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摘 要

股票市场是充满不确定性的要素市场,信息、资本的快速流动使股票市场价格不断发生变化,从而导致市场波动。股价波动是股票市场的常态特征,适度的股价波动有利于增加市场的活跃度,提高市场的流动性,但剧烈、频繁的波动则会扭曲市场的价格机制,导致股票市场效率损失进而阻碍市场优化资源配置功能的发挥。我国股票市场是一个新兴市场,市场波动的高风险低效率特征表现得尤为突出。因此,研究我国股票市场波动的数量特征以及股价波动对市场效率的影响,对于寻找有效途径平抑市场过度波动、提高市场的资源配置效率,具有重要的理论与现实意义。

本书的研究目的,主要是通过对股票市场波动的数量特征、数量关系以及数量界限进行多角度分析,探讨股票市场波动的内在传导机制以及引起市场剧烈波动的原因,为证券管理部门规范管理股票市场、制订股票市场发展战略提供决策参考和理论支持。

本书的研究思路是,以提高股票市场效率为导向,分析股票市场波动的统计特征,研究市场波动的内在传导、波动的风险结构、波动的影响因素以及波动对市场效率的影响,在此基础上,探讨我国股票市场低效率的原因以及提高市场效率的途径。根据这种研究思路,本书在结构上分为六章,分别对相关问题进行研究。

第一章首先对股票市场波动与效率进行一般分析。本章沿着“信息——价格波动——市场风险——市场效率——资源配置”的逻辑思路,探讨了股票市场波动的形成机理、市场波动与市场风险的区别与联系以及市场波动与市场效率的关系,为后续实证研究奠定理论基础。

第二章对股票市场波动的基本统计特征进行数量研究。本章首先分析我国股票市场波动的总体特征;然后运用协整分析方法分析沪深股票市场波动的联动关系;最后对股票市场波动的统计特征,特别是收益率序列波动的平稳性与正态性进行了研究。研究结果显示:我国股票市场的平均收益率高于成熟市场,但波动性也大,反映出我国新兴股票市场的高风险特征;市场收益率序列存在自相关性,收益率分布呈现出尖峰厚尾的特征,经典资本市场理论中关于收益率分布的正态性假定不适于我国股票市场;上证指数与深圳综合指数的波动存在长期稳定的联动性,但上证 30 指数与上证指数、深圳成分指数与深圳综合指数不存在协整关系,表明上证 30 指数和深圳成分指数存在缺陷,它们不能很好地代表沪深股票市场的整体变化情况,其作用正随着市场规模和市场结构的变化而逐步降低。

第三章采用现代金融时间序列分析方法对股票市场波动的聚集性进行研究。股票市场收益率分布的“厚尾”特征实际上体现了股票市场波动的聚集性,表明外部冲击对股票市场波动具有持续影响。就我国新兴股票市场而言,这种冲击的滞后效应及其内在传导机制的结构如何?能否用 ARCH 类模型来加以刻画?如果回答是肯定的,那么在过去十余年中,这种内在传导的结构是否发生了变化?特别是最近几年,外部冲击对股票市场的影响在深度和广度上有何特点?对这些问题的回答不仅有助于深入认识股票市

场波动的形成机理,而且对于平抑股票市场过度波动的策略选择具有参考价值。

本章在理论分析的基础上,利用 GARCH 模型考察了波动聚集的内在传导以及在不同时期波动聚集的结构变化。研究结果表明,沪深股市的波动聚集可以用 GARCH(1,1)模型进行刻画,但在不同时期,外部冲击对市场波动影响的深度和广度存在差异。1996 年以前,日收益率的条件方差偏大,而 1996 年以后,日收益率条件方差大幅下降,表明沪深股票市场在市场成长初期异常波动的频率和幅度比较大,随着市场规模的扩大和市场制度的不断完善,异常波动的现象有所缓解。此外还发现,外部冲击对市场波动具有持续性影响,并且从 1996 年以后,市场对冲击影响的记忆周期变长,这种波动传导结构的变化不仅体现了市场交易制度变化的影响,同时也反映了随着市场结构和市场规模的变化,市场波动惯性加大,需要更长时间才能消化外部冲击的影响。

通过运用门限 ARCH(TARCH)模型对正负外部冲击影响市场波动的非对称性进行研究,发现在成熟股票市场普遍存在的杠杆效应在我国股票市场上体现得不充分。这一方面反映了我国新兴股票市场不成熟的特征,另一方面也表明市场交易制度对股价波动的影响较大。由于沪深股票市场不容许卖空,当出现利空消息,投资者预期市场将进一步下跌时,只有股票持有者可以通过卖出股票对此做出反应,而其他投资者则不能通过卖空来反映自己对市场走势的判断,因而市场未表现出显著的负冲击杠杆效应。

第四章运用现代组合投资模型与 GARCH 模型相结合的方法,研究了我国股票市场波动的风险结构。引起股价波动的原因多种多样,但基本上可以分为两大类:一类是对整个市场产生影响的宏观共同因素;另一类是对个别股票产生影响的微观特有因素。

宏观共同因素是形成股票市场系统风险的原因,微观特有因素则是形成股票市场非系统风险的原因。如果在股票市场波动的风险结构中,系统风险占的比例过大,则说明市场同步波动的情况比较突出,市场的风险结构不合理,投资者无法通过分散化降低市场波动带来的风险。就我国股票市场来讲,波动的风险结构如何,是研究股票市场波动不可缺少的一个内容。

本章的研究发现,在市场发展初期,市场波动的系统风险在总风险中的占比非常高,风险结构十分不合理,但从动态的角度来看,系统风险在总风险中的占比随着时间的推移明显下降,特别是近年来市场风险结构的改善比较明显,说明市场波动受系统因素的影响在不断弱化,投资者可以通过适度分散化来降低价格波动带来的风险。此外,本章还从微观角度考察了个股股价波动的风险特征,侧重分析了刻画个股波动与市场整体波动关联性的 β 系数的稳定性。研究结果显示,从短期来看,个股的 β 系数具有稳定性,但从长时期来看,个股 β 系数的稳定性可能受其他因素的影响而具有时变特征。

第五章对股票市场波动的主要影响因素进行了系统研究。理论上讲,引起股票市场波动的因素既可能是投资者、上市公司、监管者以及中介机构等市场参与者行为活动的变化,也可能是各宏观经济变量的变化或者其他非市场因素。由于中国股票市场是新兴市场,经典证券经济理论中关于成熟股票市场波动的影响因素,在我国可能并不显著。本章从上市公司整体业绩、投资者羊群行为、政策干预以及宏观经济变量变化等几个方面研究了影响我国股票市场波动的原因,结果发现:①在成熟股票市场影响市场波动的上市公司整体业绩、宏观经济周期、利率以及物价变化等因素,在我国股票市场上不显著。②我国股票市场波动呈现出“政策驱

动”和“资金拉动”的特征。本章运用干预模型分析了政策对股票市场的影响效应,发现政策影响股票市场波动的幅度非常大,从平均水平来看,由于相关政策的出台,使得市场波动幅度加大到平常水平的两倍,尽管近年来政策对股市波动的影响幅度有所降低,但影响的持续性增强,市场需要较长的时间来消化政策冲击的影响。通过多变量 Grange 因果关系检验发现,货币供应量的变动与市场波动之间存在因果关系,表明近年来我国股票市场出现频繁波动与资金大规模流入、流出股市具有直接关系。③投资者的“羊群行为”加剧了市场的波动幅度。羊群行为可划分为“虚假羊群行为”和“有意羊群行为”两种类型。从严格意义上来说,“虚假羊群行为”是投资者群体在面临相似的信息集和决策问题时采取了相似的决策,这种行为是投资者对外来信息的合理反应,并非投资者在观察他人行为后做出的买卖决策,因此这种现象并不是羊群行为。而“有意羊群行为”则是由于投资者面对不确定性,在从众心理的支配下观察并模仿他人的决策,这种现象才是真正意义上的“羊群行为”。论文评价了研究我国股票市场“羊群行为”在方法论上的不足,指出利用过度反应研究“有意羊群行为”是一个比较好的途径。研究结果显示,在外部信息进入股票市场后,由于投资者盲目跟风而造成过度反应,因而加剧了市场波动。

第六章研究了股票市场波动的信息含量与市场效率的关系。股票市场波动是股票价格对信息的反应,股价波动是否充分、恰当地反映了相关信息,体现了股票市场的效率状况。对股票市场价格波动的信息含量进行研究,可以深入认识我国股票市场的效率水平。本章首先运用 AR-GARCH-M 模型分析了收益率的可预测性,结果发现,沪深股票市场在发展初期,日收益率的变化依赖于前期收益率,股票价格的波动未能充分反映历史价格所包含的

信息,因此两个市场都不具备弱有效性。但随着股票市场的发展以及各种技术、规则和制度的不断完善,投资者对过去价格变动的信息较易掌握,加工、分析和运用这些信息的能力也在不断地增强,市场效率在最近几年有所提高,特别是深圳市场已基本具备弱有效特征。其次,本章对股票市场波动是否存在周内效应进行了研究,发现上海股票市场在星期五具有明显正的收益率。周末效应的存在从一个方面反映出市场是缺乏效率的,因为根据有效市场假说,如果市场是有效率的,那么就不应该在市场中观察到任何形式的“周内效应”或其他异常现象。此外,本章还对市场专业投资者的投资绩效进行了检测,结果发现,在我国股票市场上,投资基金能凭借其专业化信息优势对股价波动做出预测而获得超额收益,这从另一个方面揭示出我国股票市场还缺乏效率。本章认为,我国股票市场效率低下的根本原因在于市场结构的缺陷和市场运行的缺陷——市场结构的缺陷主要体现在投资工具种类稀少和投资者结构不完善;市场运行的缺陷主要体现在市场功能定位偏移、信息披露残缺与误导以及政策过度影响。因此,要提高市场的效率,一方面要纠正市场功能的定位,另一方面要规范信息的生成和传递,同时还要进行投资工具创新,逐步推出新型投资工具和交易机制。

本书侧重从数量分析的角度研究了股票市场波动的特征、原因及后果,旨在为政府部门规范发展股票市场提供数量方面的决策依据。本书的创新之处主要体现在如下几个方面:

(1)运用多种现代统计与计量经济学方法对股票市场波动的数量特征、数量关系以及数量界限进行了系统研究,为寻找平抑市场过度波动、提高市场效率的有效途径提供了定量依据。

(2)以 ARCH 类模型为主要工具,按照股票市场波动这条主

线,对股票市场波动的聚集性、波动的风险结构以及股价波动所反映的市场效率层次进行了全面研究,特别是将 GARCH 模型与组合投资模型相结合动态地考察股票市场波动的风险结构的分析方法,在国内尚属少见。

(3)将干预模型运用于分析政策对股票市场波动的影响,得出的结论能够很好地解释我国股票市场受政策干预影响的实际。

(4)采用多变量 Grange 因果关系检验,分析了股价指数波动与多个宏观经济变量的关系,检验过程中所采用的“连续系统识别”方法在国内还较少运用。

此外,基于理论分析和实证研究,还提出了一些具有价值的观点。例如,在深入分析羊群行为与股票市场波动的关联性的基础上,区分了“虚假羊群行为”与“有意羊群行为”,对如何检测羊群行为进行了有益尝试,提出了从分析过度反应的角度检测羊群效应的思路;根据我国股票市场波动聚集内在传导的特点以及波动聚集的结构变化,指出管理层在出台股票市场的相关政策时,应当以数量分析作为决策基础,判断市场消化政策冲击的能力,把握好政策调节市场的力度。

Abstract

The stock market is a factor market full of uncertainty. The rapid flow of information and capital leads to frequent price changes in stock market, which in turn result in market fluctuation. Fluctuation of the stock price is a normal characteristic of the stock market. Moderate stock price fluctuation can promote the activity and enhance the liquidity of the market. Nevertheless, dramatic and frequent fluctuation can distort the market price mechanism, leading to the loss of efficiency in the stock market and impeding the market's role in optimizing the allocation of resources. Being an emerging market, China's stock market is characterized by high risk and low efficiency of market fluctuation. Therefore, the research on the quantitative characteristics of stock market fluctuation in China and the influence of stock price fluctuation over market efficiency has great significance both theoretically and practically in seeking out an effective way to counter undue fluctuation and to raise market efficiency in resource allocation.

This article talks about the internal transmission mechanism of stock market fluctuation and the causes of dramatic market fluctuation, from the multiple angles of quantitative characteristics, quanti-

tative relations and quantitative limits. Thus, this article is expected to offer decision-making reference and theoretical support for security administration departments for the benefit of their regulation of the stock market and stipulation of stock market development strategies. With the orientation of enhancing stock market efficiency, this article, according to the train of thoughts in the research, analyzes the statistic characteristics of stock market fluctuation, and studies the internal transmission, the risk structure, and the influential factors of market fluctuation, as well as the effect of fluctuation on market efficiency. Then, this article probes into the causes of low efficiency in China's stock market as well as the methods to increase market efficiency. Based on this train of thoughts, this article devotes six chapters to study the related issues respectively.

Chapter One makes a general analysis on market stock fluctuation and efficiency. Along the logic thinking from information to price fluctuation to market risk to market efficiency, and at last to resource allocation, this chapter discusses the formation mechanism of stock market fluctuation, the differences and relations between market fluctuation and market risk, as well as the relations between market fluctuation and market efficiency, building theoretical basis for the follow-up empirical research.

Chapter Two conducts a quantitative research on the fundamental statistic characteristics of stock market fluctuation. First of all, it analyzes the overall characteristics of fluctuation in China's stock market. Then, it studies the interactive relations between Shanghai Stock Market and Shenzhen Stock Market by means of cointegration

analysis. Finally, this chapter studies the statistic characteristics of stock market fluctuation, especially the stationarity and normality of rate of return series fluctuation. According to the research results, the average rate of return of China's stock market is higher but more fluctuant than that of a mature market, indicating the characteristic of high risk in China's new stock market. Market rate of return series is featured by self-correlation, and the distribution of rate of return shows high peak and fat tail. The hypothesis of normal distribution of rate of return in classic capital market theory doesn't fit China's stock market. There is long-term stationary interactivity between the fluctuation of Shanghai Stock Index and that of Shenzhen Composite Index. However, there are no cointegration relations among Shanghai 30 Index, Shanghai Index, Shenzhen Constituent Index and Shenzhen Composite Index, which reveals the deficiencies of Shanghai 30 Index and Shenzhen Constituent Index, the disability of those two to represent the overall changes of Shanghai and Shenzhen stock markets, as well as their diminishing functions along with the changes of market scale and market structure.

Chapter Three is devoted to the research of conglomeration of stock market fluctuation based on modern financial time series analyzing method. The characteristic of "Fat Tail" of rate of return distribution in stock markets actually indicates the conglomeration of stock market fluctuation, which shows the constant influence of external impact on stock market fluctuation. As for the new stock market in China, what are the lag effect and the structure of internal transmission mechanism? Can it be described with ARCH Model? If it can,

then, are there any changes of the structure of this internal transmission over the last 10 years? Particularly in recent years, what are the features concerning the scope and depth of the influence of external impact on stock markets? Answers to these questions will not only better our understanding of the formation mechanism of stock market fluctuation, but also can be consulted when people select the strategies to counter undue stock market fluctuations.

On the basis of theoretical research, this chapter reviews the internal transmission and structural changes of fluctuation conglomeration during different periods. From the research result we can see that the fluctuation conglomeration of Shanghai and Shenzhen stock markets can be described by GARCH(1,1) Model. Yet, the scope and depth of the influence of external impact on market fluctuation vary with time. Before 1996, the conditional variance of rate of return per day tended to be high, while since 1996 it has dropped substantially. It suggests that the frequency and range of abnormal fluctuations during the early stages of Shanghai and Shenzhen stock markets were fairly high and abroad, while abnormal fluctuation has been relieved to some degree with market scale increased and market regulations improved. Furthermore, external impact is found to have continuous influence over market fluctuation, and after 1996, the market has got a longer memory cycle of the influence of the impact. The structural change of fluctuation transmission reflects not only changes in market transaction regulations, but also changes in the market structure and the market scale. With the inertia of market fluctuation increased, more time is needed to absorb the effect of external im-

pact.

Thanks to the asymmetrical research on both positive and negative influence of external impact on market fluctuation through Threshold ARCH(TARCH)Model, it can be found that the leverage effect that is universal to mature stock markets cannot play a full role in China's stock market. On the one hand, it proves that China's new stock market is still emerging; on the other hand, it suggests the great influence of market transaction regulations on the fluctuation of stock prices. As short sale is forbidden in Shanghai and Shenzhen stock markets, when negative news comes about, and investors are expecting the market going further down, only share holders can react by selling stocks, while the rest investors are unable to show their judgments on market trend through short sale. Therefore, the market hasn't shown any significant negative impact of the leverage effect.

Chapter Four studies the risk structure of stock market fluctuation in China by combining Modern Portfolio Investment Model and GARCH Model. Although stock price fluctuations have various causes, basically, they can be classified into two categories: common macro factors that can affect the whole market, and special micro factors that affect some specific shares. Common macro factors bring about systematic risk in stock markets, while special micro factors cause non-systematic risk in stock markets. If the proportion that systematic risk accounts for in the risk structure of stock market fluctuation is too high, then the market is featured by synchronic fluctuation, and the risk structure of the market is irrational. Thus, in-

vestors can never reduce the risk caused by market fluctuation through decentralization. As far as China's stock market is concerned, whatever the risk structure of fluctuation is, it is necessary to study the fluctuation of stock markets.

Based on the research in this chapter, in the early stage of market development, the systematic risk of market fluctuation accounted for a large proportion compared with the total risks, with irrational risk structure. However, from a dynamic angle, the proportion of systematic risk in overall risk has been dropping with time. In particular, market risk structure has been greatly improved, which means market fluctuation is decreasing under the effect of systematic factors, and investors can decrease the risk resulting from price fluctuations through appropriate decentralization. In addition, this chapter also studies the risk of share price fluctuations, and focuses on the stationarity of β coefficient of the interactivity between share price fluctuation and overall market fluctuation from micro point of view. The research results show that β coefficient of share has the property of stationarity in a short run, while this stationarity may vary with time under the influence of other factors.

Chapter Five initiates an overall research on the major factors that affect stock market fluctuation. Theoretically speaking, factors leading to stock market fluctuation can be any changes of activities by such market participants as investors, listed companies, regulators and intermediary agencies, and they also can be changes in macro economic variables or other non-market factors. Considering China's new stock market, those factors causing fluctuations in mature stock

markets according to classic security economy theory probably are not that strong in China. This chapter studies the causes of stock market fluctuation in China from the following aspects such as the overall performance of listed companies, the herd behavior of investors, policy intervention, and changes in macro economic variables, getting the following findings. 1) Those factors that cause fluctuations in mature stock markets like overall performances of listed companies, macro economic cycles, interest rate and changes of prices are not that powerful in China's stock market. 2) "Driving by policies" and "pulling by capital" are characteristics that the fluctuation of China's stock market has exhibited. This chapter studies the effect of policies on stock markets with Intervention Model, and finds out that the fluctuation range of stock markets under the influence of policies tends to be pretty broad. Due to the related policies stipulated, the range of market fluctuation, averagely speaking, has been increased to twice of the normal level. In spite of the decreased influence of policies on stock market fluctuations in recent years, it still takes a fairly long time for the market to absorb the influence of policy impact due to the strengthened durability. By examining the causal relations of multivariable Grange, it is found that there is causal relation between the change of money supply and markets fluctuation, which means the inflow and outflow of capital in large scale in stock markets have a direct relation with frequent fluctuations in China's stock market in recent years. 3) The range of market fluctuation has been further enlarged by investors' "herd behavior", which can be classified into "spurious herd behavior" and "intentional herd behavior".