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Time Series Analysis

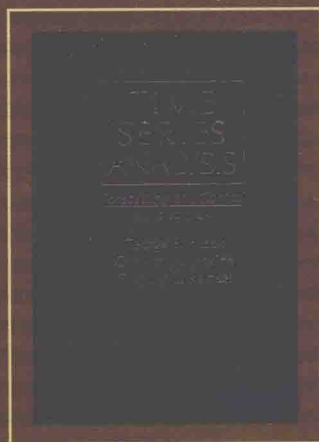
Forecasting and Control

时间序列分析

——预测与控制

(英文版·第3版)

[美] George E. P. Box
[英] Gwilym M. Jenkins 著
[美] Gregory C. Reinsel



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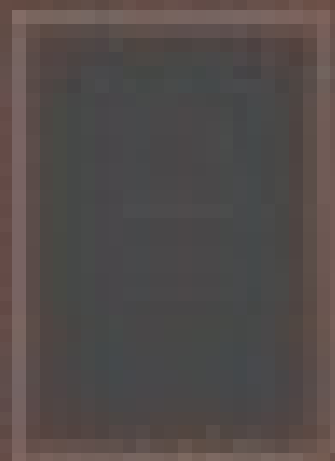
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（第二版·英文影印）

作者：James D. Hamilton
译者：王松林、王松林、王松林



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内 容 提 要

本书自 1970 年初版以来，不断修订再版，以其经典性和权威性成为有关时间序列分析领域书籍的典范。书中涉及时间序列随机（统计）模型的建立及许多重要的应用领域的使用，包括预测，模型的描述、估计、识别和诊断，动态关系的传递函数的识别、拟合及检验，干预事件影响的建模和过程控制等专题。本书叙述简明，强调实际技术，配有大量实例。

本书可作为统计和相关专业高年级本科生或研究生教材，也可以作为统计专业技术人员的参考书。

前 言

本书涉及时间序列随机（统计）模型的建立及其在重要应用领域的使用。这包括预测，模型的估计、鉴别和检验，动态关系的传递函数建模，干预事件影响的建模以及过程控制等专题。在《时间序列分析：预测与控制》第一版面世的同时，有关上述专题的研究掀起了巨大的热潮。因此，在这一版中，我们在保留有关时间序列分析的一些基本原理的同时，也融入了由众多作者提供的大量的新思想、新的修正和改进意见。

在本书上一版的写作期间，Gwilym Jenkins 正以非凡的勇气与一场慢性衰竭病症作斗争。在本次的修订中，作为对他的纪念，我们保持了原书的总体结构，仅对原文进行适当的修改和删节。具体来说，第 7 章关于 ARIMA 模型的估计作了相当大的修改。另外，我们引入一些全新的章节，用以介绍自第一版之后发展起来的重要专题。它们包括新近发展的多种有关模型鉴别方法的介绍，诸如典型相关分析，模型选择准则的使用，ARIMA 过程中有关单位根非平稳性检验的一些结果，ARMA 模型的状态空间表示及在似然估计和预报中的应用，模型诊断的得分（Score test），时间序列模型中结构分量、确定性分量及其基于回归时间序列模型方法的估计。第 12 章是全新的，它介绍了有关干预和异常值分析这一重要专题的进展，反映了自前一版以来该专业的关注热点和研究工作。

在过去的几年中，有关工业产品质量的改进又重新被强调，控制对于过程监控和过程调整的作用又引起极大的关注，因此，本书中有关控制的章节完全是重写的，以便对这些重要的专题加以介绍，同时对它们之间的关系给出了更好的解释。

本书的目的是提供实践的技巧，大多数读者将会在实际应用中受益。尽管我们也试图弥补前一版本的不足之处，但是，我们还是打算对一些问题引入严格的数学处理。

我们对 Meg (Margaret) Jenkins 以及我们的妻子 Claire 和 Sandy 致以诚挚的感谢, 在本书漫长的修订过程中, 他们始终不懈地给予支持和帮助。

原书的有关研究曾得到美国空军科学研究办公室和大英科学研究理事会的支持。第三版中的有关研究部分地得到了 Alfred P. Sloan 基金会和美国国家航空航天局的支持。我们感谢 E. S. Pearson 教授和 Biometrika Trustees, 允许我们重印由 E. S. Pearson 和 H. O. Hartley 所编制并在 *Biometrika Tables for Statisticians*, Vol.1 上经简化和修正的表 1、8 和 12, 我们感谢 Casimer Stralkowski 博士, 允许我们从他的博士论文中复制和采用了三张图。George Tiao、David Mayne、Emanuel Parzen、David Pierce、Granville Wilson、Donald Watts、John Hampton、Elaine Hodgkinson、Patricia Blant、Dean Wichern、David Bacon、Paul Newbold、Hiro Kanemasu、Larry Haugh、John MacGregor、Bovas Abraham、Gina Chen、Johannes Ledolter、Greta Ljung、Carole Leigh、Mary Esser 和 Meg Jenkins, 在上一版的修订中他们以不同的方式给予帮助, 在此一并感谢。

George Box 和 Gregory Reinsel

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