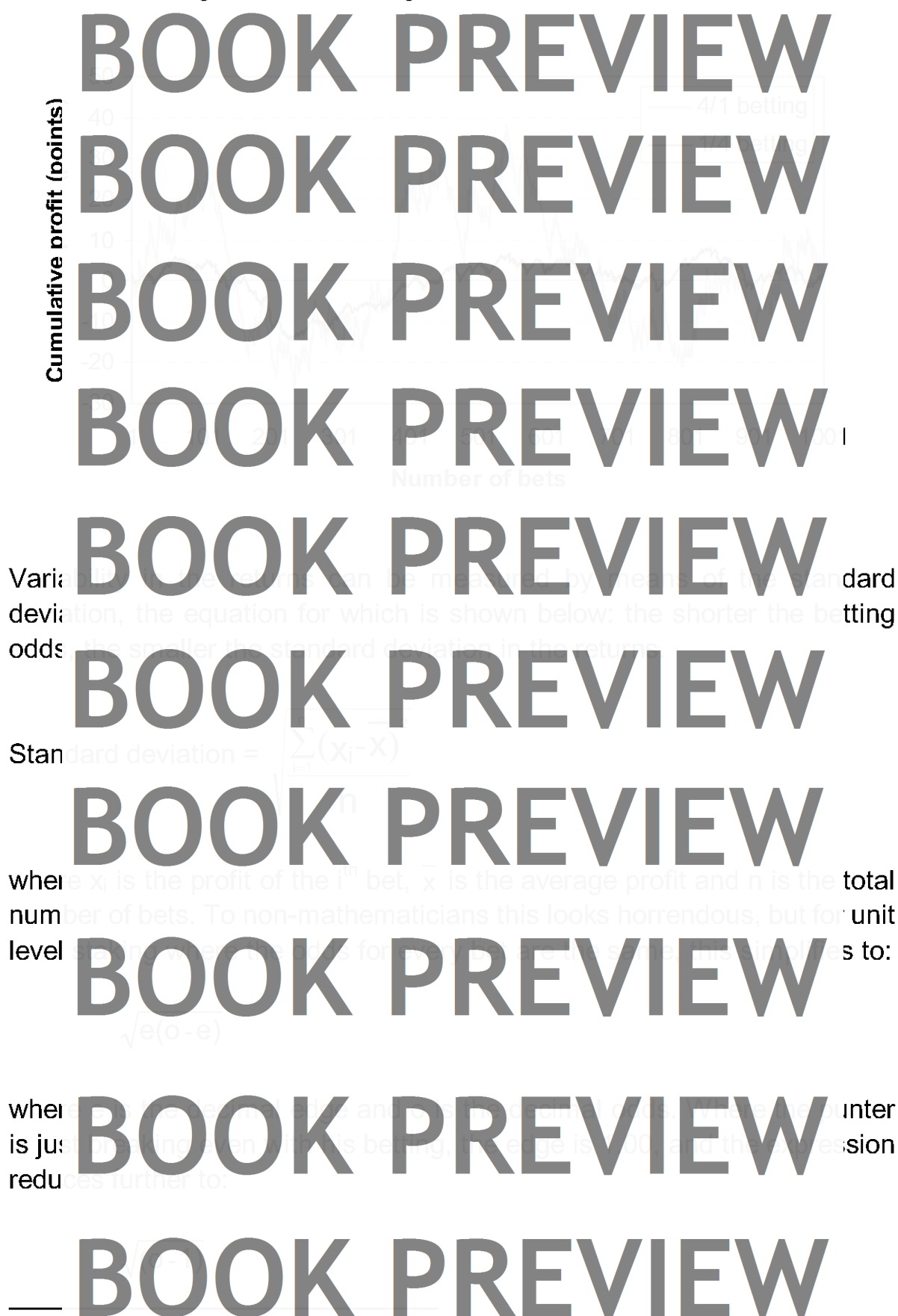
n it by
vering
e, the

longer the odds, the “noisier” or less predictable the returns, as illustrated in Table 8.3.

	Table scenario	BOOK PREVIEW	Setting
Bet			25
1			25
2			00
3			25
4			25
5			25
6			00
7			25
8			25
9			25
10			25
11			25
12			25
13			25
14			25
15			25
16			25
17			25
18			25
19			00
20			25

BOOK PREVIEW

Figure 8.2. A comparison of odds-on (1/4) and odds-against (4/1) profits time series for unit level staking, break-even betting.⁶⁶



⁶⁶ For a stake of 1 unit, the profit from a winning 4/1 bet is 4, whilst for a 1/4 bet it is 0.25. The profits time series generated for Figure 8.2 represent just one possible scenario.

For common stake size s , the standard deviation will be given by:

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

—BOOK PREVIEW—

BOOK PREVIEW

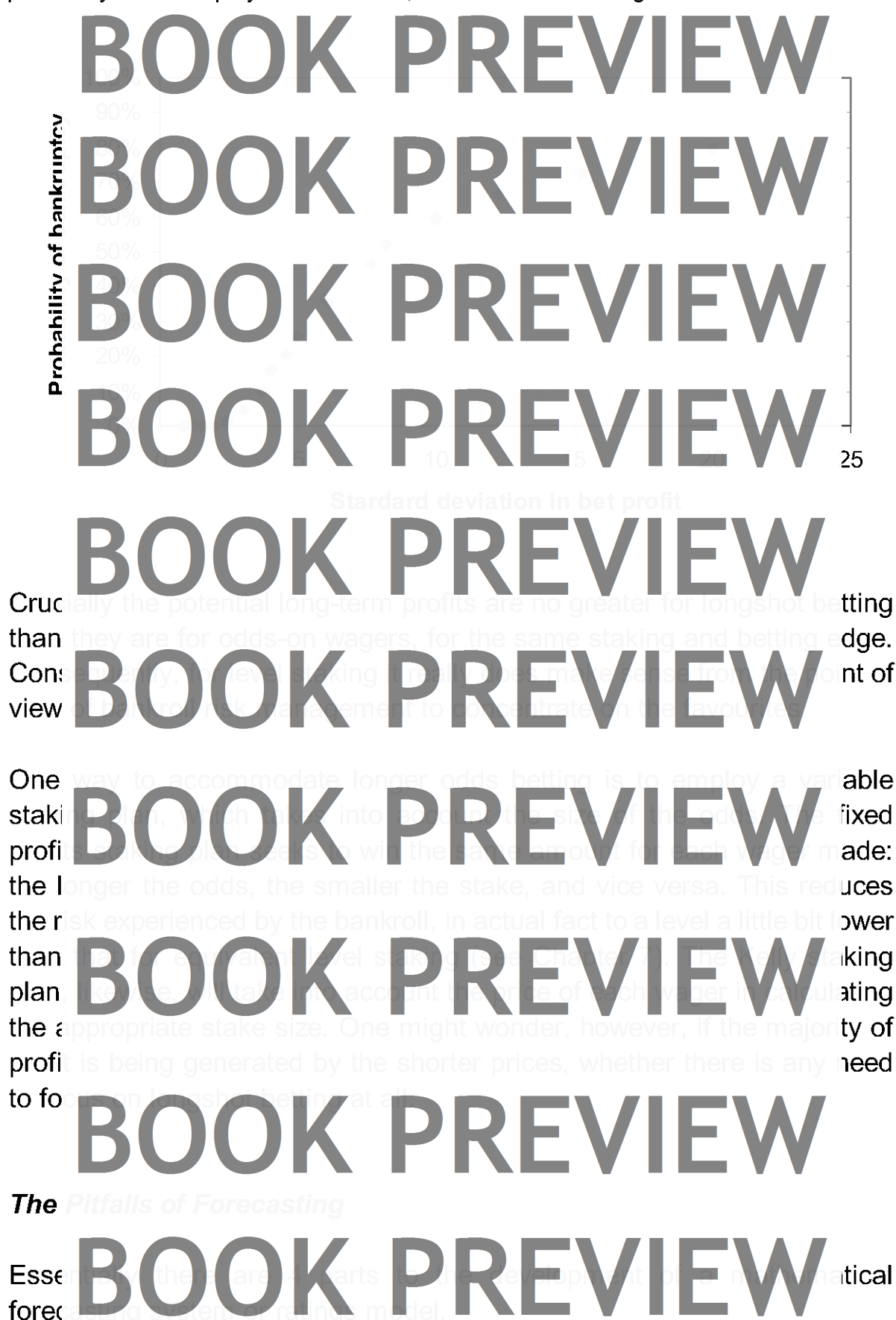
BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

Figure 8.3. The relationship between standard deviation in bet profit and the probability of bankruptcy after 250 bets, for break-even betting



1. Select a suitable method of prediction.
2. Define a relationship between ratings figures and forecasting rates.

The
signi
not p
be al
cons
conc
spre
enou
repli
facto
relat
redu
for e
relat
secc
com

BOOK PREVIEW

BOOK PREVIEW

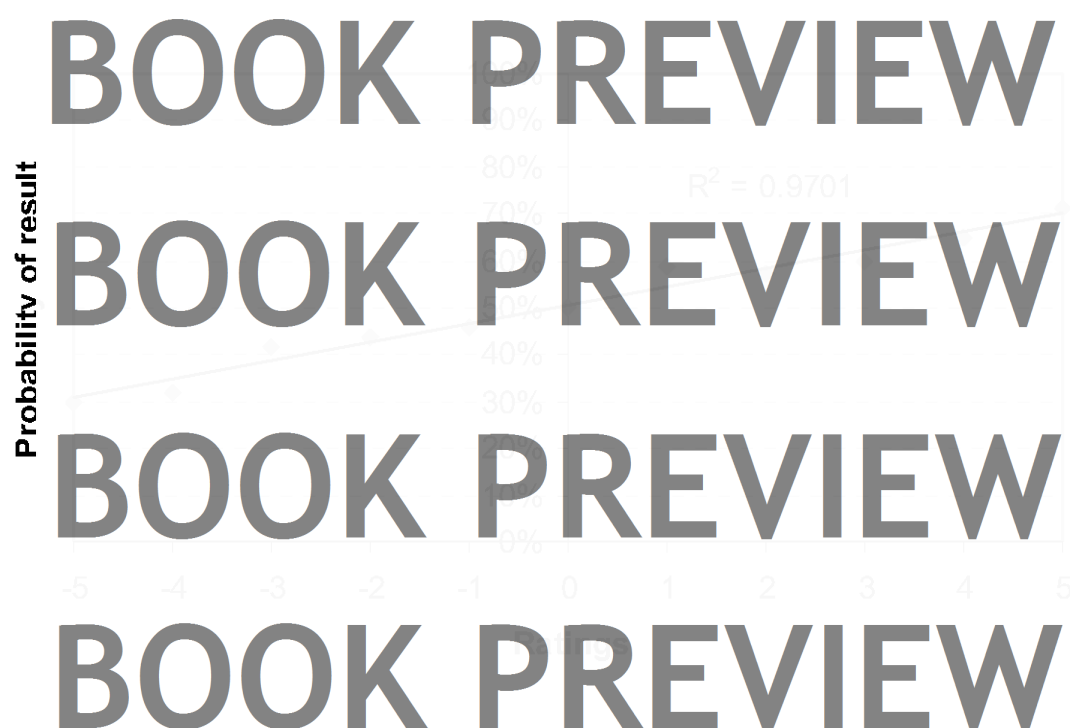
BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

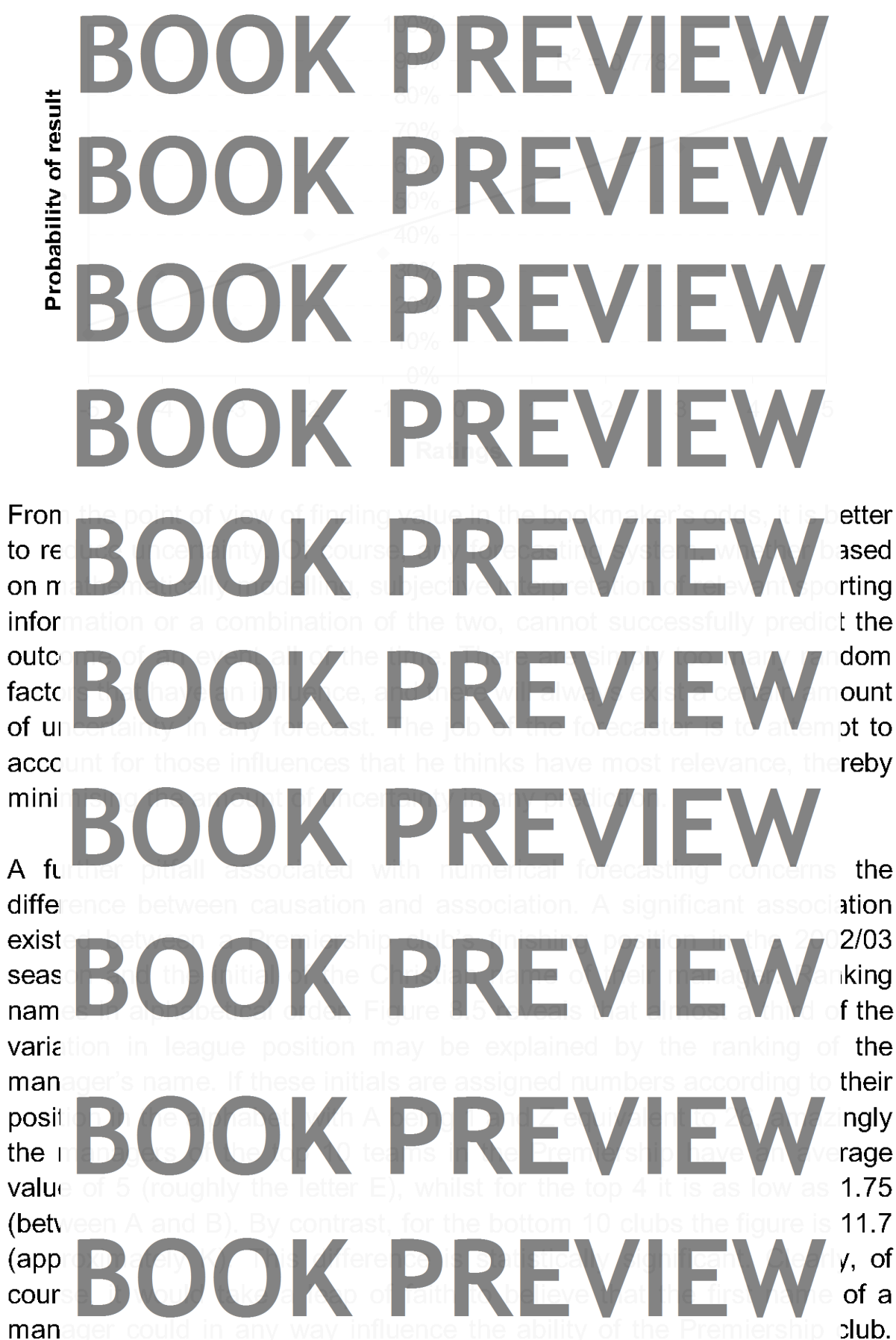
BOOK PREVIEW

Figure 8.4a. A more reliable prediction model



most
d do
ly to
only
and
the
clear
and
ctive
neral
arily
3.4b,
nger
the
'8%,

Figure 8.4b. A less reliable prediction model



Could one reasonably expect Alan Curbishly's Charlton Athletic to defeat Steve Bruce's Birmingham City on this basis?

Table

Club

Manchester

Arsenal

Newcastle United

Chelsea

Liverpool

Blackburn Rovers

Everton

Southampton

Manchester City

Tottenham Hotspur

Midlands

Charlton Athletic

Birmingham City

Fulham

Leeds United

Aston Villa

Bolton

West Ham United

Wolves

Sunderland

Figure

club's

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

League position

Alphabetical rank

Whilst somewhat far-fetched, this example nonetheless highlights the dangers of attributing a statistically significant association between 2 sets of variables. **BOOK PREVIEW** usual

An example of a gambler's fallacy is the belief that a team that has won several games in a row will lose the next game. **BOOK PREVIEW** football

ended as a draw when one of the competing teams had drawn their last 2 games. **BOOK PREVIEW** mes

making might be of use in a betting context, since it would appear to make sense to back either the home or away result for these matches. **BOOK PREVIEW** such

Further analysis of the data might reveal that the statistically significant association has arisen by chance.⁶⁷ Unfortunately, there are 2 serious flaws to this conclusion. **BOOK PREVIEW** ar to

Manchester United have drawn their last 3 games in a row. After all, draws are not that common, and a team that has drawn 2 in a row must be unlikely, but to have 3 must surely be rare indeed. **BOOK PREVIEW** has

The addition of Manchester United to the list of teams that have drawn 3 or more games during 2001/02 might be meaningful, it is necessary to test for the association again from another sample of data. If it still exists, test it again. **BOOK PREVIEW** inter

This finding might be a coincidence. For almost all other years, the percentage of games that ended in a draw was between 8.5% and 10%. **BOOK PREVIEW** id to

The bad news is that the results from the 2001/02 season seem to represent an aberration. For almost all other years, the percentage of games that ended in a draw was between 8.5% and 10%. **BOOK PREVIEW** eed.

For the purpose of testing the association, it is necessary to test for the association again from another sample of data. If it still exists, test it again. **BOOK PREVIEW** n to

⁶⁷ Strictly speaking, statisticians would not consider this finding to be entirely statistically significant, requiring as little as a 5% probability or less that it had arisen by chance. **BOOK PREVIEW** e of

Table 8.5. Percentage of drawn games for matches involving at least one team with two draws in the two preceding games

	Percentage of drawn games	Number of matches
1993/94	24.14%	58
1994/95	22.22%	63
1995/96	22.33%	77
1996/97	22.33%	97
1997/98	34.02%	97
1998/99	25.64%	78
1999/00	30.43%	85
2000/01	18.43%	65
Overall	26.88%	692

The relationship developed for the relationship arising in 2001/02 is that it represents a spurious correlation. A spurious correlation involves an association in which measures of 2 or more variables are statistically related but are not in any causal relationship. A classic example of this is the positive correlation between firemen and fire damage – more firemen, more damage. This is not a causal relationship, but it is a correlation. The same is true of the relationship between the number of firemen and the damage. For the draws analysis above, there is probably some factor lurking in the 65 games in 2001/02 which caused the low number of draws. This might be a spurious correlation, but it is not possible to know for sure. The reason that this relationship arose in the first instance is linked to what Professor Vaughan Williams in his book *Betting To Win* calls the Gambler's Fallacy. The Gambler's Fallacy is the belief that if a relationship has been observed in the past, it will continue to hold in the future. More critically, the idea that the probability of a draw occurring is decreased when such an outcome has occurred twice in the 2 preceding games. The Gambler's Fallacy frequently crops up in roulette circles, where a biased roulette wheel is believed to have a 'hot' or 'cold' streak. The Gambler's Fallacy is a common mistake in betting, and it is one that can lead to significant losses. The Gambler's Fallacy is a common mistake in betting, and it is one that can lead to significant losses.

of the next being red? More likely than black? Well, of course not, it's still the same chance as it was for all the preceding wheel spins, and is equal to the chance of a red spin independent of all the others.

Of course, the probability of a red spin is not strictly independent of all the other spins, but only in the sense that the occurrence of one spin does not affect the probability of the next spin.

As a random event in sport, as one can find, as evidenced by the results of the oddsmakers.

Nevertheless, it is possible to find the probability of a victory, for example, suppose that a boxer has won 50% of his fights over the past 5 years.

Suppose this year he has lost his last 5 fights and he has 5 left to go. If a bettor has bet on a victory, then the probability of a victory is 50%.

Garner's Fallacy. Furthermore, the person would be ignoring the fact that the probability of a victory is not 50% if the boxer has lost his last 5 fights. It is a fallacy to assume that a boxer has lost his last 5 fights and is more likely to lose the next match.

It should be noted that all probabilities are conditional probabilities, and they will be reasonable to accept. The "zero-to-hero" system, for example, looks for teams or players that have suffered a poor losing run, but it is not a fallacy to assume that a victory is due, for example squad members returning from injury or motivation by a new coach or manager, then the odds on offer for this bet may be significant.

When someone can be sure that a genuine cause exists for a significant relationship, uncontaminated by extraneous variables? Testing for a significant relationship is obviously necessary to achieve a significant relationship, but it is not sufficient. The relationship must be both meaningful and profitable in the future. To highlight this difficulty, consider the following example: a system designed to predict the outcome of a football match based on the results of the last 4 away games is predicted to draw its next 3 or 4 away games.

When someone can be sure that a genuine cause exists for a significant relationship, uncontaminated by extraneous variables? Testing for a significant relationship is obviously necessary to achieve a significant relationship, but it is not sufficient. The relationship must be both meaningful and profitable in the future. To highlight this difficulty, consider the following example: a system designed to predict the outcome of a football match based on the results of the last 4 away games is predicted to draw its next 3 or 4 away games.

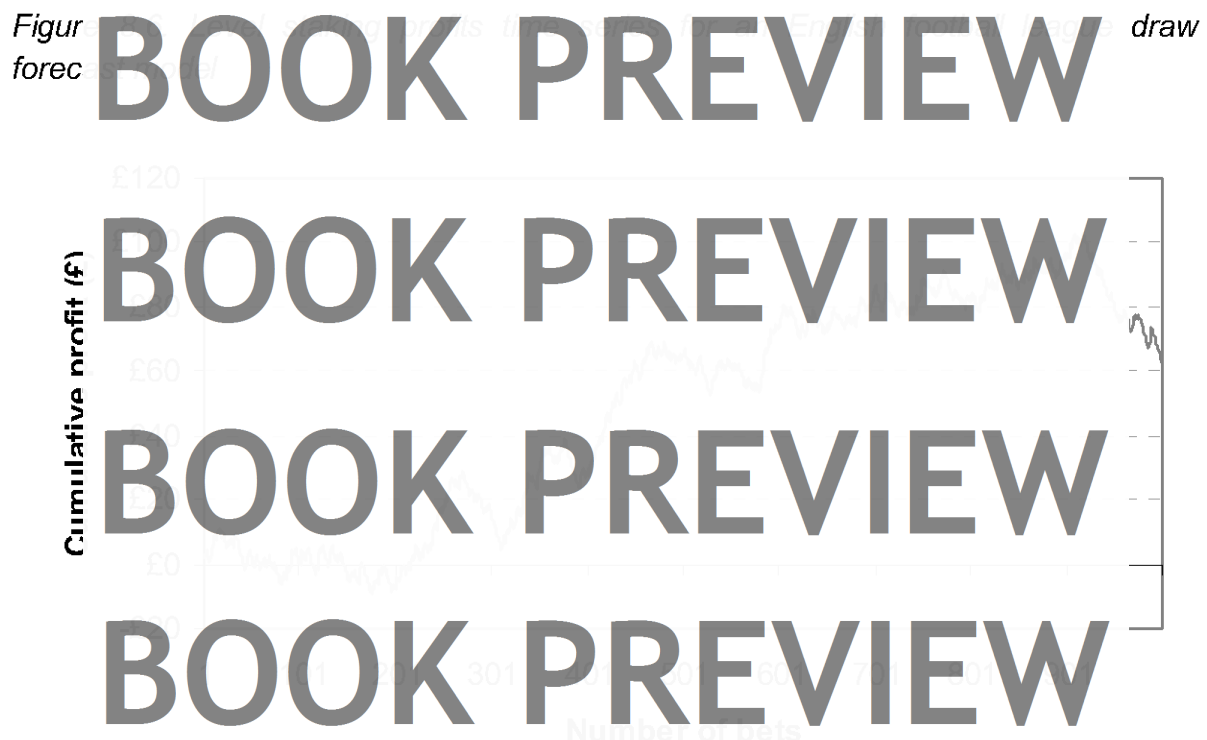
When someone can be sure that a genuine cause exists for a significant relationship, uncontaminated by extraneous variables? Testing for a significant relationship is obviously necessary to achieve a significant relationship, but it is not sufficient. The relationship must be both meaningful and profitable in the future. To highlight this difficulty, consider the following example: a system designed to predict the outcome of a football match based on the results of the last 4 away games is predicted to draw its next 3 or 4 away games.

When someone can be sure that a genuine cause exists for a significant relationship, uncontaminated by extraneous variables? Testing for a significant relationship is obviously necessary to achieve a significant relationship, but it is not sufficient. The relationship must be both meaningful and profitable in the future. To highlight this difficulty, consider the following example: a system designed to predict the outcome of a football match based on the results of the last 4 away games is predicted to draw its next 3 or 4 away games.

game, a reasonable assumption given that a) the away team is showing decent away form and b) the away side frequently accepts a point from their forec
 Figure 8.6. Without information about the actual betting prices for much of this season, it has been assumed that the average odds available at many book

Table mode

Season	Percentage	Number of bets	Level stakes	Yield
19/20	28.3%	92	£7.50	-8.15%
19/20	37.9%	95	£22.00	23.16%
19/20	34.3%	110	£13.50	12.27%
19/20	30.6%	121	£0.75	-0.62%
20/21	33.5%	122	£2.25	1.77%
20/21	32.7%	1000	£2.75	6.83%



Initially, the results look very encouraging. Seven of the 10 seasons analysed revealed a level stakes profit, and a return on investment of over 6% i

BOOK PREVIEW

BOOK PREVIEW

- **BOOK PREVIEW**
- **BOOK PREVIEW**
- **BOOK PREVIEW**

The mod the r of 9, impr show Spar seas Figu have leag For 1

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

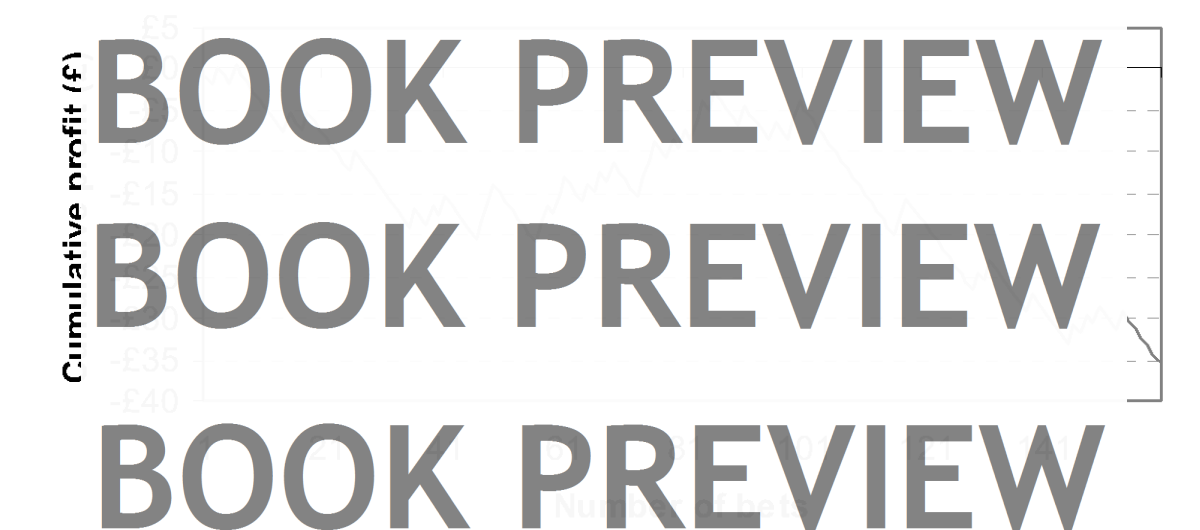
Table La Li

BOOK PREVIEW



⁶⁸ Of course, this analysis has used draw prices of 3.25. In fact, taking the best available prices for the selected games actually yielded a small profit.

Figure 8.7. Level staking profits time series for a draw forecast model: Spanish La Liga 1



While this 10-season profit was achieved from Spain's La Liga 1, the number of games at a marginal record. It might be argued that the number of games in which the forecasting criterion is statistically unrepresentative, in English 14%, compared to the long-term league average of 27%, is not quite what most

statisticians would accept as statistically significant. Furthermore, the profits chart for the English league analysis also reveals many similar

periodic significant less long sam

While court only great league only modern their United Premier num

is of able rally mean, not the win ester

total

larly t the The ed a this within etter not stem the the this ories might The glish med

ed a this within etter not stem the the this ories might The glish med

ed a this within etter not stem the the this ories might The glish med

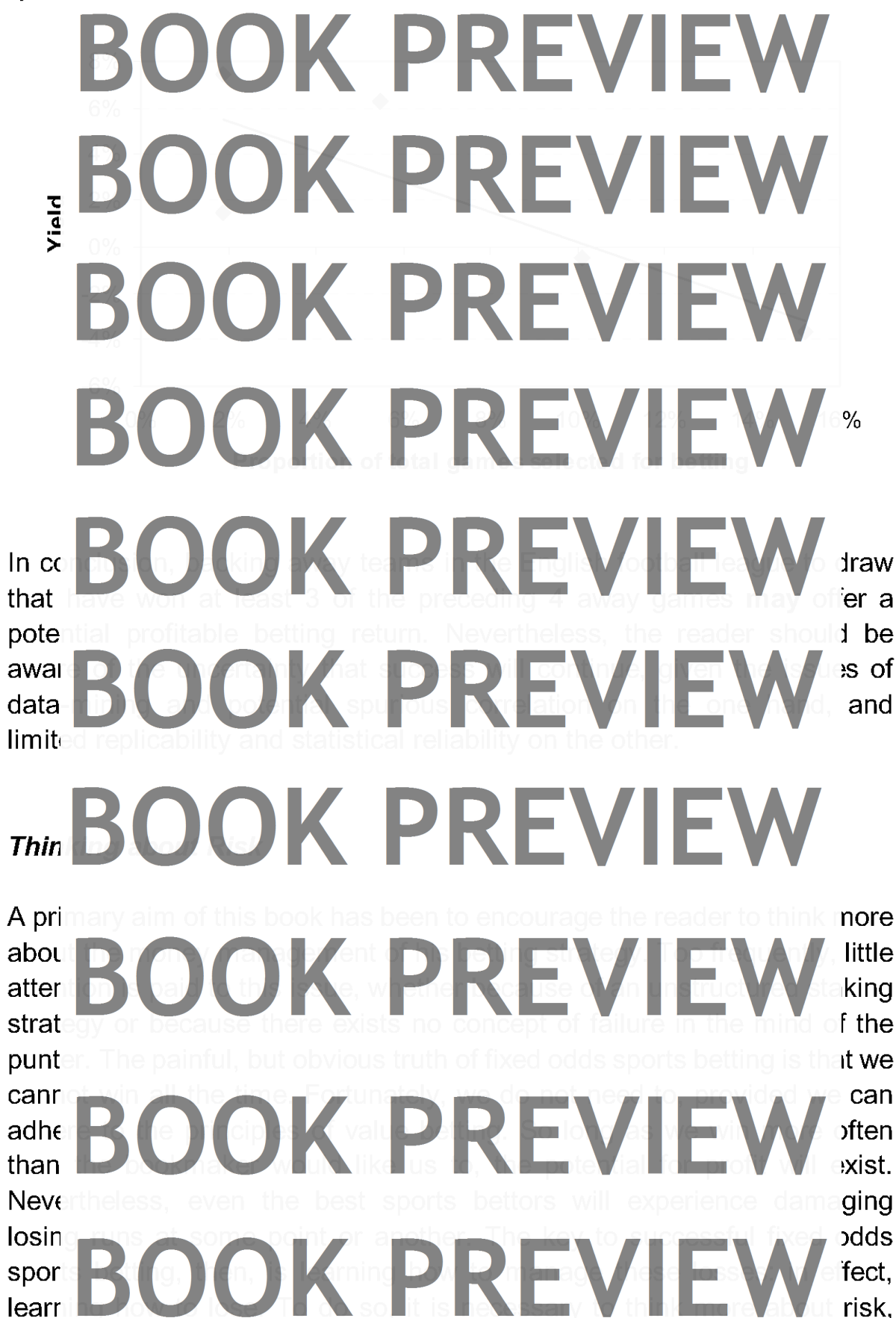
ed a this within etter not stem the the this ories might The glish med

ed a this within etter not stem the the this ories might The glish med

Table 8.8. Betting returns for an English Football League draw forecast model for four different criteria, seasons 1993/94 to 2001/02

Forecast criteria	Number of matches selected for betting	Profitability (%)
Last 3 away games, 3	18,308	1%
Last 3 away games, 2	18,308	1%
Last 3 away games, 1	18,308	1%
Last 3 away games, 0	18,308	1%
All 18,308 games	18,308	1%

Figure 8.9. Relationship between profitability and the proportion of games selected by the forecast model



and the following paragraphs which examine this subject in further detail are reproduced by kind permission of Mike Shor from Gametheory.net.

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

kind
one's
more
ainty
ng to
the
risk.
ands
much
treet
nost
then
why,



The first is a risk-seeker, the second is risk-averse, and the third is
rd is
ty of
ome
the
My
e on
ility
ie in
e, on
this
ed by

Notice that for the first person, the gamble between \$0 and \$100 is worth about \$75. This means that the person would be willing to pay

BOOK PREVIEW inly, ever, y or

BOOK PREVIEW \$25.

Even though the coin toss, on average, pays \$50, the extra risk is not

BOOK PREVIEW ler a 50% orth.

BOOK PREVIEW ither is too cost

BOOK PREVIEW th of

BOOK PREVIEW et is pay

BOOK PREVIEW rned and the

BOOK PREVIEW ad of his

Any value better, by definition, will be risk-averse on a bet-by-bet basis. In

BOOK PREVIEW ager

BOOK PREVIEW ater

BOOK PREVIEW ainty

BOOK PREVIEW d by which

BOOK PREVIEW n the

Exactly how risky and how rewarding a staking strategy might be is

one might expect, the greater the stake size as a proportion of the bankroll, the greater the likelihood of either failure to profit or bankruptcy. A certain amount of risk is necessary to make a profit, but the greater the risk, the greater the chance of failure.

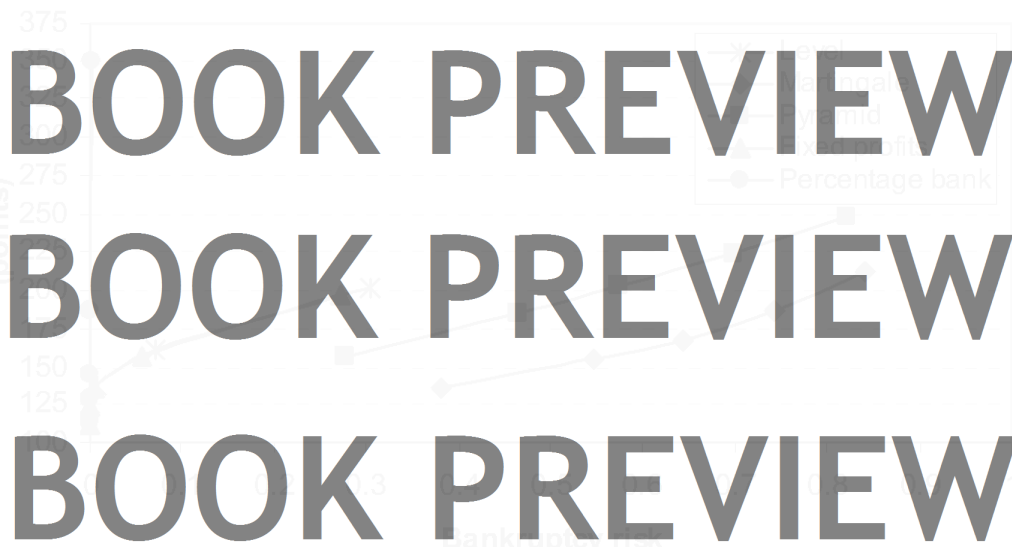
Figure 8.11 charts the association between the average size of the bankroll and the percentage of the bankroll staked. The data are taken from the 5 of the plans examined in this book. The data are taken from the 5 of the plans examined in this book.

Results of the simulation are shown in Figure 8.12. The results show that the risk of bankruptcy increases as the stake size increases. The risk of bankruptcy increases as the stake size increases.

The results of the simulation are shown in Figure 8.12. The results show that the risk of bankruptcy increases as the stake size increases. The risk of bankruptcy increases as the stake size increases.

Figure 8.13 shows the results of the simulation. The results show that the risk of bankruptcy increases as the stake size increases. The risk of bankruptcy increases as the stake size increases.

Average finishing bankroll



Clearly, the risk of bankruptcy increases as the stake size increases. The risk of bankruptcy increases as the stake size increases.

The results of the simulation are shown in Figure 8.12. The results show that the risk of bankruptcy increases as the stake size increases. The risk of bankruptcy increases as the stake size increases.

might be regarded as somewhat risk-neutral by comparison, with the risk

of bankruptcy only increasing significantly when the stake size climbs to 10% of the initial bankroll.

By c
level
not
prop
loss
point
profi
profi
throu
staki
incre

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

Figure 8.12. No profit risk–reward curves for 5 staking strategies (even money bets with a 50% win probability).

Average finishing bankroll

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

Whil
high
since
to di
acce
impr
odds
Figur

BOOK PREVIEW

BOOK PREVIEW

than
ty of
ing a
initial
of 5
fixed
ire a
able
ssive
t the

bets

been
size,
ited
se to
cally
fixed
ed in
the

more risk-averse bettors that they might need to rethink the use of such misleading strategies.

The
his a
prefe
size
limit
when
feel-
Perc
pote
from
the i
bette

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

y on
may
and
er to
egy,
The
cant.
ffers
very
ands
ll be
ices.

Usin

BOOK PREVIEW

Ther
spor
long
advic
woul
sugg
betti
your
acce
advic

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

se of
rsus
tting
they
often
ports
used
ectly
ports

Nine
For i
loss
for c
punt
unde
Freq
a ta
profi
rese

BOOK PREVIEW

BOOK PREVIEW

erm.
erall
less,
the
easy
ters.
plete
very
nt of
leed

should, maintain interest through effective money management. Tipping agencies do advise stake sizes, and sometimes even a staking plan, but rarel
risks

BOOK PREVIEW

From
shou
does
back
earn
will r
a lux
inste
payr

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

Purc
Wha
can
rese
succ
staki
be c
the j
with
thos
staki
bank
staki

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

On a
seen
large
purc
betti
exist
resu
of pr

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

⁶⁹ Va
bettin

⁷⁰ The reader will acknowledge that this represents a very risk-averse staking strategy.

actually been achieved. A “300% profit in one season” means nothing without information about the money management strategy. Instead, find out \

and BOOK PREVIEW y is, able

for a BOOK PREVIEW with

In a BOOK PREVIEW s be

rega BOOK PREVIEW as a

poss BOOK PREVIEW often

large BOOK PREVIEW e on

lead the BOOK PREVIEW e. A

the BOOK PREVIEW date

prof BOOK PREVIEW than

acco BOOK PREVIEW will it

100. BOOK PREVIEW you

alwa BOOK PREVIEW ' For

have BOOK PREVIEW will

heav BOOK PREVIEW num

frequ BOOK PREVIEW t for

allow BOOK PREVIEW nder

dout BOOK PREVIEW ems

£50. BOOK PREVIEW sing

for th BOOK PREVIEW able

reco BOOK PREVIEW n the

curre BOOK PREVIEW inter

less BOOK PREVIEW nline

may BOOK PREVIEW their

book BOOK PREVIEW nore

acco BOOK PREVIEW s? A

signi BOOK PREVIEW h or

typic BOOK PREVIEW ave

£250 BOOK PREVIEW % of

beer BOOK PREVIEW night

your BOOK PREVIEW

want BOOK PREVIEW

Ultin BOOK PREVIEW tting

sele BOOK PREVIEW nted.

Som BOOK PREVIEW work,

gain BOOK PREVIEW ney.

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

Table 8.9. A profitable level stakes betting record

Be	BOOK	PREVIEW	's	y
1				
2	1.33	1	Won	0.33
3				
4				
5	2	1	Won	1
6	1.84	1	Lost	-1
7				
8				
9	2.09	1	Lost	-1
10				
11				
12				
13	2.1	1	Won	1.1
14				
15				
16	1.72	1	Lost	-1
17	1.2	1	Won	0.2
18				
19				
20	1.36	1	Won	0.36
21	1.33	1	Won	0.33
22				
23				
24				
25	1.36	1	Won	0.36
26	1.72	1	Won	0.72
27				
28				
29	1.9	1	Lost	-1
30	2.1	1	Lost	-1
31				
32				
33				
34	1.66	1	Won	0.66
35				
36				
37				
38	1.4	1	Won	0.4

Bet	Odds	Stake	Win	Profit	Cumulative profit	Bookmaker's expectancy
30						
40						
40	1.0	1	Lost	-1	5.27	52.5%
40	2.5	1	Won	1.5	6.77	40.0%
40	1.0	1	Lost	-1	5.77	57.8%
40	1.3	1	Won	0.3	6.07	41.4%
40	1.72	1	Won	0.72	7.31	58.1%
40	1.63	1	Won	0.63	7.94	61.3%
40	1.6	1	Won	0.6	8.54	63.6%
40	1.0	1	Lost	-1	7.54	53.1%
40	1.83	1	Won	0.83	8.93	54.6%
50						
50	1.7	1	Won	0.7	9.63	55.8%
50	1.5	1	Won	0.5	10.13	53.1%
50	1.77	1	Lost	-1	10.00	56.5%
50	2.0	1	Won	1.0	11.00	49.2%
50	1.4	1	Lost	-1	8.00	54.0%
50	1.7	1	Won	0.7	8.70	58.8%
50	2.1	1	Lost	-1	7.70	47.6%
50	1.0	1	Won	0.0	7.70	53.8%
50	1.7	1	Won	0.7	9.00	53.1%
60	1.75	1	Lost	-1	8.00	57.1%
60	1.4	1	Won	0.4	8.47	71.4%
60	1.9	1	Won	0.9	9.37	54.4%
60	1.65	1	Lost	-1	8.77	54.1%
60	1.75	1	Lost	-1	7.77	57.1%
60	1.2	1	Won	0.2	8.07	76.9%
60	1.6	1	Won	0.6	8.67	57.4%
60	1.0	1	Lost	-1	7.67	57.1%
60	1.77	1	Lost	-1	6.43	56.5%
70	1.8	1	Lost	-1	5.43	55.6%
70	1.0	1	Won	0.0	5.43	56.8%
70	1.7	1	Lost	-1	4.93	54.9%
70	1.3	1	Lost	-1	3.93	45.0%
70	1.53	1	Won	0.53	4.44	65.4%
70	1.8	1	Won	0.8	5.24	55.6%
70	1.6	1	Won	0.6	5.84	59.1%
70	1.0	1	Won	0.0	5.84	51.1%
70	1.83	1	Lost	-1	5.30	54.6%

Bet	Odds	Stake	Win	Profit	Cumulative profit	Bookmaker's expectancy
7/1	7.00	1	Won	6.00	6.00	85.7%
8/1	8.00	1	Won	7.00	13.00	87.5%
8/1	8.00	1	Won	7.00	20.00	82.5%
8/1	8.00	1	Won	7.00	27.00	33.8%
8/1	8.00	1	Won	7.00	34.00	71.4%
8/1	8.00	1	Won	7.00	41.00	58.1%
8/1	8.00	1	Won	7.00	48.00	44.8%
8/1	8.00	1	Won	7.00	55.00	31.5%
8/1	8.00	1	Lost	-1	54.00	18.2%
9/1	9.00	1	Won	8.00	62.00	5.0%
9/1	9.00	1	Won	8.00	70.00	0.0%
9/1	9.00	1	Won	8.00	78.00	0.0%
9/1	9.00	1	Won	8.00	86.00	0.0%
9/1	9.00	1	Won	8.00	94.00	0.0%
9/1	9.00	1	Won	8.00	102.00	0.0%
9/1	9.00	1	Lost	-1	101.00	0.0%
9/1	9.00	1	Won	8.00	109.00	0.0%
9/1	9.00	1	Won	8.00	117.00	0.0%
9/1	9.00	1	Won	8.00	125.00	0.0%
10/1	10.00	1	Won	9.00	134.00	0.0%

With more than 66 winners and 34 losers. How does this compare to the strike rate that the bookmaker has predicted according to his odds? The value of the bookmaker's expectancy is 58.2%. About 58.2% of the bets have been successful. The average, across 100 bets, is 58.2%. According to the bookmaker's analysis, for any punter to break even after 100 wagers, he would, on average, need to win roughly 58 of them. The bookmaker's profit margin, however, has been built into each price is very much open to debate. There will be two main influences, both of which concern the betting bookmaker's profit margin, which might be expected to be affected solely by the overround because of the favourite-longshot bias. For an

average price of 1.76, this may be 108% or even lower as illustrated earlier in the chapter by Figure 8.1.

Section 8.1
bookmakers
1.76
from
Chapter 8
on real
then
occasions
considered
for the
55.4
bookmaker
winning
for the
punter
unjustified
price

What
are
with
could
loser
believes
value

To test
predicted
statistical
is used
what
is of

X

BOOK PREVIEW
BOOK PREVIEW
BOOK PREVIEW
BOOK PREVIEW
BOOK PREVIEW
BOOK PREVIEW
BOOK PREVIEW
BOOK PREVIEW
BOOK PREVIEW

arent
et of
1.66
ed in
and
f the
bets,
many
d be
nate
bets:
specific
true
that
the
and
fair

cord
dds,
i, he
r 45
e he
real

that
what
test
from
(χ^2)

In plain English, if it can be expressed plainly, χ^2 is the sum of the square of the deviations of observed frequencies from the expected frequency divided by the expected frequency. In this case, the observed frequency of wins is 34. By contrast, the expected frequency of wins and losses is 55.47 and 4.53 respectively. Consequently, $\chi^2 = 4.49$, as illustrated below.

	Observed	Expected	Observed - Expected	(Observed - Expected) ² / Expected
Winn	34	55.47	-21.47	8.53
Loser	2	4.53	-2.53	1.37
Total	36	60	-24	9.90

The observed frequency of wins is significantly different from the expected frequency of wins without a punter's skill and judgement. For a simple binomial analysis, the probability that a betting record is statistically significant may be calculated by using the following formula:

Table 8.10 Critical values for the Chi Square distribution ⁷¹	50.0%	25.0%	10.0%	5.0%	2.5%	1.0%	0.5%
Prob of chance	50.0%	25.0%	10.0%	5.0%	2.5%	1.0%	0.5%
Chi-square	0.45	1.39	2.71	3.84	5.02	6.63	7.88

For our betting record, a χ^2 value of 4.49 would indicate that the strike rate of winners has between a 2.5% and 5% probability of having arisen by chance. If the probability is less than 5%, then the result is statistically meaningful, that is, the result of the bettor's forecasting skill.

Readers with a statistical background may like to note that the critical values in Table 8.8 are for a one-tailed Chi distribution with one degree of freedom.

Readers with a statistical background may like to note that the critical values in Table 8.8 are for a one-tailed Chi distribution with one degree of freedom.

⁷¹ Readers with a statistical background may like to note that the critical values in Table 8.8 are for a one-tailed Chi distribution with one degree of freedom.

where a_1 , b_1 , a_2 , and b_2 represent the column-row cell locators for the observed frequency of winners, observed frequency of losers, expected frequency of winners, and expected frequency of losers. For this value, the probability is 3.41%, indeed between 2.5% and 5%, meaning that the betting record is probably the result of the punter's superior ability.

When the probability of the punter's superior ability is 3.41%, the error in the estimation of the expected frequency of winners and losers, which is 1.05, is not necessarily simply the value of the overround, a value of 1.05 for the bookmaker's profit margin was used here, since most bookmakers add a profit margin of 1.12 instead, a margin equivalent to the overround, the value of χ^2 is 7.85 whilst the probability value is 0.005.

The betting value of the overround to calculate the expected frequencies of wins and losses may sometimes be inappropriate, particularly where prices are short and account believe that his betting record is more statistically significant than it actually is. In such a case, the punter may be taking more credit than is due, were

Similarly, if 1.05 actually represents an overestimate of the true probability value, and statistical significance, as the size of the bookmaker's profit margin used to calculate the expected win/loss frequencies is varied for this record. The punter's superior ability on the part of the punter to beat the bookmaker's odds.

The horizontal lines in Figure 8.13 signify the 5% and 1% probability case of the punter's skill and not chance. For this record, an estimated bookmaker's

Simi

book

the r

on t

book

frequ

signi

obse

to a

The

valu

the c

punt

profit margin of less than about 1.035 would mean that the record could not traditionally be considered to be statistically significant.

Figur
book

BOOK PREVIEW

BOOK PREVIEW

Probability value

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

Of course, bias will reduce the profitability of the record, but it will not determine the outcome.

BOOK PREVIEW

BOOK PREVIEW

As the voters bet, record place record seek this say, 25 dem

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

number of bets in it increases, all other things being equal.

Table 8.11. The influence of the size of a betting record on its statistical significance

Bet **BOOK PREVIEW** **ity**

20

40

80

160

320

640

1280

2560

BOOK PREVIEW

The As s
othe
strat
loss
mea
win/l
prob
per l
be. l
term
succ
dete
signi
cont

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

ses.
any
king
and
d by
rved
the
profit
it to
long
as a
nt to
the
will

The norm
much
of si
stan
and

BOOK PREVIEW

o the
very
nple
and
mean
r:

$t = \frac{\sqrt{n}(\bar{x} - \mu)}{\sigma}$

BOOK PREVIEW

The t-statistic, like the Chi-Square statistic, provides a measure of how extreme a statistical estimate is, and in this example may be used to determine whether the data should be normally distributed, with more values close to the average and fewer at the extremes. For technical betting records, this assumption is only stated as a hypothesis for a single bet (excluding multiple wagers) and is not negative (the bookmaker's edge) or positive (the stake multiplied by the fractional odds). Figure 8.14 illustrates the distribution of bet profits from Table 8.9.

Figure 8.14. Distribution of bet profits from Table 8.9



Fortunately, the distribution is fairly close to the normal distribution. When the samples become very large (above $n = 100$), then the sample mean will approximate the normal distribution, even if the variable is not normally distributed in the population.

Following the earlier Chi-Square analysis, we might reasonably assume that for the chosen betting odds in Table 8.9, the real distribution of bet profits is not normal, but the value of the Chi-Square statistic is 0.4, which is less than the critical value of 3.84 at the 5% level. This means that the bookmaker's edge is not statistically significant.

spreadsheet to calculate the mean and standard deviation⁷² of the 100 bet profits returns a t-statistic for this profit record of 2.23.

When the probability of a chance occurrence is 1%, the t-statistic must be greater than 2.576 to determine the probability of a chance occurrence. With a t-statistic of 2.23, the probability of a chance occurrence is greater than 1% and less than 5%.

Table 8.12 Critical values for the t-distribution⁷³

Degrees of freedom	25.0%	10.0%	5.0%	2.5%	1.0%	0.5%	0.1%
1	0.69981	1.37219	1.94316	2.22814	2.76237	3.16226	4.17910
2	0.68688	1.35810	1.92455	2.20106	2.70613	3.07747	4.10171
3	0.67929	1.34503	1.91190	2.17743	2.68100	3.05584	4.04790
100	0.67695	1.29008	1.66023	1.98397	2.36421	2.62589	3.17706
200	0.67547	1.28495	1.65097	1.96950	2.34136	2.59564	3.13634
500	0.67459	1.28219	1.64772	1.96590	2.33747	2.59256	3.12938
1000	0.67449	1.28200	1.64759	1.96584	2.33739	2.59250	3.12930

In Microsoft Excel, the TDIST(t,dof,tails) function can be used to calculate the probability of a chance occurrence. The t-statistic is the value of the t-distribution (for the one-tailed distribution) or 2 (for the two-tailed distribution). Since we are not really concerned with testing for a significantly unprofitable record at the same time, we would in this case use the one-tailed distribution. Consequently, TDIST(2.23,100,1) returns a value of 0.0119, or 1.19%.

⁷² The mean and standard deviation of the 100 bet profits are 0.00 and 0.1445, respectively. ⁷³ As the probability of a chance occurrence is 1%, the t-statistic must be greater than 2.576 to determine the probability of a chance occurrence. With a t-statistic of 2.23, the probability of a chance occurrence is greater than 1% and less than 5%.

calculator available online at <http://duke.usask.ca/~rbaker/Tables.html>.

not wholly dissimilar to the probability value obtained via the Chi-Square testing (3.41%).

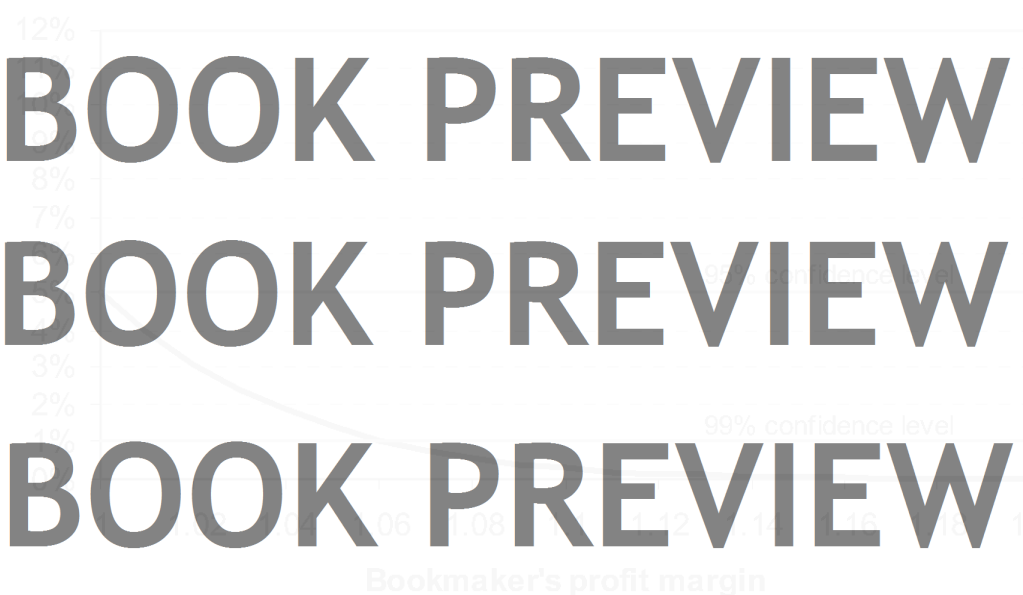
Figure 3.41 shows the variation of statistical significance with the chosen value of the bookmaker's profit margin. This margin is used since the greater the bookmaker's profit margin, the greater the difference between the observed average bet and that expected on the basis of the chosen value of the bookmaker's profit record. The generally greater level of statistical significance attributed to the betting history by the t-statistic, however, may have arisen as a result of the victor's assumption that the bookmaker's profit margin is to be questioned.

BOOK PREVIEW
BOOK PREVIEW
BOOK PREVIEW
BOOK PREVIEW

Figure 3.42 shows the variation of the probability value of the bookmaker's profit margin.

BOOK PREVIEW
BOOK PREVIEW
BOOK PREVIEW
BOOK PREVIEW

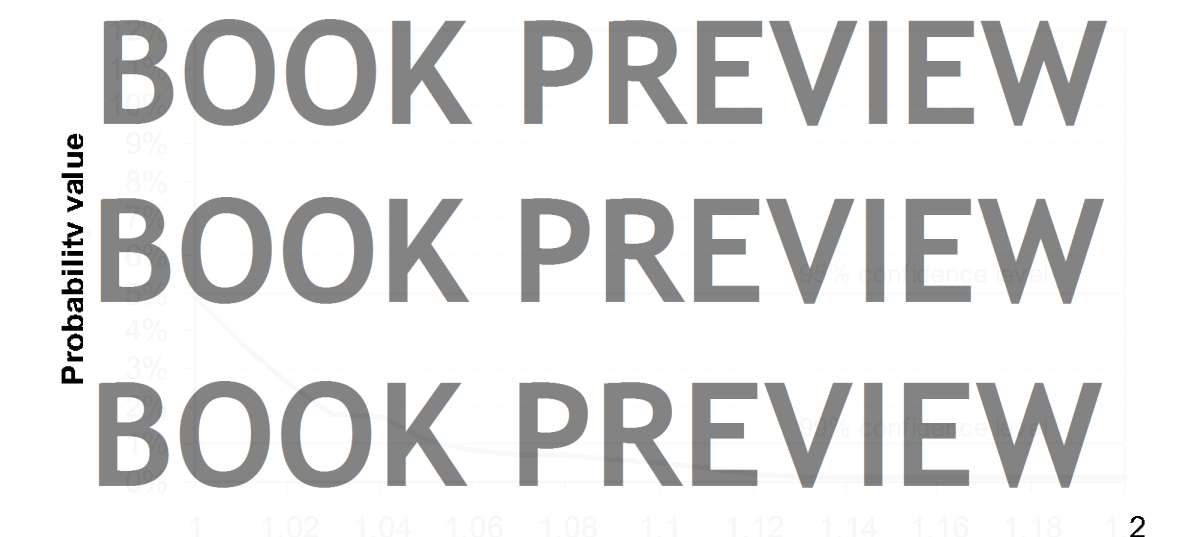
Probability value



Perhaps a more accurate method of determining statistical significance is to run a Monte Carlo simulation, like those used in the previous chapter. Such a simulation, which generates a random profit record for the bookmaker, would allow the bookmaker to compare his actual profit record with the simulated profit record. The bookmaker would then be able to determine whether or not he is performing better than his actual profit record simply by chance.

BOOK PREVIEW
BOOK PREVIEW

BOOK PREVIEW



211

1,000. Certainly, where the bettor is utilising a numerical forecasting approach, that is, a rating system, the statistical significance of a limited record is not a problem. The more races the bettor can observe, the more accurate the rating system will be. Consequently, it is always preferable to err on the side of caution and treat a limited record as statistically insignificant. In a betting context, as statistically significant as it may be, a record of 100 or even 200 races is not enough to beat the bookmaker. Perhaps 500, maybe even 1,000. The only certainty with significant records is that the bettor has a better chance of beating the bookmaker than the average bettor. The only certainty with significant records is that the bettor has a better chance of beating the bookmaker than the average bettor.

BOOK PREVIEW

BOOK PREVIEW

Sum

BOOK PREVIEW

Fixer

BOOK PREVIEW

sugg

long

verif

one

sens

offer

excitement than merely collecting an annual low interest return from their savings.

The
to th
inve
num
mos
exan
appr
With
Con:
rega
strat
som
princ
mon

1. Se

With
betti
safe
the s
lost,
betti

2. Re

There
be f
stac
disa
spor
mar
book
of st
ther
feel
betti

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

ettor
s he
and
and
l an
tical
ess.
and.
d be
nent
with
such
sing

avoid
ch to
ting,
his is
ports
y.

as to
d to
this
key
ular
the
ower
ying
you
not

3. Keep accurate records

For a
their
Keep
and
all, t
serv
With
actu

BOOK PREVIEW

and
red.
gths
ly of
sory
ying.
s will

BOOK PREVIEW

BOOK PREVIEW

4. Value

Win
all th
you t
red.
of be
and
winn

BOOK PREVIEW

win
iced
in the
ison
ques
the

BOOK PREVIEW

5. Test

Punt
prefe
mak
more
form
cont
forec
wary
mea
pred
long
anot
ultim

BOOK PREVIEW

BOOK PREVIEW

ome
and
ries,
bout
next
rical
Be
the
ised
books
n or
will

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

6. Identify favourable betting markets

There are many ways to identify favourable betting markets, but the most common is to look at the bookmaker's margin. The bookmaker's margin is the difference between the bookmaker's odds and the true odds. The bookmaker's margin is a measure of the bookmaker's profit. The bookmaker's margin is a measure of the bookmaker's risk. The bookmaker's margin is a measure of the bookmaker's return. The bookmaker's margin is a measure of the bookmaker's performance. The bookmaker's margin is a measure of the bookmaker's success. The bookmaker's margin is a measure of the bookmaker's failure. The bookmaker's margin is a measure of the bookmaker's loss. The bookmaker's margin is a measure of the bookmaker's gain. The bookmaker's margin is a measure of the bookmaker's profit. The bookmaker's margin is a measure of the bookmaker's risk. The bookmaker's margin is a measure of the bookmaker's return. The bookmaker's margin is a measure of the bookmaker's performance. The bookmaker's margin is a measure of the bookmaker's success. The bookmaker's margin is a measure of the bookmaker's failure. The bookmaker's margin is a measure of the bookmaker's loss. The bookmaker's margin is a measure of the bookmaker's gain.

7. Back singles
For the availability of single bets, where the punter needs only to back the outcome of a single event, the bookmaker's margin is a measure of the bookmaker's risk. The bookmaker's margin is a measure of the bookmaker's return. The bookmaker's margin is a measure of the bookmaker's performance. The bookmaker's margin is a measure of the bookmaker's success. The bookmaker's margin is a measure of the bookmaker's failure. The bookmaker's margin is a measure of the bookmaker's loss. The bookmaker's margin is a measure of the bookmaker's gain.

8. Back favourites or short prices
Contrary to the presence of a favourite-longshot bias, demonstrated empirically by question in the European football fixed odds market, it potentially exists to the risk-averse tendencies of most bookmakers who would offer short prices. The bookmaker's margin is a measure of the bookmaker's risk. The bookmaker's margin is a measure of the bookmaker's return. The bookmaker's margin is a measure of the bookmaker's performance. The bookmaker's margin is a measure of the bookmaker's success. The bookmaker's margin is a measure of the bookmaker's failure. The bookmaker's margin is a measure of the bookmaker's loss. The bookmaker's margin is a measure of the bookmaker's gain.

you believe it contains real value, and that the bookmaker has made a mistake.

9. C

Real offer
Perh
of th
the
unne
can
Des
avail
tech
bet
cont

10. I

Are
shap
are
win
Furtl
ratch
NOT
prefe
polic
perc
more
bett
loss

11. /

Mon
you
becc
simp

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

other
rice.
tage
and
an
you
aker.
odds
re is
mply
odds

i will
kers
big-
ting.
ough
r will
you
ps a
ig a
g or
oven
ls of

rly if
void
ould
e so

easily in the future. Even where you have established significance in a betting history, beware of unexplained factors that may be accounting for your

12. I

Perh
is he
to m
busi
the v
Succ
enha
you
odds

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

earn
how
this
and
ling.
eatly
in it,
fixed

Bibliography

- Book **BOOK PREVIEW**
- Ben **BOOK PREVIEW** d.
Harv
Hun
McC
Mak
Stee
Vau
To F
Sele
- Cair **BOOK PREVIEW** shot
bias
Polit
Vau
succ
19, £
Vau
favo
Ecor
Sele
- Fing **BOOK PREVIEW** n of
Book
Series
http:
Forr
the l
and
http:
Holl
First
http:
- BOOK PREVIEW** cy in
oling
f
bler,

Hunter, Bill, *The 12Xpert*

<http://members.aol.com/the12Xpert/>

Kell

[http:](http://)

Sho

[http:](http://)

Tin

Marl

fulfil

Univ

[http:](http://)

BOOK PREVIEW

BOOK PREVIEW

BOOK PREVIEW

[http:](http://)

BOOK PREVIEW

Beth

Betti

BOOK PREVIEW

Betti

Foot

BOOK PREVIEW

Foot

Gam

BOOK PREVIEW

Glob

Onli

BOOK PREVIEW

Prof

Punt

Spor

Spor

BOOK PREVIEW

BOOK PREVIEW

etting
artial
en's

Appendix

The book preview Carlo
 staking plan simulations in Chapter 7. Information for each of the 250 bets
 for each of the 250 bets, the
 correct results for each of the 250 bets, the
 edge for each of the 250 bets, the
 subs for each of the 250 bets, the
 across the edge for each of the 250 bets, the
 edge size for each of the 250 bets, the
 Kelly for each of the 250 bets, the

Bet	Bookmaker's result expectancies and their odds	Betting edges
1	0.13 7.692 0.31 3.228 0.41 2.439 0.615 1.626 0.495 2.02 0.84 0.915 0.855 0.885 1.16 1.15	1.2
2	0.25 4 0.31 3.228 0.61 1.639 0.51 1.961 0.53 1.887 0.805 0.895 1.055 1.085 1.18 0.955	1.325
3	0.13 7.692 0.31 3.228 0.41 2.439 0.615 1.626 0.495 2.02 0.84 0.915 0.855 0.885 1.16 1.15	1.215
4	0.13 7.692 0.31 3.228 0.41 2.439 0.615 1.626 0.495 2.02 0.84 0.915 0.855 0.885 1.16 1.15	1.27
5	0.25 4 0.31 3.228 0.61 1.639 0.51 1.961 0.53 1.887 0.805 0.895 1.055 1.085 1.18 0.955	1.285
6	0.13 7.692 0.31 3.228 0.41 2.439 0.615 1.626 0.495 2.02 0.84 0.915 0.855 0.885 1.16 1.15	1.17
7	0.25 4 0.31 3.228 0.61 1.639 0.51 1.961 0.53 1.887 0.805 0.895 1.055 1.085 1.18 0.955	1.22
8	0.13 7.692 0.31 3.228 0.41 2.439 0.615 1.626 0.495 2.02 0.84 0.915 0.855 0.885 1.16 1.15	1.265
9	0.25 4 0.31 3.228 0.61 1.639 0.51 1.961 0.53 1.887 0.805 0.895 1.055 1.085 1.18 0.955	1.135
10	0.13 7.692 0.31 3.228 0.41 2.439 0.615 1.626 0.495 2.02 0.84 0.915 0.855 0.885 1.16 1.15	1.34
11	0.25 4 0.31 3.228 0.61 1.639 0.51 1.961 0.53 1.887 0.805 0.895 1.055 1.085 1.18 0.955	1.345
12	0.13 7.692 0.31 3.228 0.41 2.439 0.615 1.626 0.495 2.02 0.84 0.915 0.855 0.885 1.16 1.15	1.275
13	0.25 4 0.31 3.228 0.61 1.639 0.51 1.961 0.53 1.887 0.805 0.895 1.055 1.085 1.18 0.955	1.155
14	0.13 7.692 0.31 3.228 0.41 2.439 0.615 1.626 0.495 2.02 0.84 0.915 0.855 0.885 1.16 1.15	1.06
15	0.25 4 0.31 3.228 0.61 1.639 0.51 1.961 0.53 1.887 0.805 0.895 1.055 1.085 1.18 0.955	1.15
16	0.13 7.692 0.31 3.228 0.41 2.439 0.615 1.626 0.495 2.02 0.84 0.915 0.855 0.885 1.16 1.15	1.195
17	0.25 4 0.31 3.228 0.61 1.639 0.51 1.961 0.53 1.887 0.805 0.895 1.055 1.085 1.18 0.955	1.21
18	0.13 7.692 0.31 3.228 0.41 2.439 0.615 1.626 0.495 2.02 0.84 0.915 0.855 0.885 1.16 1.15	0.99
19	0.25 4 0.31 3.228 0.61 1.639 0.51 1.961 0.53 1.887 0.805 0.895 1.055 1.085 1.18 0.955	1.23
20	0.13 7.692 0.31 3.228 0.41 2.439 0.615 1.626 0.495 2.02 0.84 0.915 0.855 0.885 1.16 1.15	1.205
21	0.25 4 0.31 3.228 0.61 1.639 0.51 1.961 0.53 1.887 0.805 0.895 1.055 1.085 1.18 0.955	1.14
22	0.13 7.692 0.31 3.228 0.41 2.439 0.615 1.626 0.495 2.02 0.84 0.915 0.855 0.885 1.16 1.15	1.175
23	0.25 4 0.31 3.228 0.61 1.639 0.51 1.961 0.53 1.887 0.805 0.895 1.055 1.085 1.18 0.955	1.33
24	0.13 7.692 0.31 3.228 0.41 2.439 0.615 1.626 0.495 2.02 0.84 0.915 0.855 0.885 1.16 1.15	1.215
25	0.25 4 0.31 3.228 0.61 1.639 0.51 1.961 0.53 1.887 0.805 0.895 1.055 1.085 1.18 0.955	1.2
26	0.13 7.692 0.31 3.228 0.41 2.439 0.615 1.626 0.495 2.02 0.84 0.915 0.855 0.885 1.16 1.15	1.165
27	0.25 4 0.31 3.228 0.61 1.639 0.51 1.961 0.53 1.887 0.805 0.895 1.055 1.085 1.18 0.955	1.01
28	0.13 7.692 0.31 3.228 0.41 2.439 0.615 1.626 0.495 2.02 0.84 0.915 0.855 0.885 1.16 1.15	1.135
29	0.25 4 0.31 3.228 0.61 1.639 0.51 1.961 0.53 1.887 0.805 0.895 1.055 1.085 1.18 0.955	1.105
30	0.13 7.692 0.31 3.228 0.41 2.439 0.615 1.626 0.495 2.02 0.84 0.915 0.855 0.885 1.16 1.15	1.39
31	0.25 4 0.31 3.228 0.61 1.639 0.51 1.961 0.53 1.887 0.805 0.895 1.055 1.085 1.18 0.955	1.215
32	0.13 7.692 0.31 3.228 0.41 2.439 0.615 1.626 0.495 2.02 0.84 0.915 0.855 0.885 1.16 1.15	1.25
33	0.25 4 0.31 3.228 0.61 1.639 0.51 1.961 0.53 1.887 0.805 0.895 1.055 1.085 1.18 0.955	1.04
34	0.13 7.692 0.31 3.228 0.41 2.439 0.615 1.626 0.495 2.02 0.84 0.915 0.855 0.885 1.16 1.15	1.2
35	0.25 4 0.31 3.228 0.61 1.639 0.51 1.961 0.53 1.887 0.805 0.895 1.055 1.085 1.18 0.955	1.3

Bet	Bookmaker's result expectancies and their odds										Betting edges						
	0.2	0.3	0.4	0.5	0.6	0.9	0.95	1	1.05	1.1	1.15	1.2					
35	0.375	2.667	0.645	1.55	0.465	2.151	0.38	2.632	0.755	1.325	0.66	1.14	0.985	1.02	0.965	1.055	1.25
36																	1.195
37																	1.175
38																	1.135
39																	1.44
40																	1.15
41																	1.125
42																	1.1
43																	1.195
44																	1.115
45																	1.4
46																	1.205
47																	1.135
48																	1.14
49																	1.255
50																	1.055
51																	1.115
52																	1.22
53																	1.33
54																	1.27
55																	1.185
56																	1.25
57																	1.285
58																	1.175
59																	1.265
60																	1.35
61																	1.055
62																	1.255
63																	1.245
64																	1.155
65																	1.165
66																	1.2
67																	1.16
68																	1.115
69																	1.245
70																	1.35
71																	1.285
72																	1.075
73																	1.24
74																	1.39
75																	1.215
76																	1.16
77																	1.16
78																	1.195
79																	1.2
80																	1.11
81																	1.155
82																	1.01
83																	1.255
84																	1.325
85																	1.275
86																	1.19
87																	0.935
88																	1.26
89																	1.205
90																	1.245
91	0.26	3.846	0.385	2.597	0.46	2.174	0.235	4.255	0.79	1.266	0.87	0.97	1.025	1.07	1.265	1.01	1.145

	Bookmaker's result expectancies and their odds										Betting edges						
Bet	0.2		0.3		0.4		0.5		0.6		0.9	0.95	1	1.05	1.1	1.15	1.2
92	0.17	5.882	0.3	3.333	0.345	2.899	0.495	2.02	0.7	1.429	0.88	0.855	1.015	1.05	1.03	1.08	1.3
93	BOOK PREVIEW																1.065
94	BOOK PREVIEW																1.215
95	BOOK PREVIEW																1.255
96	BOOK PREVIEW																1.315
97	BOOK PREVIEW																1.2
98	BOOK PREVIEW																1.365
99	BOOK PREVIEW																1.185
100	BOOK PREVIEW																1.215
101	BOOK PREVIEW																1.25
102	BOOK PREVIEW																1.2
103	BOOK PREVIEW																1.24
104	BOOK PREVIEW																1.23
105	BOOK PREVIEW																1.23
106	BOOK PREVIEW																1.18
107	BOOK PREVIEW																1.185
108	BOOK PREVIEW																1.215
109	BOOK PREVIEW																1.2
110	BOOK PREVIEW																1.265
111	BOOK PREVIEW																1.345
112	BOOK PREVIEW																1
113	BOOK PREVIEW																1.195
114	BOOK PREVIEW																1.3
115	BOOK PREVIEW																1.135
116	BOOK PREVIEW																1.3
117	BOOK PREVIEW																1.21
118	BOOK PREVIEW																1.23
119	BOOK PREVIEW																1.08
120	BOOK PREVIEW																1.075
121	BOOK PREVIEW																1.16
122	BOOK PREVIEW																1.4
123	BOOK PREVIEW																1.24
124	BOOK PREVIEW																1.25
125	BOOK PREVIEW																1.13
126	BOOK PREVIEW																1.12
127	BOOK PREVIEW																1.2
128	BOOK PREVIEW																1.06
129	BOOK PREVIEW																1.255
130	BOOK PREVIEW																1.225
131	BOOK PREVIEW																1.22
132	BOOK PREVIEW																1.185
133	BOOK PREVIEW																1.13
134	BOOK PREVIEW																1.035
135	BOOK PREVIEW																1.25
136	BOOK PREVIEW																1.21
137	BOOK PREVIEW																1.415
138	BOOK PREVIEW																1.305
139	BOOK PREVIEW																1.31
140	BOOK PREVIEW																1.31
141	BOOK PREVIEW																1.355
142	BOOK PREVIEW																1.21
143	BOOK PREVIEW																1.205
144	BOOK PREVIEW																1.185
145	BOOK PREVIEW																1.295
146	BOOK PREVIEW																1.195
147	BOOK PREVIEW																1.18
148	0.175	5.714	0.29	3.448	0.22	4.545	0.43	2.326	0.45	2.222	0.825	0.835	1.02	1.29	0.975	1.145	1.14

Bet	Bookmaker's result expectancies and their odds										Betting edges						
	0.2	0.3	0.4	0.5	0.6	0.9	0.95	1	1.05	1.1	1.15	1.2					
149	0.065	15.38	0.285	3.509	0.33	3.03	0.515	1.942	0.57	1.754	0.71	0.865	1.02	0.89	1.075	0.96	1.315
150																	1.17
151																	1.205
152																	1.015
153																	1.07
154																	1.26
155																	1.205
156																	1.21
157																	1.235
158																	1.135
159																	1.15
160																	1.24
161																	1.19
162																	1.26
163																	1.15
164																	1.37
165																	1.215
166																	1.245
167																	1.2
168																	1.3
169																	1.29
170																	1.045
171																	1.2
172																	1.35
173																	1.06
174																	1.18
175																	1.08
176																	1.29
177																	1.19
178																	1.3
179																	1.31
180																	1.095
181																	1.19
182																	1.175
183																	1.21
184																	1.06
185																	1.1
186																	0.995
187																	1.19
188																	1.2
189																	1.32
190																	1.185
191																	1.225
192																	1.25
193																	1.165
194																	1.23
195																	1.135
196																	1.285
197																	1.225
198																	1.205
199																	1.16
200																	1.22
201																	1.235
202																	1.155
203																	1.29
204																	1.09
205	0.17	5.882	0.215	4.651	0.29	3.448	0.225	4.444	0.785	1.274	0.955	0.86	1.05	0.995	1.235	1.15	1.045

	Bookmaker's result expectations and their odds										Betting edges							
Bet	0.2		0.3		0.4		0.5		0.6		0.9	0.95	1	1.05	1.1	1.15	1.2	
206	0.24	4.167	0.355	2.817	0.3	3.333	0.45	2.222	0.535	1.869	0.935	0.94	1.035	1.05	0.925	1.15	1.11	
207	BOOK PREVIEW																	1.195
208	BOOK PREVIEW																	1.34
209	BOOK PREVIEW																	1.125
210	BOOK PREVIEW																	1.025
211	BOOK PREVIEW																	1.055
212	BOOK PREVIEW																	1.12
213	BOOK PREVIEW																	1.05
214	BOOK PREVIEW																	1.305
215	BOOK PREVIEW																	1.2
216	BOOK PREVIEW																	1.22
217	BOOK PREVIEW																	1.17
218	BOOK PREVIEW																	1.235
219	BOOK PREVIEW																	1.4
220	BOOK PREVIEW																	0.99
221	BOOK PREVIEW																	1.25
222	BOOK PREVIEW																	1.18
223	BOOK PREVIEW																	1.055
224	BOOK PREVIEW																	1.16
225	BOOK PREVIEW																	1.33
226	BOOK PREVIEW																	1.025
227	BOOK PREVIEW																	1.16
228	BOOK PREVIEW																	1.085
229	BOOK PREVIEW																	1.03
230	BOOK PREVIEW																	1.185
231	BOOK PREVIEW																	1.3
232	BOOK PREVIEW																	1.2
233	BOOK PREVIEW																	1.315
234	BOOK PREVIEW																	1.18
235	BOOK PREVIEW																	1.155
236	BOOK PREVIEW																	1.21
237	BOOK PREVIEW																	1.275
238	BOOK PREVIEW																	1.215
239	BOOK PREVIEW																	1.235
240	BOOK PREVIEW																	1.09
241	BOOK PREVIEW																	1.35
242	BOOK PREVIEW																	1.08
243	BOOK PREVIEW																	1.145
244	BOOK PREVIEW																	1.285
245	BOOK PREVIEW																	1.265
246	BOOK PREVIEW																	1.21
247	BOOK PREVIEW																	1.175
248	BOOK PREVIEW																	1.19
249	BOOK PREVIEW																	0.95
250	BOOK PREVIEW																	1.35
Avg	BOOK PREVIEW																	1.2