

陆菲

性 别	女	类 别	博士研究生
政治面貌	中共党员	学 院	经济管理学院
年 级	2022 级	专 业	管理科学与工程



奋斗历程

初心如磐，笃行致远

陆菲，女，中共党员，西南交通大学经济管理学院管理科学与工程专业博士研究生，国家公派麦考瑞大学联合培养博士生，研究方向为金融计量、预测及风险管理。该生求学期间谦逊踏实，不断突破，始终保持对科研的热爱与对专业的敬畏，立志将论文写在祖国大地上，用专业所学回应时代所需，现发表学术论文 10 篇（一作 8 篇、通讯 1 篇；包括 9 篇 JCR 一区/9 篇校级 A 类），主要成果发表在 Nature 子刊和领域内重要期刊上，博士在读期间累计获博士国家奖学金和优秀研究生标兵等奖励荣誉 10 余项。

一、扎根学术：以探索之志叩问科研之门

回首求学之路，始终以“踔实扬华，自强不息”的交大精神为指引，在科研探索、学术创新与社会服务的点滴中砥砺前行。这段旅程并非坦途，但每一次挑灯夜战的坚持、每一次突破瓶颈的喜悦，都深刻体会到“行胜于言”的力量。本科阶段，该生以本校专业第一的成绩推免直博，开启了金融工程与风险管理的研究之路。初入科研时，曾因模型调试失败而彻夜难眠，也曾为论文多次被拒而倍感焦虑，但导师的教诲让人明白，科研是厚积薄发的过程，唯有沉下心来，方能见微知著。进入课题组后，迅速完成角色转换，融入博士科研节奏，系统学习金融计量、时间序列、机器学习等领域知识。

博士期间，聚焦“金融预测与风险管理”这一国际前沿问题，通过长期积累与思辨，在 Nature 旗下子刊 *Humanities and Social Sciences Communications* 以第一作者身份发表研究成果，成为目前本院唯一一位在该期刊以博士生一作发表论文者。该生先后在 Nature 子刊、能源经济领域权威期刊 *Energy Economics* 和创新管理领域权威期刊 *Technological Forecasting and Social Change* 等累计发表论文 10 篇，其中 9 篇为第一作者/通讯作者，JCR 一区/校级 A 类占比达 90%，多篇发表于经管领域 ABS 3 星权威期刊，科研业绩分数名列前茅。这些成果并非一蹴而就：为验证能源消费对股市波动的预测效应，曾连续多日每天工作 12 小时，对比十余种计量模型和预测因子；为回应期刊审稿人的质疑，与合作者跨国协作，补充了多个市场的实证分析。这些经历让人懂得，学术的深度源于对真理的敬畏与对细节的执着。

二、国际视野：以开放之姿拥抱世界舞台

2024 年，该生有幸获得国家留学基金委公派项目资助，赴澳大利亚麦考瑞大学联合培养。在外方导师的团队中，接触到全球顶尖的金融计量方法和全新的学术视野的同时，也面临语言与文化差

异的挑战。为快速适应全英文科研环境，坚持每天阅读最新文献并整理汇报。这段经历使得学会以更开放的姿态倾听不同学术声音，也坚定了“立足中国，对话世界”的信念。

作为多个 SSCI 期刊的审稿人，在审阅来自海内外的投稿的同时，也在与国际同行的交流中反思自身研究的局限。例如，一次关于“股票市场收益率”的审稿意见促使重新设计文本分析框架，最终形成一篇投递至金融学知名期刊的工作论文。学术没有国界，唯有保持谦逊与对话，才能让中国学者的声音被世界听见。

三、服务担当：以赤子之心回馈社会

科研之外，该生始终铭记“知行合一”的责任。主持重点课题时，该生牵头构建“中国金融市场不确定性关注指标体系”，相关成果有望为监管部门提供风险预警工具；作为民航安全项目的第一学生主研，协同团队设计的“智慧民航评价体系”已应用于行业实践。通过这些经历，体会到学术研究的价值最终要落脚于社会需求。

在学校工作方面，该生亦始终秉持服务意识与责任感。曾担任《高等数学》《固定收益证券》等课程助教，认真批改答疑，协助任课老师顺利完成授课任务。在认真学习的同时，团结友爱身边同学，连续多年获得“优秀研究生标兵”和学业一等奖学金。此外，该生也关注科研之外的综合素养提升，参与“奔跑吧交大”运动赛事获奖，注重心理健康、身体锻炼与团队协作能力培养。

四、感恩前行：以踔实扬华精神照亮未来

回首来路，深知所有成绩的取得离不开学校的培养、导师的引领与同窗的支持。那些在工作室通宵达旦的夜晚，那些与国际学者思维碰撞的瞬间，那些见证研究成果服务社会的时刻，共同构成了永恒的成长坐标。

若有机会获得“踔实扬华奖章”，将视之为新的起点。未来，愿继续深耕金融风险管理领域，探索人工智能等前沿技术在风险预测中的应用，同时致力于搭建中外学术合作的桥梁，让更多青年学者在世界的舞台上绽放光彩。踔实扬华，不仅是一份荣誉，更是一生的追求。无论身在何处，都始终铭记自己是一名交大人，以扎实的学术根基、开阔的国际视野与热忱的奉献精神，践行新时代青年的使命与担当。

成绩列表

荣誉及获奖情况：

1. 2024 年 12 月，获博士国家奖学金；
2. 2024 年 07 月，获国家建设高水平公派研究生项目奖励资助（联合培养博士生）；
3. 2025 年 05 月，入选西南交通大学“国奖回馈计划”；
4. 2025 年 02 月，获西南交通大学经济管理学院“博士学术新星”荣誉称号；
5. 2024 年 12 月，获西南交通大学学业奖学金一等奖；
6. 2024 年 12 月，获西南交通大学“优秀研究生标兵”荣誉称号；
7. 2023 年 12 月，获西南交通大学学业奖学金一等奖；

8. 2023 年 12 月，获西南交通大学“优秀研究生标兵”荣誉称号；
9. 2023 年 12 月，获西南交通大学毛子洄基金奖学金；
10. 2023 年 12 月，获“奔跑吧交大”第十季活动三等奖；
11. 2022 年 12 月，获西南交通大学博士研究生扬华新秀奖。

论文、专利、著作情况：

1. 第一作者发表论文 8 篇：8 篇 SSCI/A 类/JCR 一区：
 - 1) **Lu, F.**, Ma, F.*, & Bouri, E.* (2024). “Stock market volatility predictability: New evidence from energy consumption.” *Humanities and Social Sciences Communications*, 11(1), 1-17.
（一作，SSCI, JCR 一区，A 类，Nature 子刊，Nature 旗下唯一面向人文社会科学领域的刊物）；
 - 2) **Lu, F.**, Ma, F.*, & Feng, L. (2024). “Carbon dioxide emissions and economic growth: New evidence from GDP forecasting.” *Technological Forecasting and Social Change*, 205, 123464.
（一作，SSCI, ABS 3, JCR 一区，创新管理领域权威期刊，A 类）；
 - 3) **Lu, F.**, Ma, F., & Hu, S.* (2024). “Does energy consumption play a key role? Re-evaluating the energy consumption-economic growth nexus from GDP growth rates forecasting.” *Energy Economics*, 129, 107268. （一作，SSCI, ABS 3, JCR 一区，能源经济领域权威期刊，A 类）；
 - 4) **Lu, F.**, Ma, F.*, Bouri, E., & Liao, Y. (2024). “Do commodity futures have a steering effect on the spot stock market in China? New evidence from volatility forecasting.” *International Review of Financial Analysis*, 94, 103262. （一作，SSCI, ABS 3, JCR 一区，A 类）；
 - 5) **Lu, F.**, Ma, F., & Guo, Q.* (2023). “Less is more? New evidence from stock market volatility predictability.” *International Review of Financial Analysis*, 89, 102819. （一作，SSCI, ABS 3, JCR 一区，A 类）；
 - 6) **Lu, F.**, Zeng Q.*, Bouri E.*, & Tao, Y. (2024). “Forecasting US GDP growth rates in a rich environment of macroeconomic data.” *International Review of Economics and Finance*, 95, 103476. （一作，SSCI, ABS 2, JCR 一区，A 类）；
 - 7) **Lu, F.**, & Ma, F.* (2023). “Cross-sectional uncertainty and stock market volatility: New evidence.” *Finance Research Letters*, 57, 104202. （一作，SSCI, ABS 2, JCR 一区，A 类）；
 - 8) **Lu, F.**, Ma, F.*, Li, P., & Huang, D. (2022). “Natural gas volatility predictability in a data-rich world.” *International Review of Financial Analysis*, 83, 102218. （一作，SSCI, ABS 3, JCR 一区，A 类）；
2. 通讯作者（学生一作）发表论文 1 篇：1 篇 SSCI/A 类/JCR 一区：
 - 1) Ma, F., **Lu, F.***, & Tao, Y. (2022). “Geopolitical risk and excess stock returns predictability:

New evidence from a century of data.” Finance Research Letters, 50, 103211. (通讯/学生一作, SSCI, ABS 2, JCR 一区, A 类);

3. 第四作者发表论文 1 篇: 1 篇 CSSCI/A 类:

- 1) 马锋,王继谦*,郭杨莉,陆菲. (2023)“基于跳跃、跳跃强度和机制转换的股票市场波动建模及其预测研究.”系统工程理论与实践, 43(2), 371-382. (CSSCI, 管理学中文权威期刊, A 类);

4. 参与出版专著 1 部:

- 1) 2025 年 1 月,《原油期货市场价格波动率预测模型介绍及应用研究》,科学出版社, ISBN: 978-7-03-078471-1;

5. 工作论文 3 篇: 1 篇 CSSCI/A 类; 2 篇 SSCI:

- 1) 马锋, 陆菲*, 曹嘉威. “基于分析师报告文本视角下的金融市场不确定性关注与股市波动预测研究”(通讯/学生一作, 投递至管理学中文权威期刊, 二审待录用, A 类);
- 2) Lu, F., Ma, F.*, & M. I. M. Wahab. “What can we learn from energy consumption on excess stock return prediction?” (一作, 投递至金融学知名期刊, 返修中, B 类, JCR 二区, ABS 3);
- 3) Lu, F., Ma, F.*. “Is financial market uncertainty concern predictive? New evidence from multinational market” (一作, 工作论文)。

以学生身份参与课题情况:

1. 主持 1 项: 其他类别 1 项:

- 1) 服务科学与创新四川省重点实验室 2024 年度重点课题 (编号: KL2405): 不确定性视角下中国金融市场风险建模及预测: 基于自然语言处理的研究, 2024.09-2026.06, 经费 5 万, 构建中国金融市场不确定性关注指标体系, 为我国金融市场风险预警和防控提供新的技术手段;

2. 学生第一主研 1 项: 其他类别 1 项:

- 1) 民航安全能力建设项目 (编号: WR111022H02036): 基于 SMS 的民航服务质量管理体系研究-试点及建立, 2022.01-2023.12, 经费 23 万, 协同团队展开民用航空服务质量研究, 构建“智慧民航建设评价指标体系”, 助力民用航空建设高质量发展。

社会工作情况:

1. 2022 年 09 月至 2023 年 01 月, 担任《固定收益证券》课程助教;
2. 2023 年 02 月至 2023 年 06 月, 担任《高等数学 2》课程助教;
3. 2024 年 09 月-至今, 任 Energy Economics 期刊 (ABS3, JCR 一区) 匿名审稿人;
4. 2025 年 07 月-至今, 任 Financial Innovation 期刊 (ABS2, JCR 一区) 匿名审稿人;

5. 2024 年 05 月-至今，任 *North American Journal of Economics and Finance* 期刊（ABS2，JCR 二区）匿名审稿人；
6. 2025 年 05 月-至今，任 *Applied Economics* 期刊（ABS2，JCR 二区）匿名审稿人；
7. 2025 年 03 月-至今，任 *Asia-Pacific Journal of Accounting and Economics* 期刊（ABS2）匿名审稿人；
8. 2024 年 05 月-至今，任 *Applied Economics Letters* 期刊（ABS1）匿名审稿人。

导师寄语

愿陆菲同学以“踔实”精神潜心求索，以“扬华”情怀勇担使命，砥砺前行，不负韶华！

经济管理学院 马锋 教授

西南交通大学研究生 评奖评优支撑材料

学院名称： 经济管理学院

申请奖项（荣誉）： 诶实扬华奖章

联系人： 陆菲

联系电话： 13072830475

日 期： 2025 年 9 月 29 日

支撑材料目录

分类	编号/名称	页码
一、获得荣誉情况	(1) 博士研究生国家奖学金 (2024国家级)	1
	(2) 国家建设高水平大学公派研究生项目 (2024国家级)	2
	(3) 西南交通大学“国奖回馈计划”(2025校级)	3
	(4) 西南交通大学经济管理学院“博士学术新星”荣誉称号 (2025院级)	4
	(5) 西南交通大学学业一等奖学金 (2024校级)	5
	(6) 西南交通大学“优秀研究生标兵”荣誉称号 (2024校级)	6
	(7) 西南交通大学学业一等奖学金 (2023校级)	7
	(8) 西南交通大学“优秀研究生标兵”荣誉称号 (2023校级)	8
	(9) 西南交通大学毛子洄基金奖学金 (2023校级)	9
	(10) 西南交通大学博士扬华新秀奖 (2022校级)	10
二、竞赛获奖情况	(1) “奔跑吧交大”第十季活动三等奖 (2023校级)	11
三、论文情况 (现发表10篇, 包括9篇校级A类期刊; 其中8篇一作/1篇通讯, 待发表论文3篇)	(1) “股市波动的可预测性: 来自能源消耗的新证据”. Humanities and Social Sciences Communications, (一作, SSCI, A类, JCR Q1, IF=3.7, 中科院一区, Nature旗下唯一面向人文社会科学领域的子刊, 本学院目前唯一以博士生一作发表的子刊)	12
	(2) “二氧化碳排放与经济增长: 来自GDP预测的新证据”. Technological Forecasting and Social Change, (一作, SSCI, A类, ABS 3, JCR Q1, IF=12.9, 中科院一区Top, 创新管理领域权威期刊)	13
	(3) “能源消耗是否起着关键作用? 从基于国内生产总值增长率的预测中重新审视能源消耗与经济增长之间的关系”. Energy Economics, (一作, SSCI, A类, ABS 3, JCR Q1, IF=13.6, 中科院一区Top, 能源经济领域权威期刊)	14
	(4) “商品期货是否会对中国的现货股市产生引导作用? 来自波动率预测的新证据”. International Review of Financial Analysis, (一作, SSCI, A类, ABS 3, JCR Q1, IF=7.5, 中科院二区Top, 金融学国际权威期刊)	15
	(5) “少即是多? 来自股市波动可预测性的新证据”. International Review of Financial Analysis, (一作, SSCI, A类, ABS 3, JCR Q1, IF=7.5, 中	16

	科院二区Top，金融学国际权威期刊)	
	(6)“在宏观经济数据丰富的背景下预测美国国内生产总值的增长率”。International Review of Economics and Finance,(一作, SSCI, A类, ABS 2, JCR Q1, IF=4.8, 中科院二区, 经济学国际权威期刊)	17
	(7)“横截面不确定性与股票市场波动性: 新证据”。Finance Research Letters, (一作, SSCI, A类, ABS 2, JCR Q1, IF=7.4, 中科院二区, 金融学国际知名期刊)	18
	(8)“数据丰富的世界中天然气价格波动的可预测性”。International Review of Financial Analysis, (一作, SSCI, A类, ABS 3, JCR Q1, IF=7.5, 中科院二区Top, 金融学国际权威期刊)	19
	(9)“地缘政治风险与股票超额收益的可预测性: 基于百年数据的新证据”。Finance Research Letters, (通讯/学生一作, SSCI, A类, ABS 2, JCR Q1, IF=7.4, 中科院二区, 金融学国际知名期刊)	20
四、参与课题情况	(1) 主持, 服务科学与创新四川省重点实验室2024年度重点课题(编号: KL2405): 不确定性视角下中国金融市场风险建模及预测: 基于自然语言处理的研究, 2024.09-2026.06, 经费5万, 构建中国金融市场不确定性关注指标体系, 为我国金融市场风险预警和防控提供新的技术手段。	21
	(2) 第一学生主研, 民航安全能力建设项目(编号: WR111022H02036): 基于SMS的民航服务质量管理体系研究-试点及建立, 2022.01-2023.12, 经费23万, 协同团队展开民用航空服务质量研究, 构建“智慧民航建设评价指标体系”, 助力民用航空建设高质量发展。	22
五、授权专利情况	无	
六、著作情况	(1) 主要编写人员,《原油期货市场波动率预测模型介绍及应用研究》, 科学出版社。	23-24



国家奖学金荣誉证书

编号: BSY202410128

陆 菲同学荣获 2024 年博士研究生国家奖学金，特颁此证。



2024 年 12 月



贺信

陆菲女士：

祝贺您通过专家评审，获得国家公派出
国留学资格！

*We are happy to tell you that you have been awarded the
Chinese Government Scholarship to sponsor your
upcoming study abroad. Congratulations!*

国家留学基金管理委员会
二〇二四年七月

CSC NO. 202407000049

推送链接:

https://mp.weixin.qq.com/s/0sU_iCG6lKIPJW2Isypg6w

研小扬优享会|陆菲：行而不辍、履
践致远

西南交通大学研工部 2025年05月23日 11:34

四川 听全文



编者按

为选树先进典型，弘扬榜样力量，同时助力同学们全面发展，特推出“国奖回馈计划—研小扬优享会”主题推送。每期我们会邀请一位国奖获得者分享他们在科研探索中的心得与经验，内容涵盖文献查阅、实验设计、论文撰写以及如何应对科研瓶颈等。他山之石可以攻玉，希望同学们能从他们的分享中汲取力量，书写属于自己的精彩篇章。



陆菲

人物简介

陆菲，女，汉族，西南交通大学经济管理学院管理科学与工程专业2022级博士生，中共党员，国家公派麦考瑞大学联合培养博士，主要研究方向为金融计量、预测及风险管理，获国家奖学金、扬华新秀奖学金、一等学业奖学金和“优秀研究生标兵”等多项荣誉；主持服务科学与创新四川省重点实验室重点课题1项，参与撰写出版专著1部。

推送链接:

https://mp.weixin.qq.com/s/XetD0Y6eyIDY-zto_vBQ4w

博士学术新星第六期 | 陆菲

西南交大经管研究生会 2025年02月22日 09:13

四川  听全文



引言

“经管博士学术新星”栏目本期给大家分享的学术新星是陆菲博士，她近期在《**Humanities & Social Sciences Communications**》(Nature 子刊，JCR Q1) 期刊上发表了《**Stock market volatility predictability: new evidence from energy consumption**》。

西南交通大学经济管理学院2024年博士研究生学业奖学金公示（2022级）

序号	学号	姓名	专业	奖项	金额（元）
1	2022310326	罗琴	管理科学与工程	一等奖	17500
2	2022310330	叶焱	管理科学与工程	一等奖	17500
3	2022310332	郭杨莉	管理科学与工程	一等奖	17500
4	2022320335	陆菲	管理科学与工程	一等奖	17500
5	2022300343	穆毅强	管理科学与工程	二等奖	12600
6	2022300354	李晶鑫	工商管理	二等奖	12600
7	2022300355	陈玖柒	工商管理	二等奖	12600
8	2022310327	杜华峰	管理科学与工程	二等奖	12600
9	2022310345	沈俊宏	工商管理	二等奖	12600
10	2022310346	周超	工商管理	二等奖	12600
11	2022310347	王思瑞	工商管理	二等奖	12600
12	2022300339	孙扬	管理科学与工程	三等奖	9200
13	2022300341	王晓斐	管理科学与工程	三等奖	9200
14	2022300342	黄超然	管理科学与工程	三等奖	9200
15	2022300349	刘玉婷	工商管理	三等奖	9200
16	2022300352	李婧萱	工商管理	三等奖	9200
17	2022300353	张依梦	工商管理	三等奖	9200
18	2022300374	刘丽	管理科学与工程	三等奖	9200
19	2022310325	徐晓萱	管理科学与工程	三等奖	9200
20	2022310328	谢洁	管理科学与工程	三等奖	9200
21	2022310329	任秋洁	管理科学与工程	三等奖	9200
22	2022310331	周芳婷	管理科学与工程	三等奖	9200
23	2022310333	陈艺鑫	管理科学与工程	三等奖	9200
24	2022310334	梁爽	管理科学与工程	三等奖	9200
25	2022310348	罗翔	工商管理	三等奖	9200
26	2022320336	高颖	管理科学与工程	三等奖	9200
27	2022320337	秦丽	管理科学与工程	三等奖	9200
28	2022328338	张华	管理科学与工程	三等奖	9200



西南交通大学
Southwest Jiaotong University

陆 菲 同学：

在2023-2024学年中，学习成绩优异，科研成果显著，表现突出，被评为：

优秀研究生标兵

特发此证，以资鼓励。



西南交通大学经济管理学院2023年博士研究生学业奖学金公示（2022级）

序号	学号	专业	姓名	奖项	金额（元）
1	2022310332	管理科学与工程	郭杨莉	一等奖	17500
2	2022320335	管理科学与工程	陆菲	一等奖	17500
3	2022310325	管理科学与工程	徐晓萱	一等奖	17500
4	2022310327	管理科学与工程	杜华峰	二等奖	13400
5	2022310334	管理科学与工程	梁爽	二等奖	13400
6	2022310326	管理科学与工程	罗琴	二等奖	13400
7	2022310328	管理科学与工程	谢洁	二等奖	13400
8	2022310331	管理科学与工程	周芳婷	二等奖	13400
9	2022300355	工商管理	陈玖柒	三等奖	9300
10	2022310333	管理科学与工程	陈艺鑫	三等奖	9300
11	2022320336	管理科学与工程	高颖	三等奖	9300
12	2022300342	管理科学与工程	黄超然	三等奖	9300
13	2022300354	工商管理	李晶鑫	三等奖	9300
14	2022300352	工商管理	李婧萱	三等奖	9300
15	2022300344	管理科学与工程	刘丽	三等奖	9300
16	2022300349	工商管理	刘玉婷	三等奖	9300
17	2022310348	工商管理	罗翔	三等奖	9300
18	2022300343	管理科学与工程	穆毅强	三等奖	9300
19	2022320337	管理科学与工程	秦丽	三等奖	9300
20	2022310329	管理科学与工程	任秋洁	三等奖	9300
21	2022310345	工商管理	沈俊宏	三等奖	9300
22	2022300339	管理科学与工程	孙扬	三等奖	9300
23	2022310347	工商管理	王思瑞	三等奖	9300
24	2022300341	管理科学与工程	王晓斐	三等奖	9300
25	2022310330	管理科学与工程	叶焱	三等奖	9300



西南交通大学
Southwest Jiaotong University

陆 菲 同学：

在2022-2023学年中，学习成绩优异，科研成果显著，表现突出，被评为：

优秀研究生标兵

特发此证，以资鼓励。

西南交通大学

2023年12月





西南交通大学
Southwest Jiaotong University

专项奖助学金荣誉证书

陆 菲 同学：

获得2022-2023学年毛子洄基金奖
学金，特颁此证，以资鼓励。

西南交通大学

2023年12月



西南交通大学经济管理学院2022年博士扬华新秀奖公示

序号	学号	专业	姓名	金额（元）
1	2022310332	管理科学与工程	郭杨莉	25000
2	2022320335	管理科学与工程	陆菲	25000



西南交通大学
Southwest Jiaotong University

荣誉证书

秦明、李泳江、李欣、**陆菲**、谢浩。_____ 同学：

在“扬帆把舵.跃动青春”奔跑吧交大第十季活动中，荣获：

三等奖

特发此证，以资鼓励。

共青团西南交通大学
电气工程学院委员会
西南交通大学
电气工程学院委员会

共青团西南交通大学
地球科学与环境工程学院委员会
委员会

共青团西南交通大学
马克思主义学院委员会
西南交通大学马克思主义学院委员会



ARTICLE



<https://doi.org/10.1057/s41599-024-04130-x>

OPEN

Stock market volatility predictability: new evidence from energy consumption

Fei Lu¹, Feng Ma^{1,2}✉ & Elie Bouri^{3,4}✉

This research develops a group of novel indicators from the energy consumption perspective and assesses their ability to forecast stock market volatility using various techniques. Empirical evidence reveals that novel indicators, notably industrial non-renewable energy consumption, significantly enhance the forecasting of stock market volatility. The MIDAS-LASSO model, which integrates a mixed-data sampling method, effectively captures key information and outperforms other models in predictive accuracy. Further analysis reveals that the novel indicators contain useful forecasting information over the business cycle and crisis periods. Additionally, we indicate the forecasting ability of the novel indicators from the standpoint of investor sentiment variation. Our findings yield useful insights for the forecasting of stock market volatility, emphasizing the significant role of energy consumption.

¹School of Economics and Management, Southwest Jiaotong University, Chengdu, China. ²Service Science and Innovation Key Laboratory of Sichuan Province, Chengdu, China. ³School of Business, Lebanese American University, Beirut, Lebanon. ⁴Korea University Business School, Seoul, Korea.
✉email: mafeng2016@swjtu.edu.cn; elie.elbouri@lau.edu.lb



Carbon dioxide emissions and economic growth: New evidence from GDP forecasting

Fei Lu^a, Feng Ma^{a,b,*}, Lin Feng^{a,b}

^a School of Economics and Management, Southwest Jiaotong University, Chengdu, China

^b Service Science and Innovation Key Laboratory of Sichuan Province, China

ARTICLE INFO

Keywords:

Carbon emission index
Energy-consuming sectors
Incremental information
Business cycle
COVID-19 pandemic

ABSTRACT

This study aims to construct a monthly carbon emission index based on energy combustion in order to investigate its predictive power for the real GDP growth rate in the United States. Our objective is to evaluate and quantify the predictive performance and the potential impact of carbon-related factors on the GDP growth rate. We define the carbon emission index as the change rate index of monthly carbon dioxide emissions after accounting for seasonal effects, encompassing five sectors of energy consumption (residential, commercial, industrial, transportation, and electric power). Our findings demonstrate the robust and exceptional predictive capability of the newly developed carbon emission indices for GDP growth rates, particularly in relation to the transportation and industrial sectors. Moreover, in addition to popular macroeconomic variables, the carbon emission index contains incremental predictive information. The results obtained under diverse business cycle conditions and during the COVID-19 Pandemic further underscore the significance of our study. The findings of this paper provide more concise and efficient predictors for GDP growth rate forecasts.

1. Introduction

GDP forecasting, as an integral aspect of macroeconomic forecasting, has consistently represented a challenging and momentous responsibility for governmental entities (Roubini and Sachs, 1989). On the one hand, changes in GDP, which reflect the state of the economy and the real income of the country, are central to global development dynamics (Camba-Mendez et al., 2001; Shahzad et al., 2023). On the other hand, the precision of GDP forecasts profoundly influences the economic evaluation conducted by a nation's market committee, which aims to oversee overall economic growth and inflation (Landefeld et al., 2008; Ericsson, 2016; Watanabe et al., 2018). Simultaneously, business managers and analysts heavily rely on precise GDP forecasts to derive essential and optimal inferences and decisions pertaining to future business undertakings. From an investment standpoint, GDP growth rate, as one of the principal indicators for assessing operational conditions, exhibits a close association with the measurement of stock return volatility (Paye, 2012). Within this context, the significance of accurate GDP forecasts cannot be overstated, as they play a pivotal role in

effectively monitoring economic conditions, establishing justifiable economic growth targets, and sustaining stable economic development (Sun et al., 2019).

Over the past few decades, issues such as environmental sustainability and climate change have attracted much attention worldwide and are among the most pressing issues of the 21st century (Chen et al., 2020). According to the 13th Sustainable Development Goals (SDGs) set by the United Nations, a 45 % reduction in global net carbon emissions between 2010 and 2030 must be achieved to effectively mitigate global warming and limit it to 1.5 °C.¹ The recent 28th United Nations Climate Change Conference (COP28) also emphasized that climate action is urgent and sustainable development needs to be vigorously promoted.² The burning of fossil fuels (coal, oil and natural gas) is the main source of carbon emissions and an important source of global warming (Lau et al., 2023). With the growth of global population and rapid industrial development, energy demand is growing rapidly (Liang et al., 2022). Excessive consumption of energy trading and the emission of a large amount of carbon dioxide have damaged the global carbon balance, aggravated the greenhouse effect, accelerated global warming, caused

* Corresponding author at: School of Economics and Management, Southwest Jiaotong University, China.

E-mail addresses: lufei2022@my.swjtu.edu.cn (F. Lu), mafeng2016@swjtu.edu.cn (F. Ma), linfeng@swjtu.edu.cn (L. Feng).

¹ <https://www.un.org/en/global-issues/climate-change#:~:text=The%20report%20finds%20that%20limiting%20global%20warming%20to,levels%20by%202030%2C%20reaching%20%E2%80%98net%20zero%E2%80%99%20around%202050>

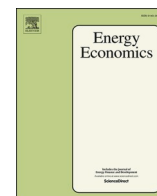
² <https://www.un.org/en/climatechange/cop28>

<https://doi.org/10.1016/j.techfore.2024.123464>

Received 14 December 2023; Received in revised form 3 April 2024; Accepted 20 May 2024

Available online 3 June 2024

0040-1625/© 2024 Elsevier Inc. All rights reserved, including those for text and data mining, AI training, and similar technologies.



Does energy consumption play a key role? Re-evaluating the energy consumption-economic growth nexus from GDP growth rates forecasting

Fei Lu^a, Feng Ma^{a,b}, Shiyang Hu^{c,*}

^a School of Economics and Management, Southwest Jiaotong University, Chengdu, China

^b Service Science and Innovation Key Laboratory of Sichuan Province, Chengdu, China

^c School of Economics and Business Administration, Chongqing University, Chongqing, China

ARTICLE INFO

Keywords:

Economic growth
GDP growth rate
ECI
Industrial sector
Geopolitical risk shocks

ABSTRACT

Given the strong link between economic growth and energy consumption, we construct a new set of energy consumption indices (ECI) to forecast GDP growth rates. The findings demonstrate the strong predictive power of the new indices. In particular, the electricity consumption index from the industrial sector has an excellent predictive performance and deserves the attention of the government and academia to help formulate economic growth targets. The mixed-frequency model with the Least Absolute Shrinkage and Selection Operator approach (MIDAS-LASSO) enables the full exploitation of energy consumption information for stable forecasting performance, even in the context of crisis fluctuations and geopolitical risk shocks. Furthermore, we apply forecast encompassing tests and variable selection to statistically investigate the predictive information. By analyzing energy consumption characteristics, we contribute to the economic growth hypothesis at the level of energy consuming sectors and provide new insights into GDP forecasting.

1. Introduction

As an important factor in economic production, energy is widely used in all aspects of social production and consumption, and has a significant impact on global economic activities (Gong et al., 2022a). A growing energy crisis in the 1970s inspired academia and industry to study energy consumption and economic growth (see Cleveland et al., 1984; Ramanathan, 2006; Apergis and Payne, 2009; Kourtzidis et al., 2018; Raza et al., 2019; Acheampong et al., 2021; Chai et al., 2022), as energy has always been a key driver of economic development. Energy plays an important role in economic development as a vital input component for economic growth. Since Kraft and Kraft (1978) conducted pioneering research on energy consumption and economic growth, numerous studies have examined energy consumption and economic development. For example, Shahbaz et al. (2018) and Raza et al. (2019) explored the connection between energy consumption and economic development in developed countries using quantile and covariance analysis techniques, and discovered a favorable association

between the two. Wang and Wang (2020) conducted an in-depth examination into the underlying factors that impact economic growth with regards to energy consumption. More recently, Acheampong et al. (2021) found that there exists an interdependent relationship between energy consumption and economic growth.

Overall, the theoretical literature classifies the relationship between energy consumption and economic growth into four categories: growth hypothesis, conservation hypothesis, neutrality hypothesis, and feedback hypothesis. Studies in developed economies have provided empirical evidence in support of the growth hypothesis, which holds that energy consumption plays a crucial role in economic development by complementing the inputs of capital and labor in the production process. Therefore, the contribution of energy consumption to economic growth is indispensable (Cleveland et al., 1984; Apergis and Payne, 2009; Lin and Liu, 2012).¹ Evidence supporting the growth hypothesis is demonstrated through increased energy consumption, economic growth, and higher GDP. This suggests a positive relationship between energy consumption and economic development, providing support for

* Corresponding author at: School of Economics and Business Administration, Chongqing University, China.

E-mail addresses: lufei2022@my.swjtu.edu.cn (F. Lu), mafeng2016@swjtu.edu.cn (F. Ma), hushiyang@cqu.edu.cn (S. Hu).

¹ The remaining three hypotheses hold as follows. The conservation hypothesis states that energy conservation policies designed to reduce energy consumption and waste do not adversely affect real GDP. The neutrality hypothesis then assumes that energy consumption is a small fraction of total output and thus has little or no effect on real GDP, and that there is no causal relationship between energy consumption and real GDP. Finally, the feedback hypothesis states that energy consumption and real GDP are correlated and that there is a two-way causal relationship.



Do commodity futures have a steering effect on the spot stock market in China? New evidence from volatility forecasting

Fei Lu^a, Feng Ma^{a,b,*}, Elie Bouri^c, Yin Liao^d

^a School of Economics and Management, Southwest Jiaotong University, Chengdu, China

^b Service Science and Innovation Key Laboratory of Sichuan Province, China

^c School of Business, Lebanese American University, Lebanon

^d Department of Applied Finance, Macquarie University, Australia

ARTICLE INFO

Keywords:

Commodity futures volatility
Stock market volatility
Emerging market
Economic policy uncertainty
Investor sentiment

ABSTRACT

This study conducts a volatility forecasting analysis to examine whether Chinese commodity futures have a steering effect on China's spot stock market index. After constructing realized volatility indices for 36 commodity futures, a combination of forecasts and shrinkage methods are applied. The results reveal that the commodity futures volatility index has the power to predict the realized volatility of the stock market index. The PVC (Poly Vinyl Chloride) index, in particular, is a powerful predictor, which reflects its ability to serve as a guide for short-term market risk management and stock market investing decisions. The shrinkage model fully incorporates volatility information and consistently outperforms, even during the COVID-19 pandemic. We consider the impact of Chinese economic policy and investor sentiment and find that commodity futures maintain their outstanding predictive power. We also explore the difference in forecasting spot volatility by futures volume and show that predictive power depends not only on trading volume but also on commodity type. Further analysis highlights the predictive performance of commodity futures in semi-variance and stock sub-sectors, providing significant findings. Our study is statistically and economically significant and sheds light on stock market volatility forecasting and investment decisions in the largest emerging market.

1. Introduction

The topic of how futures and spot markets interact is a perennial *hot potato*. The claim made in opposition to futures trading is that high leverage in the futures market may transmit more information to the spot market, increasing price volatility (Chen & Gau, 2022). A contradictory view contends that futures trading accelerates the flow of information, provides new and feasible risk management tools, and thus can reduce (stock) market volatility (McKenzie, Brailsford, & Faff, 2001; O'hara, M., 2015). Volatility is generally recognized to reflect risk, which is strongly tied to asset pricing and risk management (Bardgett, Gourier, & Leippold, 2019; Chen & Petkova, 2012). In light of this, empirical studies extensively examine the volatility relationship between futures and the spot market, focusing on financial futures and, in particular, stock index futures. For example, Bae, Kwon, and Park (2004) investigate the Korean stock market and find that the introduction of financial futures trading could improve spot volatility and market efficiency. Chen, Han, Li, and Wu (2013) show that, after the

introduction of stock index futures trading, the volatility of the Chinese stock market is significantly reduced. Contrary to previous studies, Bohl, Diesteldorf, Salm, and Wilfling (2016) consider five major developed economies, the United States, United Kingdom, France, Germany, and Japan, and reveal that stock index futures trading has an insignificant impact on the stability of the spot market.

Few studies investigate the volatility impact of futures on the spot market from a predictive perspective. It is worth noting that the accurate volatility measurement and prediction of spot markets can not only supplement the existing literature, but also benefit the asset-allocation decision of portfolio managers and the risk inferences of risk managers (Berkowitz & O'Brien, 2002), which is worthy of academic attention. Taking the stock market as an example; as one of the most important financial assets, it is characterized by high volatility. In the economic system, commodity futures have an important impact on stock market volatility. On the one hand, fluctuations in commodity prices can cause flows and transfers of funds, which in turn affect the flow of capital in the stock market. On the other hand, the impact of commodity price

* Corresponding author at: School of Economics and Management, Southwest Jiaotong University, Chengdu, China.

E-mail addresses: lufei2022@my.swjtu.edu.cn (F. Lu), mafeng2016@swjtu.edu.cn (F. Ma), elie.elbouri@lau.edu.lb (E. Bouri), yin.liao@mq.edu.au (Y. Liao).

<https://doi.org/10.1016/j.irfa.2024.103262>

Received 29 December 2023; Received in revised form 10 March 2024; Accepted 2 April 2024

Available online 4 April 2024

1057-5219/© 2024 Elsevier Inc. All rights reserved.



Less is more? New evidence from stock market volatility predictability

Fei Lu^a, Feng Ma^{a,b}, Qiang Guo^{a,b,*}

^a School of Economics and Management, Southwest Jiaotong University, Chengdu, China

^b Service Science and Innovation Key Laboratory of Sichuan Province

ARTICLE INFO

Keywords:

Global financial uncertainty
Stock market
Volatility forecasting
Uncertainty shocks
MIDAS

ABSTRACT

The complex nature of stock market volatility has motivated researchers to apply a variety of predictors to obtain reliable predictive information for precise forecasting. This study seeks to examine the effectiveness of the novel Global Financial Uncertainty (GFU) indices, comprising of only five sub-indices, in predicting stock market volatility using the widely used mixed-data sampling (MIDAS) model. The results demonstrate the remarkable and stable predictive power of GFU, even during crises and global financial uncertainty shocks. Specifically, the financial uncertainty index from Europe plays a significant role in our analysis. Importantly, we find that the GFU index outperforms a large number of other indicators in stock volatility forecasting. The statistical and economic significance of the predictive power of GFU is remarkable. Our study provides significant insights for market participants and policymakers that highlight the need to prioritize global financial uncertainty.

1. Introduction

In portfolio and risk management, existing literature commonly considers volatility as a crucial factor and a valid proxy for risk (Christiansen et al., 2012; Paye, 2012; Conrad and Loch, 2015; Bollerslev et al., 2018; Lin et al., 2020; Ma and Tanizaki, 2021). As a consequence, ensuring reliable modeling and prediction of volatility has become a prominent focus of research in financial markets. Understanding the volatility of the stock market, a major financial market closely tied to financial activities such as asset allocation and derivatives pricing, can be helpful in navigating today's dynamic economic conditions. Given the criticality of modeling accurate stock market volatility, numerous studies have been conducted to formulate new predictive models or identify innovative predictors that yield reliable predictions. For example, Bollerslev et al. (2016) constructed an adaptable heterogeneous autoregressive (HAR) model based on the traditional autoregressive (AR) model, while Ma et al. (2022) developed a new Markov regime-switching model by combining shrinkage techniques. Recently, scholars have applied a large set of multivariate predictors to model volatility. For instance, Christiansen et al. (2012) and Mittnik et al. (2015) employed macroeconomic variables, while Balcilar et al. (2019) applied economic policy uncertainty indices for several nations to successfully forecast market volatility.

As previously mentioned, a growing number of studies have demonstrated significant predictive results using an extensive list of

predictors for financial market forecasting. However, a crucial question that remains unanswered is whether a finite set of predictors can potentially provide better prediction than a large set of predictors. Though rarely tackled, issues surrounding this matter are of paramount importance. Thus, our study aims to determine if a restricted number of predictors may yield greater predictive performance for stock market volatility. Recently, Caggiano and Castelnovo (2023) obtained financial volatility information from 42 countries to construct a new set of global financial uncertainty (GFU) indices, including five subdivided regional indices. According to Caggiano and Castelnovo (2023), the new GFU index is based on stock market returns, exchange rate returns and 10-year government bond yields. They found GFU showed a large jump when crises broke out (such as the subprime crisis and the COVID-19 pandemic), corresponding to the large fluctuations in the financial market. Therefore, we believe that the GFU index can reflect the actual economic operations and respond in time to sudden crisis events. Since investment decisions and savings are strongly correlated with the three indicators above (Fernández-Villaverde et al., 2011; Cenedese et al., 2016), and stock market volatility is a crucial indicator of uncertainty (see Zhang et al., 2006; Cesa-Bianchi et al., 2020), we want to evaluate whether this set of regional financial uncertainty indices outperforms a broad range of predictors. Building on this premise, we aim to conduct a quantitative investigation of how global financial uncertainty shocks affect stock market volatility.

Our second motivation is to develop models that can substantially

* Corresponding author at: Qiang Guo, School of Economics and Management, Southwest Jiaotong University.

E-mail addresses: lufei2022@my.swjtu.edu.cn (F. Lu), mafeng2016@swjtu.edu.cn (F. Ma), qguoqguo@163.com (Q. Guo).

<https://doi.org/10.1016/j.irfa.2023.102819>

Received 21 March 2023; Received in revised form 29 June 2023; Accepted 20 July 2023

Available online 21 July 2023

1057-5219/© 2023 Elsevier Inc. All rights reserved.



Forecasting US GDP growth rates in a rich environment of macroeconomic data

Fei Lu^a, Qing Zeng^{b,*}, Elie Bouri^{c,d,**}, Ying Tao^a

^a School of Economics and Management, Southwest Jiaotong University, Chengdu, China

^b School of Business, Chengdu University of Technology, Chengdu, China

^c School of Business, Lebanese American University, Lebanon

^d Korea University Business School, Seoul, Korea

ARTICLE INFO

Keywords:

US GDP growth rate
Macroeconomic variables
Macroeconomic attention indices
Macroeconomic risks
MIDAS-LASSO

ABSTRACT

Forecasting GDP growth rates is a formidable challenge, compounded by the inherent volatility, the complexity of the economic landscape, and the presence of a multitude of economic indicators at varying data frequencies. This study employs the MIDAS-LASSO model, which represents a penalized approach designed for mixed-frequency data, to forecast US GDP growth rates, while considering a vast array of macroeconomic indicators, including the Macroeconomic Attention Index (MAI) of Fisher et al. (2022). The empirical analysis demonstrates that both macroeconomic indicators and MAI exhibit considerable power for forecasting US GDP growth rates. The MIDAS-LASSO model outperforms its competitors in terms of forecasting efficacy, particularly in scenarios involving a plethora of predictors. Further analysis scrutinizes the model's efficacy across business cycles and during significant economic downturns, and the pathways through which macroeconomic risks influence US GDP growth rates. These insights offer valuable contributions to the field of economic forecasting and present novel avenues for policymakers and analysts.

1. Introduction

Gross Domestic Product (GDP) forecasting stands as a pivotal aspect of macroeconomic analysis, representing a formidable yet critical duty for governments (Roubini & Sachs, 1989). The reason for this is multifaceted. Fluctuations in GDP not only mirror the state of the economy and the nation's fiscal health (Camba-Mendez et al., 2001), but also enable the tracking of broader economic trends such as growth and inflation (Landefeld et al., 2008). Furthermore, the accuracy of GDP forecasts exerts a profound influence on the economic assessments undertaken by a nation's market committees, as evidenced by Ericsson's (2016) findings. Concurrently, the formulation of strategic and optimal decisions pertaining to impending operations heavily relies on the precision of GDP forecasts, which serve as a cornerstone for business executives and financial analysts alike. From an investment perspective, the GDP growth rate, a pivotal indicator of market dynamics, is intricately intertwined with the quantification of stock market volatility, as emphasized by Paye (2012). In light of these considerations, the precision of GDP forecasts is essential for the vigilant oversight of economic

* Corresponding author. School of Business, Chengdu University of Technology, China.

** Corresponding author.

E-mail addresses: lufei2022@my.swjtu.edu.cn (F. Lu), zengqing2017@126.com (Q. Zeng), elie.elbouri@lau.edu.lb (E. Bouri), taoying0693@sina.com (Y. Tao).

<https://doi.org/10.1016/j.iref.2024.103476>

Received 10 March 2024; Received in revised form 8 July 2024; Accepted 31 July 2024

Available online 31 July 2024

1059-0560/© 2024 Elsevier Inc. All rights are reserved, including those for text and data mining, AI training, and similar technologies.



Cross-sectional uncertainty and stock market volatility: New evidence

Fei Lu^a, Feng Ma^{a,b,*}

^a School of Economics and Management, Southwest Jiaotong University, Chengdu, China

^b Service Science and Innovation Key Laboratory of Sichuan Province, Chengdu, China

ARTICLE INFO

Keywords:

Cross-sectional uncertainty
Economic policy uncertainty
Stock market volatility
Out-of-sample forecast
Financial crisis

ABSTRACT

This study investigates the potential of cross-sectional uncertainty (CSU) to predict stock market volatility. Empirical findings reveal that the newly developed variance-based index conditioned on economic policy uncertainty exhibits greater predictive power than the widely used economic policy uncertainty index. Sparse methods consider multiple predictors and perform well. Further research has demonstrated that the CSU index contains more valuable information and delivers better predictive performance and economic value, especially under financial crises. Our study extends the application of the CSU index and provides novel evidence for volatility prediction.

1. Introduction

Volatility in financial markets has long attracted attention for its importance in asset allocation and risk management (see [Paye, 2012](#); [Ma et al., 2019](#); [Liang et al., 2022](#); [Zhang et al., 2023](#)). As future's uncertainty is regarded as the key driving force of behavior ([Yu and Huang, 2023](#)), existing studies widely apply it to volatility forecasting, especially the economic policy uncertainty (EPU) (see [Wen et al., 2019](#); [Zeng et al., 2022](#); [Zhang et al., 2022](#)). Recently, [Dew-Becker and Giglio \(2023\)](#) constructed a new cross-sectional uncertainty (CSU) index, which can prospectively track the prices and shocks of firms and markets. However, [Dew-Becker and Giglio \(2023\)](#) focus on CSU's ability to predict economic activities such as total output and employment rate, but it is not known whether CSU could predict stock market volatility. Therefore, this study focuses on the predictability of CSU for stock market volatility and compares it with the popular EPU.

Our contribution is as follows. First, the existing literature focuses on the predictability of the EPU for volatility. To the best of our knowledge, this study is the first to explore the predictive power of the CSU index on stock market volatility. In contrast to uncertainty measures of the overall market state, we extend existing forecasting studies by starting from cross-sectional uncertainty at the firm level. Second, we compare CSU with the popular EPU and find that CSU outperforms the latter in terms of predictive performance and is statistically and economically significant even in the medium and long term, as well as during financial crises. Our study finds that the CSU index has superior predictive performance and contains more valuable information.

* Corresponding author at: School of Economics and Management, Southwest Jiaotong University.
E-mail address: mafeng2016@swjtu.edu.cn (F. Ma).



Natural gas volatility predictability in a data-rich world

Fei Lu, Feng Ma^{*}, Pan Li, Dengshi Huang

School of Economics and Management, Southwest Jiaotong University, Chengdu, China

ARTICLE INFO

Keywords:

Natural gas volatility forecasting
MIDAS-LASSO
Macroeconomic variables
Economic indices

ABSTRACT

This study employs macroeconomic variables and economic indices to forecast natural gas volatility. The out-of-sample results show that the forecasting performance of the macroeconomic variables outperforms the economic indices. Additionally, the forecasting performance of the mixed data sampling model, which combines the least absolute contraction and the selection operator (MIDAS-LASSO), is better than that of other competing models, and it still has a good predictive ability under certain conditions (e.g., business cycles). Our study confirms the superiority of the MIDAS-LASSO model for natural gas volatility forecasting.

1. Introduction

Natural gas, as a commonly utilized modern energy source, has the advantages of being cleaner and easier to store and transport than fossil fuels (Beyca, Ervural, Tatoglu, Ozuyar, & Zaim, 2019). Every country has devoted increasing attention to sustainable development in recent years (Zhang & Wen, 2008), especially natural gas. Burning natural gas generates significantly less dangerous particulate matter and greenhouse gases than crude oil and other fossil fuels,¹ making it appealing to environmentalists as a clean energy source (Delborne, Hasala, Wigner, & Kinchy, 2020; Obama, 2017). As a critical strategic commodity, natural gas price volatility has a substantial influence on the energy market, economic development, and even national security (Weber, 2012). Considering the abovementioned background, accurately estimating and forecasting natural gas volatility is critical for investors and researchers in terms of avoiding and preventing energy market risks while fostering green and sustainable economic development as well as sustaining the energy market's stability and health.

Previous research on volatility forecasting has mainly focused on crude oil, with little attention given to natural gas. To our knowledge, clean energy forecasting studies have mostly focused on natural gas reserves and consumption (Beyca et al., 2019; Delborne et al., 2020; Soldo, 2012). As the energy market is prone to large changes (Wei, Patadia, & Kammen, 2010), it has an impact not only on a country's economic prosperity but also on its national security (Blum & Legey, 2012). Therefore, research on natural gas price fluctuations is of considerable importance. Unfortunately, natural gas volatility is difficult to forecast due to the complexities of energy markets. On the one

hand, as a clean energy source, natural gas price volatility is affected not only by its own supply and demand but also by other traditional fossil fuels. On the other hand, as the financialization progress of energy markets is very fast, those markets' fluctuations are being increasingly influenced by financial markets.

Furthermore, the energy market is more sensitive to macroeconomic uncertainty (Tan & Ma, 2017). Existing research has examined the economic policy uncertainty index's capacity to anticipate energy variations since it was established by Baker, Bloom, and Davis (2016) while paying more attention to the important role of the EPU (Economic Policy Uncertainty) index in driving economic activity (Ma, Wang, & He, 2020). The economic uncertainty index, according to some researchers, is a good predictor of crude oil price volatility. For example, Li et al. (2020) compared the predictive ability of uncertainty indices and found that the stock market volatility uncertainty index (EMV) outperformed traditional determinants in predicting crude oil's daily volatility. In the area of natural gas volatility forecasting, Wang, Ma, Bouri, and Zhong (2022) investigated the influence of the economic uncertainty index and global economic conditions and discovered that these two types of factors are successful. Considering that the energy market may be affected by the macroeconomic environment, Zhang, Ma, and Wang (2019) utilized macroeconomic variables and technical indicators to forecast crude oil prices. The number of factors influencing energy volatility is growing, but few studies categorize these predictors and employ broader-dimensional indicators to forecast monthly volatility in the natural gas market. In this paper, we investigate 15 macroeconomic variables and 15 economic indices and use this information to select useful predictable information for natural gas volatility. Therefore, one

^{*} Corresponding author.

E-mail address: mafeng2016@swjtu.edu.cn (F. Ma).

¹ <https://fuelconomy.gov/feg/bifueltech.shtml>



Geopolitical risk and excess stock returns predictability: New evidence from a century of data

Feng Ma, Fei Lu^{*}, Ying Tao

School of Economics and Management, Southwest Jiaotong University, Chengdu, China

ARTICLE INFO

Keywords:

Geopolitical risks
Geopolitical threats
Excess stock returns
Portfolio performance

ABSTRACT

This study applies a new series of geopolitical risk historical indices developed by Caldara and Iacoviello (2022) to predict stock returns. Empirical results show that the geopolitical threats index (GPRHT) can help in predicting stock returns, especially during expansion. Combined the geopolitical indices and 14 famous macroeconomic variables can yield good out-of-sample performances from statistical and economic viewpoints. Our research provides fresh perspectives on stock return predictability in light of geopolitical risks.

1. Introduction

Stock return predictability has received more attention from scholars and investors (McLean and Pontiff, 2016). It is important to predict stock market returns precisely to evaluate the stock market's performance and serve as a guide for investment decisions (Fama and French, 1988; Goyal and Welch, 2003; Campbell and Thompson, 2008; Cochrane, 2011). Compared with the macroeconomic variables have been extensively employed in stock market return research (Welch and Goyal, 2008; Dai et al., 2021; Zhang et al., 2021; Ma et al., 2022), scholars have been looking for newly available variables (Banz, 1981; Jegadeesh and Titman, 1993; Cohen and Frazzini, 2008; Chincio et al., 2019). Recently, Caldara and Iacoviello (2022) discover that geopolitical risks can impact economic activity and stock market. The uncertainty of economic policies also affects the diffusion of geopolitical risk shocks. The geopolitical risk index based on this shock can more thoroughly reflect the economic situation. Therefore, we seek to investigate whether geopolitical risks can predict stock market returns.

The contributions to the existing research are as follows. First, we investigate the potential of new historical geopolitical risk indices for predicting stock market returns and find that they can outperform traditional macroeconomic variables. Second, we find that GPRHT has superior performance in both the short term and long term, indicating that the impact of geopolitical risks is mainly driven by the threat of unfavorable geopolitical events. Therefore, the GPRHT index can consistently forecast stock returns.

Our study is inspired by Caldara and Iacoviello (2022), but there are some differences. First, we apply a new series of geopolitical risk historical indices developed by Caldara and Iacoviello (2022) to forecast stock returns, and we find that GPRHT has superior performance. Caldara and Iacoviello (2022) construct the geopolitical risk index based on news articles, which is a milestone in the existing literature. Second, by using the mean combination forecast method, we find that combining geopolitical indices with macroeconomic variables can produce good performance from both statistical and economic perspectives. Our study provides new insights into the impact of geopolitical risk on stock return predictability. Therefore, our study is an exploration of the research of Caldara and Iacoviello (2022) on stock returns predictability.

^{*} Corresponding author.

E-mail addresses: mafeng2016@swjtu.edu.cn (F. Ma), lufei2022@my.swjtu.edu.cn (F. Lu), taoying0693@sina.com (Y. Tao).

“服务科学与创新”四川省重点实验室

2024 年度开放课题立项通知书

陆 菲：

经“服务科学与创新”四川省重点实验室学术委员会评审，您申报的“服务科学与创新”四川省重点实验室开放课题《不确定性视角下中国金融市场风险建模及预测：基于自然语言处理的研究》获批立项，批准号：KL2405，立项时间为：2024 年 10 月 1 日，结项时间为 2026 年 9 月，资助经费伍万元。请严格按照相关管理办法和通知的规定，尽快组织和开展研究工作，按期结题。

“服务科学与创新”四川省重点实验室

（西南交通大学经济管理学院 代章）



合同编号：

技术开发（委托）合同

项目名称： 民航服务质量管理体系宣讲推广及测试试点

委托方（甲方）： 南京航空航天大学

受托方（乙方）： 西南交通大学

签订时间： 2022-6-20

签订地点： 南京

有效期限： 20220620-20221230

中华人民共和国科学技术部印制

原油期货市场价格波动率预测模型介绍及应用

马 锋 王 璐 著

科学出版社

原油期货市场价格波动率预测模型 介绍及应用

马 锋 王 璐 著



 科学出版社

内 容 简 介

在当前面临局部性地缘事件频发、全球经济复苏和气候变化等多重挑战的背景下，准确预测原油价格变动显得尤为关键。本书通过大量的实证研究和案例分析，以简明的语言呈现了复杂的波动率预测模型理论，并对现有流行的原油波动率预测模型进行了介绍，包括GARCH族模型、HAR-RV族模型、混频数据模型和机器学习模型等。

本书适合金融从业者和对能源市场与环境问题感兴趣的研究人员使用。它为读者提供了深入了解和分析原油市场的工具与视角，旨在使广大投资者、研究者和决策者全面系统地了解原油市场的波动率特征，准确把握市场趋势，为实际操作和决策提供更为科学的支持。

图书在版编目(CIP)数据

原油期货波动率预测模型介绍及应用 / 马锋, 王璐著. —北京: 科学出版社, 2025.1

ISBN 978-7-03-078471-1

I. ①原… II. ①马… ②王… III. ①原油—期货交易—期权定价—研究—中国 IV. ①F426.22

中国国家版本馆 CIP 数据核字 (2024) 第 087708 号

责任编辑: 郝 悦 / 责任校对: 王璐菡
责任印制: 张 伟 / 封面设计: 有道设计

科学出版社 出版

北京东黄城根北街16号

邮政编码: 100717

http://www.sciencep.com

北京凌奇印刷有限责任公司印刷

科学出版社发行 各地新华书店经销

*

2025年1月第 一 版 开本: 720×1000 1/16

2025年1月第一次印刷 印张: 12

字数: 239 000

定价: 138.00 元

(如有印装质量问题, 我社负责调换)