ON THE PERFORMATIVITY OF ECONOMICS

by

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Abstract

This project seeks to deepen the understanding of economic “performativity” – the effects of economic theory and models on the economy - by examining the history of financial markets and the relationship between economic and political forces. Chapter One demonstrates how the culture of finance (and economics, more generally) began changing in 1950 from methods that aimed in the production of epistemologically true, descriptive statements to abstract theories that illuminated the potentials of markets. As a result, economics was able to provide the mechanisms necessary to transform markets for the first time.

Chapter Two demonstrates that this departure from orthodox methods birthed a new field of research concerning the ability of economics to construct theoretically described worlds: performativity. This chapter demonstrates that all conceptions of performativity are able to be organized into weak and strong claims, being further united by their depiction of economics as an independent force that comes up against external forces in periods of market emergence and transformation. Interestingly, a dichotomy emerges between performativity and political-cultural approaches to understanding economies: the former claims economics is the force that practically transforms markets and the latter claims transformation occurs through mediation of political and institutional interests.

It is the purpose of Chapter Three to unveil a new context to understand economic performativity. It will first be demonstrated that there exists little evidence for the performative claim that economics is a force unto itself: instead, economics is utilized as tool to provide organization and stability for actors in periods of market transformation and as such, relies on external forces for performative success. Reconceptualizing performativity in this way addresses many critiques against variations of the performative thesis and suggests that the dichotomization between performative and political-cultural approaches may be reconciled, illuminating a more plausible account of how economics interacts with its objects. It is concluded that performative
accounts of economics ought to be subsumed within political-cultural approaches to understanding economic organization.
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Chapter 1

Introduction

Prior to 1950, the study of finance was a highly peripheral stream of economics confined to business schools; it was descriptive, institutionally focused, and non-theoretical in its approach to market interactions. However, between 1950 and 1970, the study of finance began reorienting itself to become aligned with economics and applied sciences more generally. Methodology in finance became less associated with that of descriptive practices and more attuned to analyzing the economic processes occurring. The development of financial models such as the Modigliani-Miller irrelevance propositions, Markowitz’s portfolio selection theory, and Sharpe’s capital asset pricing model (all of which culminated in Fama’s landmark theory, the efficient market hypothesis) were all developed from this new approach. Finance was no longer a purely descriptive account of reality; financial economics became an analytical tool to examine and comment on market processes. The tools for such analysis, such as the statistics and mathematics borrowed from economics, led to the full integration of theoretical finance into mainstream economics (MacKenzie 2007, 2008).

With the growing legitimacy resulting from their ability to be empirically tested, the new financial models were applied to real markets. Application, however, soon advanced to complete embeddedness in markets once these theories became used to institutionalize market rules and structures. This led to an interesting result: for the first time, economics was no longer able to externally observe and describe its object without changing it in some way; gradually, the economy became broadly reflective of economic
theory. Thus, questions have been raised pertaining not to how the economy informs economics, but how economic inquiry informs the very economy it seeks to study.

Performativity in finance, then, must be understood to be an event that not only witnesses economics influence the economy as its mechanisms are swept into economic worlds, but one that holds the potential to construct economic worlds in their totality so that they come to resemble what was previously a theoretical concept. The purpose of this project, in reaction to this concept, is to survey the current literature on economic performativity, categorize the various theses into broad categories, and develop an equivocal statement concerning this process as it relates to economics and finance more specifically: a statement of this nature is currently missing in the literature concerning performativity and will be of use in defining future directions for research. In completing this task, an interesting result will be unearthed: performativity as currently conceptualized risks either vacuity or, conversely, is too demanding on the practical and normative authority of economics as a discipline. To remedy this problem and make performativity more palatable to skeptics, this project will seek to reconceptualize performativity as a process that is enabled by political and cultural forces external to the realm of economics. In doing this, it is hoped that weaker forms of performativity are saved from triviality for any performative event occurs because it is necessary to the stability of markets, and any stronger form of performativity concedes less to economics for performativity of this nature is enabled only insofar as political-cultural-institutional actors permit.
A changing epistemic culture

Orthodox financial theory prior to the 1950s largely consisted in empirically descriptive, behavioral approaches that focused on institutions rather than markets. For example, Carl Menger’s work focused on how preferences are ordered, Willian Stanley Jevons focused on how consumer feelings inform decisions (Morgan 2003), and Herbert Simon, a leading authority in academic finance, advocated for behavioral studies of institutions (1955, 1979). Arthur Stone Dewing, another prominent academic in finance, argued that the “…motives that have led men to expand business enterprises…are not economic but rather psychological” (1953, 812). While largely behaviorally orientated, academic finance was also descriptive in its approach. Most articles in the Journal of Finance, for example, concerned themselves not with theory but with describing processes such as “Federal Reserve policy, the impact of money on prices and business activity, taxation, and issues related to corporate finance, insurance, and accounting” (MacKenzie 2008, 38).

This traditional approach culminated with an academic discipline that was passive and largely reactionary: in short, finance was the descriptive study of institutions and their decision-making abilities. For a hypothesis to be validated in this discipline, it had to be descriptively ‘true’ in its representation of external events: finance scholars of this period would argue that it was “fundamentally wrong to think that unrealism in the sense of factual inaccuracy…is anything but a demerit for a hypothesis…The fact that nothing is perfectly accurate should not be an excuse to relax our standards of scrutiny” (Samuelson 1963, 236).

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1 This chapter owes a great deal to the work of Donald MacKenzie and Mary Morgan in their efforts to construct a history of financial markets.
MacKenzie’s inquiry has isolated three catalysts that initiated the transformation of finance from that of descriptive, non-theoretical, and isolated to business schools, to that of analytical, prescriptive, and complimentary to mainstream economics. Beginning in the 1950s with the rise in popularity of the managed economy, mathematical models and theories were introduced to finance for the first time, bringing practice in line with economics more generally (MacKenzie 2003, 2008). Both linguistic and mathematical, these new approaches necessitated abstraction from reality so as to be general enough to mathematically capture economic processes occurring: For these hypotheses to be successful, “…a clear and precise boundary must be drawn between the relations which the agents will take into account and which will serve in their calculations and those which will be thrown out of the calculations” (Callon 1998, 16). Thus, the goal of this new approach was not to represent a process *talis qualis*, but instead to illuminate why and how processes occur through controlling variables of interest in hypothetical environments. The three catalysts that initiated such changes were Modigliani and Miller’s propositions concerning the irrelevance of capital structure, Markowitz and Sharpe’s work concerning the Capital Asset Pricing Model (CAPM), and mathematical and statistical advancements to the Random Walk Theories of stock pricing.

**The irrelevance propositions**

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2 The aftermath of World War I and the Great Depression forced the US and Germany to implement large scale interventions and state control to end the economic downturn, signaling a shift that emphasized the use of economic ‘tools’. Beginning in the 1950s and into the 1960s, the government was understood to have the power to “fine tune or to nudge the economy back on course” (Morgan 2003, 277).

3 For detailed discussion on this, refer to Friedman (1970). “The ultimate goal of a positive science is the development of theory or hypothesis that yield valid and meaningful (i.e., not truistic) predictions about phenomena…such a theory is, in general, a complex intermixture of two elements. In part, it is a language designed to promote ‘systematic and organized methods of reasoning. In part, it is a body of substantive hypotheses designed to abstract essential features of complex reality” (Friedman 1970, 3-4).
Franco Modigliani and Merton H. Miller’s two propositions concerning corporate valuations were perhaps the first venture into analytical finance. Their landmark 1958 paper contained the ‘capital irrelevance proposition’, a thesis proposing that the value of a firm is independent of its leverage ratio: “the average cost of capital to any firm is completely independent of its capital structure and is equal to the capitalization rate of a pure equity stream of its class” (Modigliani and Miller 1958, 269). Similarly, in 1961 Modigliani and Miller published a subsequent proposition that stated that the dividend policy of a firm is irrelevant to its investors, thus making dividend policy irrelevant to a firm’s stock valuation.

Modigliani and Miller’s approach to capital structure marked a clear distinction from traditional approaches, which were concerned with the importance of corporate decision making, techniques of financing firms (i.e. issuance of stocks versus bonds), and corporate budgeting.\(^4\) In direct opposition to this descriptive tradition, Modigliani and Miller made several assumptions to produce a highly simplified, hypothetical economy that could be traced mathematically. In both propositions, perfect capital markets,\(^5\) atomistic, fully rational behavior,\(^6\) and tax and interest rate neutrality (Modigliani and Miller 1958, 262) were assumed. Additional assumptions such as constant prices, infinite flow of income (profit) streams and perfectly correlated returns of shares issued by firms


\(^5\) “In perfect capital markets, no buyer or seller (or issuer) of securities is large enough for his transactions to have an appreciable impact on the then ruling price. All traders have equal and costless access to information…no fees are incurred…there are no tax differential either between distributed and undistributed profits or between dividends and capital gains” (Miller and Modigliani 1961, 412).

\(^6\) Rational behavior and atomistic competition is defined as a state where “…investors always prefer more wealth to less” and are indifferent to how wealth is accumulated, by cash or increases in market value (Miller and Modigliani 1961, 412).
of the same class were made which permitted the classification of firms and their commodities into homogenous units (Modigliani and Miller 1958, 265-266).

In this controlled environment, the authors found that capital structure becomes irrelevant. Consider a two-step process, where step one sees two corporations in the same class, with identical income streams, that offer varying capital structures. Each firm exists in a different economy. Firm A is valued at V1 at its equilibrium. This firm is financed through the issuance of common stock, so an increase in its equity (stock issuance) yields a decrease in its expected returns. Firm B is fully leveraged, valued at V2 at its equilibrium. This firm is financed through increasing leverage, which increases expected returns due to risk. This stage represents a general equilibrium where each firm has a particular debt-equity ratio and a particular value (Stiglitz 1969, 785). If this is the case, Modigliani and Miller mathematically derived that there must exist another general equilibrium for the entire economy where firms A and B could possess different capital structures whilst maintaining similar value. In this second stage general equilibrium, if firm B’s value is higher than firm A, V2 > V1, an investor who owns firm A may sell her stock and purchase the bonds of firm B whilst maintaining an identical income stream. Arbitrage of this nature brings the market valuations of A and B to par, for it increases the value of firm A and decreases the value of firm B. This result indicates that the differing capital structures are irrelevant to their market price, for in this denaturalized environment, investors are foremost concerned with profit potential instead of capital structure.

Miller and Modigliani’s second proposition was that dividend policy is irrelevant to a firm’s valuation, quite opposite from guiding scholarship at the time which consisted
in empirical studies into which range of payout ratios maximized the worth of corporate stock.\footnote{For example, one can look to John B. Williams’ “Theory of Investment Value” (1938), which drew heavily on empirical analysis to argue that corporate decisions on dividend payouts were central to corporate valuations.} Traditional finance scholarship offered four empirical approaches to address this question: the discounted cash flow approach (popular with economists who focused on corporate budgeting),\footnote{The discounted cash flow approach reaches a valuation by discounting – at the market rate of interest – the corporation’s cash receipts and the corporation’s terminal value, subtracting cash outlays (Miller and Modigliani 1961, 415).} the future opportunities approach (popular with those interested in firm ownership),\footnote{With the future opportunities approach, valuation depends on “the normal rate of return [an investor] can earn by investing capital in securities; the earning power of physical assets currently held by the firm; the opportunities...that the firm offers for making additional investments in real assets” that will yield surplus returns over the market rate of return (Miller and Modigliani 1961, 416).} the stream of dividends approach (the most popular approach among economists at the time),\footnote{The stream of dividends approach states that share valuation is determined by the discounted value of the corporation’s dividend paid in perpetuity (Miller and Modigliani 1961, 419).} and the stream of earnings approach,\footnote{The stream of earnings approach focuses on corporate earnings instead of dividends paid to investors.} each offering varied results as to the most appropriate dividend payout ratio to maximize share worth. By mathematically deriving similar results from all four competing conceptions of value, the authors demonstrated that if – hypothetically – firms of the same class have similar earning power, the mechanisms used to distribute profits cease to affect the firm’s market valuations: varying the ratio between capital gains and dividends – the traditional focus of finance scholarship – only affects the distribution of the firm’s total return, for lowering the total yearly distributed dividends would simply raise the year-end capital gain distribution and vice versa. As Miller and Modigliani demonstrated, if all traditional approaches concerning payout ratios yield equivalent results when employed within the
hypothetical economy, the irrelevance of such ratios (dividend policy) on firm valuation is made clear.¹²

While it is true that both the traditional, descriptive approaches and Modigliani and Miller’s analytical approaches were concerned with the decisions made by firms, the latter’s object of focus was in direct confrontation with the former: “…instead of looking inside the firm for the determinants of these decisions, Modigliani and Miller looked at the firm from the outside…from the viewpoint of investors and the financial markets” (MacKenzie 2008, 74). This focus on markets allowed for mathematical applications that were not prevalent in the empirical and behavioral financial scholarship prior to 1950. For example, resulting from the mathematical abstraction necessary to build the irrelevance propositions, for the first time, was a hypothetical world in which assumptions of competition, interest rates, and taxation policies could be held constant in order to manipulate other variables and examine the resulting state of affairs. Clearly, “…the situation of [a real corporation] was quite different, and the market they had to interact with was far from Modigliani and Miller’s assumptions of perfection” (MacKenzie 2008, 44). By 1989, for example, there existed 48 articles and books that challenged the proposition concerning capital structure (Levinsohn 2003, 59), signaling the apprehension that many orthodox finance scholars exhibited towards denaturalized assumptions in their field.

**Portfolio selection and the capital asset pricing model**

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¹² To summarize: “…current valuation is unaffected by differences in dividend payments in any future period…dividend policy is irrelevant for the determination of market prices” (Miller and Modigliani 1961, 429).
MacKenzie identifies the work of Harry Markowitz (1952) and William Sharpe (1964) as another catalyst for the shift from descriptive to prescriptive finance. As Rubinstein remarked, “…what has always impressed me most about Markowitz’s 1952 paper is that it seemed to come out of nowhere” (2002, 1041). Markowitz’s landmark paper on portfolio selection was concerned with diversification and its effects on risk. Whereas traditional approaches believed that diversification could completely eliminate risk\(^{13}\) and used expected values and dividend discount models to derive theoretical stock values,\(^{14}\) Markowitz was able to apply mathematics and statistics to demonstrate that while risk can certainly be reduced (without changing expected returns) through proper diversification, it could not be eliminated entirely. As Sharpe too mathematically derived at a later date, “diversification enables the investor to escape all but the risk resulting from swings in economic activity – this type of risk remains even in efficient combinations” (1964, 441).

Markowitz demonstrated that if investors focused on the expected values of stocks only, as traditional scholarship hypothesized (Williams 1938) – an investor’s money would have to be placed in a single stock with the highest expected return. Clearly, this was not occurring in reality, as a diversified portfolio was always preferred, even by traditional theorists who advocated the use of expected value. Thus, “the hypothesis that the investor does maximize discounted return must be rejected…a rule of behavior which does not imply the superiority of diversification must be rejected”

\(^{13}\)A prominent theorist of the time was John Burr Williams: “The customary way to find the value of a risky security has been to add a ‘premium for risk’ to the pure rate of interest, and then use the sum as the interest rate for discounting future receipts…Strictly speaking, however, there is no risk in buying a bond if its price is right. Given adequate diversification, gains on such purchases will offset losses, and a return at the pure interest rate will be obtained. Thus the net risk turns out to be nil” (Williams 1938, 67-69).

\(^{14}\)See Williams (1938, 55-75).
(Markowitz 1952, 77). Resulting from statistical analysis, Markowitz’s result was that an optimal portfolio could be found that offers “…the minimum variance of return for the given expected return, or the maximum expected return for the given variance of return” (MacKenzie 2008, 48). This demonstrated that it is not the security’s risk or expected returns that are important to investors, but how the security correlates with others in a portfolio or index. Thus, this landmark model of efficient portfolio selection could be used by traders to determine correlations of securities to an index, maximizing expected returns for set variances of return instead of focusing on orthodox methods which emphasized expected value alone.

Much like the irrelevance propositions, Markowitz and Sharpe relied heavily on abstracted models, admitting the assumptions they had to make to mathematically derive their results were highly unrealistic: “In our presentation we try to avoid complicated mathematical statements and proofs. As a consequence a price is paid in terms of rigor and generality” (Markowitz 1952, 79); the model’s assumptions are “…highly restrictive and undoubtedly unrealistic” (Sharpe 1964, 434). In Sharpe’s later work on the CAPM, for example, assumptions were made concerning optimal investor behavior, rational expectations,15 and interest rates16 in equilibrium, assumptions which would never be found in real markets amongst real investors, marking a sharp departure from the empirically descriptive and behaviorally orientated traditional scholarship.

15 “The model of investor behavior…considers the investor as choosing from a set of investment opportunities the one which maximizes his utility” (Sharpe 1964, 429). Additionally, “…investors are assumed to agree on the prospects of various investments- the expected values, standard deviations, and correlation coefficients” (Sharpe 1964, 433-434).
16 “…we must assume a pure rate of interest, with all investors able to borrow or lend funds on equal terms” (Sharpe 1964, 433).
Sharpe’s theoretical work represented the first time in academic finance where mathematical models were used to determine asset prices at equilibrium under conditions of risk. In the hypothetical economy he presumed, only one optimal portfolio resulted, ‘the market portfolio’. That is, in equilibrium, the best investment (e.g. the most efficient investment, given risk and expected return) was the market itself: “Of all possibilities…one will dominate: that investment plan lying at the point of the original investment opportunity curve” (Sharpe 1964, 432). It was the unrealistic assumptions which allowed Sharpe to first find the ideal portfolio, then mathematically determine building on Markowtiz’s portfolio selection model - the prices of securities and their expected rate of return adjusted for risk at equilibrium. That is, Sharpe was able to demonstrate – using a mathematically traceable method – that as the market and beta (β, an asset’s sensitivity of returns to market fluctuations) rises, so too does an investor’s expected returns.

Irrespective of the unrealistic assumptions it made, the implications of the CAPM model were great: Sharpe was able to mathematically validate the traditionally held belief that managers who purchase low risk securities are willing to accept low returns, and those who acquire aggressive securities will only do so expecting significant returns. That is, the complexities previously debated about in traditional scholarship could finally be settled using a simple mathematical model, beta, demonstrating the tradeoff between risk and return. As Sharpe stated, “the familiarity of the implications [of the model] need not

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17 Jack Treynor was working on a similar model of risk adjusted returns, though his work would not be published until the following year, 1965. Prior to Sharpe’s model, theorists such as Hicks (1962), Gordon and Gangolli (1962), and Tobin (1958) focused on attitudes towards risk, but not decision making under risk conditions. For a detailed commentary, see Sharpe (1964, 427-428).

18 In order to achieve this, Sharpe had to create beta, β, in order to determine an asset’s sensitivity to risk.
be considered a drawback. The provision of a logical framework for producing some of the major elements of traditional financial theory should be a useful contribution” (1964, 442). Indeed, as MacKenzie states, Sharpe’s innovative work “…inhabited an epistemic culture quite different from that of traditional finance in the academic study of finance: essentially the culture of applied mathematics” (MacKenzie 2008, 50), where hypothetical environments could mathematically derive principles that could be used to validate assumptions in traditional academic finance.

**Random walks and the efficient market hypothesis**

While the concept of random walks have been around since the early 1900s, the mathematization and subsequent empirical testing of the concept did not occur until Samuelson’s work in 1965. This represented another turning point in the epistemic culture of finance, orienting itself towards applied mathematics and statistics and aligning itself with economics more closely. Previously, random walk theory was understood to be the claim that changes in stock prices were random events that could not be predicted.\(^\text{19}\) Samuelson first applied advanced concepts from physics (such as Brownian Motion) to stock price changes, pausing to admit that “…the reader may feel inclined to doubt that my arguments…have even a germ of interest for the economist” (1965, 42), then demonstrated that his technique could derive that it was not the price changes that were random, but the logarithms of prices that were random. With this new understanding, Samuelson was able to then borrow probability theorems from statistics and apply them to the random fluctuations. This culminated with his model that demonstrated stock

\(^{19}\) For a discussion concerning the developments in random-walk hypotheses up to the 1960s by theorists such as Regnault (1863), Bachelier (1900), Working (1934), and Kendall (1953), refer to both MacKenzie (2008, 37-69) and Fama (1970, 389-399).
prices were log-normal in their random variances (e.g. the traditional bell curve shape). In much similar fashion to the irrelevance propositions and the CAPM, Samuelson’s work relied on heavy generalities\(^{20}\) and borrowed scientific methods from disciplines outside the traditional scholarship. As he states in a manner similar to Sharpe’s defense of the CAPM, “the empirical question of the applicability of the model to economic reality must be kept distinct from the logical problem of what is the model’s implied content” (Samuelson 1965, 45). This once again demonstrates a sharp epistemic reorientation in financial scholarship from that of descriptive representation to that of denaturalized models and theoretical assumptions.

Capitalizing on and improving this analysis of stock prices was Eugene Fama, whose work, MacKenzie (2003, 2008) claims, was the beginning of a new era of finance: a finance concerned not with corporate decision making, but with the markets and applied mathematics and statistics. The Efficient Market Hypothesis was an elegant extension of the principles derived from Samuelson’s work on random walks\(^{21}\) as well as the CAPM. The EMH posited that “…investors can choose among securities….under the assumption that security prices at any time ‘fully reflect’ all available information” (Fama 1970, 383). Efficiency, Fama showed, was found by using the CAPM and its assumption that equilibrium can be stated in terms of expected returns. By employing the CAPM, Fama was able to determine whether investments were able to yield excess risk-adjusted returns in relation to the norm. The random walk model was also incorporated in order to assume

\(^{20}\) “The theorem is so general that I must confess to having oscillated over the years in my own mind between regarding it as trivially obvious (and trivially vacuous) and regarding it as remarkably sweeping” (Samuelson 1965, 45).

\(^{21}\) For example, Fama states: “it is best to regard the random walk model as an extension of the general expected return model or efficient markets model in the sense of making a more detailed statement about the economic environment” (1970, 387).
that “successive price changes are independent…and identically distributed” (Fama 1970, 387) within the broader context of the model itself.

However, in much the same fashion as the theorists discussed above, Fama found it necessary to defend the nature of the theoretical assumptions: “the results of tests based on this assumption [the CAPM] depend to some extent on its validity…but some such assumption is the unavoidable price one must pay to give the theory of efficient markets empirical content” (Fama 1970, 364); “we do not expect [the efficient markets model] to be literally true” (1970, 388 emphasis mine).

**Theoretical Applications**

Culminating with Fama’s Efficient Market Hypothesis, mathematized and theoretical finance became fully occupied with analyzing the market using models as tools, signaling a departure from the traditional focus on corporate behavioralism and descriptive methodologies. For example, the traditional accounts of free competition that illustrated a state in which “…firms were free to enter and leave the marketplace and actively competed within it” (Morgan 2003, 285) were replaced with an idealized concept of ‘perfect competition’, an ideal environment where there was no active competition between firms.22 The traditional concept of Adam Smith’s ‘invisible hand’, to add another example, was replaced by conceptions of an abstracted and ideal perfect equilibrium where order was already constructed and perfectly maintained so that other variables could be manipulated with ease. As Milton Friedman contentiously advocated

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22 While this idealized environment was by no means accepted across the discipline, its creation signaled a growing change in perspective. As Durand states, “To the practically minded, it is unthinkable to postulate the existence of two or more separate and independent corporations…that can fluctuate at random yet be perfectly correlated” (1959, 640).
during this period, the unrealistic assumptions made by these financial models need not count against their validity as long as they could produce predictable and verifiable results.\(^{23}\) As he argued, economics should be used as a tool to interact with the economy, isolating conditions of interest to probe under what conditions economic processes occur. As a result of changing attitudes, financial economists began applying their models to real markets.

As MacKenzie outlines at length (2008, 89-118), the credibility of financial economics came from its ability to be mathematically traced and empirically tested in ways impossible for pre-1950s finance scholarship.\(^{24}\) For example, the unrealistic assumptions made by Fama were able to mathematically derive the theory that market specialists (such as mutual fund managers) were not privy to special information that allowed them to yield above average returns, nor were particular investment vehicles better at uncovering such information than others (1970, 410). Jenson was able to employ Fama’s model to empirically demonstrate this hypothesis: in a sample of 115 mutual funds over a ten year period spanning 1955-1964, 89 underperformed their benchmarks by an astonishing -14.6% (Fama 1970, 412).

Because of this newfound legitimacy resulting from empirical validation, financial economics was granted its prescriptive power, becoming utilized in real markets and contributing greatly to practical, real world economic understanding. To provide evidence of this, consider that the irrelevance propositions concerning dividend policy

\(^{23}\) For a prominent critique of this new abstracted and ‘unrealistic’ finance, please refer to David Durand, 1959a, 1959b, and 1960.

\(^{24}\) For a detailed discussion on the positive (though inconclusive) results of empirical testing of financial models such as the irrelevance propositions of 1958 and 1961, refer to Stiglitz (1969). For literature concerning the empirical testing that challenges the irrelevance propositions based on market imperfections (‘real’ markets), see: Weston (1963), Robichek et al (1967), or Davenport (1971). For a discussion concerning the empirical testing of the CAPM, see MacKenzie (2008, 92-94) or Durand (1960).
and capital structure are still taught in corporate finance courses today and employed in macroeconomic policy (Levinsohn 2003). Markowitz and Sharpe’s theoretical work on the concept of beta was also being applied to real markets. Strikingly, a mathematical model employed in a hypothetical environment was able to clearly correlate risk and return, allowing for empirical performance measurement for the first time in financial history. Additionally, the theorems in the EMH and CAPM were used to create new types of diversified investment vehicles that tracked indexes. Called exchange traded funds, these products (and their index-providers) have been proliferating at unprecedented levels due to the application of their models.

Fama’s EMH was practically applied in other ways as well: This model was used to discourage the tradition of technical analysis (chartism) - a practice that focused on charting price changes in order to find patterns and forecast future fluctuations – by empirically demonstrating that price movements were random. As a result, traditional practices concerning technical analysis and forecasting became viewed as “nothing more than a pseudoscience” (MacKenzie 2008, 76). As Roberts, a prominent advocate of efficient markets, stated, “probably all the classical patterns of technical analysis…can be generated artificially by a suitable roulette wheel” (1959, 4). In much the same manner, fundamental analysis was also challenged by the EMH. If markets were efficient, prices reflected all the available information. Fundamental analysis was concerned with finding the intrinsic value of firms by studying cash flows, balance sheets, industry health, credit ratings, and future growth potential, among innumerable other qualitative and quantitative factors. As efficient market theorists argued, there was no necessity to invoke fundamental analysis, for the factors they studied were already incorporated in market
prices as the information became available: “if markets were efficient, fundamentals analysts were wasting their time looking for cases in which intrinsic value differed knowably from market price” (MacKenzie 2008, 78). In other words, the theoretical work in the EMH hypothesized that investors using fundamentals or technical analysis could achieve no higher returns than investors using a portfolio of random stocks with approximately the same risk level. In its application in real markets, the EMH provided an empirical challenge to traditional approaches to stock picking such as technical and fundamental analysis. Thus, the tools that finance created were “…critically involved in new ways of making sense of phenomena and constructing facts about the economy” (Morgan 2003, 277).

**Changing Markets**

Resulting from the employment of these new theorems was a new relationship between finance and the market. No longer did finance seek to capture the truth of its object through external study as it did prior to the 1950s; the new finance (now fully embraced in academic economics) became not only applied to - but embedded and inseparable from - its object, the market. As Friedman (1953) initially advocated, economics was becoming employed as a tool to manipulate and explore economic processes. However, the development did not stop there. As modern theorists such as MacKenzie, Muniesa, Callon, and Guala emphasize, finance (and economics more generally) began interacting with its object in ways previously impossible by first theoretically enframing, then analyzing, and finally manipulating particular events in ways that supported the theoretical hypotheses. That is, as the practical applications of
financial economics became more prevalent, the market and its linguistic, technical, and institutional mechanisms (MacKenzie 2008, 250) began to change.

Linguistically, financial economics provided a new way of talking about markets. For example, the concept of beta was able to reduce complexities not previously understood to a simple correlation that could be discussed at ease for traders, managers, and investors. This concept is widely discussed today and is still employed as an investment strategy by hedge funds, mutual funds, and exchange traded funds. 25 Today, ultimately, Sharpe’s theory informs the very way market participants understand and discuss risk. Technically, these theories allowed for an explosion of new investment products such as exchange traded funds and derivatives in the marketplace. For example, there has been a proliferation of beta products in market, such as exchange traded funds that track high and low beta stocks. Without the theoretical underpinnings these products would likely not exist: theoretical applications allowed for the creation of particular technologies that now come to constitute particular niches of the economy.

Empirical testing of the applied theories assisted in their growing credibility, which eventuated in the institutional integration of economics into the market. For example, the “legal distinction between gambling and legitimate futures trading…” (MacKenzie 2008, 252) made options illegal until the 1970s in the US. With the rise of financial models, most prolific of which was the Black-Scholes theorem, futures trading was no longer seen as gambling, but as a scientific and verifiable activity, leading to the opening of the Chicago Board of Options Exchange and subsequent explosion of

sanctioned derivatives markets. As Morgan emphasizes, “models were taken as sufficiently accurate representations of the economic world that they formed the basis for both advice to governments and firms and for normal academic science” (2003, 287). The institutionalization of economic theory saw economics become the building block of real markets, making economics constitutive and inseparable from its object of study.

The market changes that occurred after financial economics became legitimated and employed in the economy are profound, illuminating that economics may no longer be preoccupied with uncovering \textit{a priori} truths of the marketplace, but instead with uncovering possibilities. This appears consistent with the changing macroeconomic culture which, beginning in the 1950s, emphasized economic planning, technical assessments, and government control over economic processes (Morgan 2003). Once the theoretical becomes institutionalized, it is used to inform the legal rules, structures, and products of markets that subsequent theory studies. For example, financial theory asks questions such as: Under what conditions of risk does optimal portfolio selection occur? Under which conditions may the efficient market hypothesis be empirically validated? In what scenarios do the irrelevance propositions offer useful results? As these questions are hypothetically addressed, then empirically tested and applied to real markets, credible results lead to their integration into the economy itself as “the history of economic methods [becomes integrated] with the history of economic theory” (Morgan 2003, 281). Thus, the historical question of how the economy informs economics has recently been left on the wayside in favor of questioning, somewhat less intuitively, how and under what conditions economics informs the economy.
Since the practical transformation of markets accomplished by the employment of financial economics has only gained momentum since the 1960s, it may come as no surprise to see a noticeable increase in literature concerning the performativity of this discipline within the last decade. This literature, while quite varied, all suggests that economics holds the creative power not to simply affect the market, but aid in its very construction through its normative and practical prestige: as economics now linguistically, technically, and institutionally constitutes the economy it seeks to study, the object of economics is no longer independent from it, but integrated into its very practice. This new literature also asks whether economic theories were successful because they discovered real economic processes, or processes changed due to the embeddedness of economics within the economy itself. As MacKenzie advocates, performative processes such as these bear similarity to Barry Barnes’ self-validating loops. Implied in this reframing of the study of economics is the hypothesis that the use of the theoretical, under certain conditions, has the power to redirect an economic process so that the process begins to reflect its formerly abstracted description. As these theorists emphasize, economics is performative because economics now affects the objects it studies. These accounts illuminate performativity to be either strong or weak in its effects, and it is to this literature that we now turn.
Chapter 2

Literature Review

The transformation from orthodox finance to financial economics was accompanied by a drastic transformation in market infrastructure, such as the legitimation of futures trading and subsequent explosion of derivative products. These changes tend to support recent sociological studies of economic methodology that demonstrate how financial theory affects (or even performs) the market it seeks to analyze, innovating new markets through an economist’s use of specialized and interactive models. If theorists studying the performativity of economics are correct, the use of theoretical finance and experimental economics has the power to not simply inform the economy through its illocutionary force, but change the economy so that it begins to reflect its formerly abstracted depiction first promulgated in financial economic theory. Despite their sometimes expansive claims about performativity, all theorists would agree that economics has a varying degree of power in its ability to interact with markets.

It will first be demonstrated that the abstracted models in economics and finance made the phenomenon of performativity possible, for they illuminate potentialities of markets instead of reflecting empirical reality. Next, the literature addressing performativity will be organized and broken down into two simple stages, weak and strong, with a discussion concerning recent claims that each category is co-dependent and constituted by its relationship to the other. Whilst the degrees of this claim vary, a similarity across much of the research is the concept of the normativity of the discipline or economists themselves. What all of the performativity literature appears to have in common, despite the range of approaches that constitute it, is the consensus that weak
performativity represents how economics *informs* markets, while strong performativity – much more contentiously – represents how economics *constructs* markets in its likeness. To provide empirical evidence concerning the plausibility of the strongest theses, MacKenzie’s work concerning options theory will be examined as a case study into the validity of this new field of performative research (MacKenzie 2007, 2008; MacKenzie and Millo 2003). To conclude the chapter, two positions will be advanced: first, performativity as a relatively new phenomenon yields valuable knowledge concerning how we are to understand the nature of the relationship between economics and the economy; second, despite the variations and irreconcilable tensions within the literature about performativity, the phenomenon may be understood as broad concept that states economics, *by virtue of its own normative and practical strength*, holds the power to affect markets and oppose external interests.

**A New Epistemic Relationship**

As Sugden (2008) emphasizes, the proliferation of experimental interaction with markets necessitates a reconceptualization of the relationship between economics and its object. As models are now used both theoretically and experimentally, their development ushers in a new culture of economics as well as a new way to think about economic knowledge. As a result of this transformation, it becomes necessary to ask whether the development of abstracted models results in a departure from the epistemic

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26 For purposes of this discussion, ‘economics’ and ‘economic theory’ is considered inclusive of finance scholarship, for by 1980 the discipline of finance was integrated fully into the economic mainstream (MacKenzie 2008).

27 See Sismondo (2009) for a detailed discussion of simulations. As he states, models may be developed from theories as a test of their theoretical validity or, alternatively, be used experimentally to explore new possibilities (2009, 3-4).
value of economics as a science. In answering this question, it becomes necessary to determine how a model’s empirical representation of reality is transformed throughout the course of the model’s development, yielded knowledge, and subsequent impact on markets.

In the process of constructing models, the empirical reality of the economy is distorted in two ways. First, generalizations must be made in order to serve the tractability of models as economic subject matter is often irreducibly complex. This process results in abstracted environments. Neoclassical models, for example, are highly generalized for they omit real world conditions such as nonmonetary incentives and imperfect information. This is not to detract negatively from a model’s epistemic worth, for it must indeed continue to grapple with real world processes and characteristics if it is to derive real potentials. That is, the generalizations in models cannot materialize ex nihilo, making it necessary for models to contend with realistic interpretations of empirical reality. Here we may apply Dummit’s statement concerning the mathematician to our economist: “the mathematician has great freedom in devising the concepts he introduces and in delineating the structure he chooses to study, but he cannot prove just whatever he decides it would be attractive to prove” (1978, xxv).

Second, it is quite difficult for economics to “…construct an epistemology which is divorced from the subjective nature of mind” (Gordon 1950, 478) as the concepts it

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28 The argument here is that only approximate truths result from abstracted theory. As the abstraction in models distorts its referents, models are said to reveal a modified version of reality. For a discussion concerning this, refer to Sugden (2008).
29 Sismondo (2009) has offered an analysis of this question as this relates to computer simulations, largely inspiring this discussion as it relates to economic models.
30 Abstraction may be either precisive or nonprecisive: The former dictates that abstraction specifies particular characteristics as being absent, while the latter dictates that particular characteristics are absent from being specified. See Long (2006, 3-23) for a detailed discussion and implications concerning each.
Manipulates are often about human constructs. The discipline of economics is different from the natural and physical sciences in this regard, as it must contend with immaterial and subjective concepts such as fairness, trust, decision making, legality, and prices, among many others. Here, the construction of economic models distorts the empirical representation of reality for in manipulating immaterial concepts, the economist must draw on her own interpretations, social conventions, and broad conceptual frameworks. Clearly, these immaterial objects of economics do not exist as external, independent standards but are rather constantly mediated, isolated, idealized, and aggregated so that their meanings are never concrete in the same manner as, for example, a proton or neutron would be to a scientist (Mäki 2001, 8-9). As Guido Hülsmann has emphasized:

“Economics is based on the insight that human behavior...is only a part of human action, namely, the part that is realized (that is ‘there’). [Austrian] economics contends with not-yet-realized potentials of human action such as (a) the purposes in pursuit of which humans act and (b) the foregone alternatives that could have been chosen. These are not part of the world in the sense that they are realized. However, it cannot be denied that they have some sort of existence, and this puts [the economist] in a position to explain the realized manifestation of human action as a corollary of the non-realized part” (1999, 4-6).

As a result of the complexities of abstracting the empirical and involving the subjective, it may be concluded that models do not aim to be stand-ins for reality, but achieve a Platonic realism in their representation of reality.

31 Prices are considered abstract insofar as they may be conceptualized in numerous ways: fixed-price, flex-price, limit-entry, administered, or mark-up models are but a few models attempting to explain the concept. As Samuels states, “...the concept of price is not transcendent” (2004, 357).
32 Mäki uses the term “commonsensibles” in his research (borrowed from Robbins 1945) to refer to these objects and others such as households: these objects are real in the sense that individuals must interact with them, but are also subject to the conventions of the economist in determining which are basic, valuable entities and which are not.
33 As models contend with environments abstracted away from empirical reality, they no longer discuss anything that exists in a spatial or temporal sense. Nonetheless, the objects of models must exist as they are generalized concepts of a particular.
The knowledge flowing from the models further questions the epistemic correspondence between the model and reality. As models yield statements such as, ‘let us assume perfect equilibrium’, ‘if all actors are perfectly rational and self-maximizing’, and ‘in a state of perfect competition’, their conclusions depart from strict empirical correspondence to their object. As the model’s abstracted environment does not exist in reality, the statements flowing from its use also do not exist in an empirically verifiable, realist manner. Instead, the statements flowing from models tend to indicate not-yet-realized potentials of the economy for realism is found in the relationships between causal mechanisms in the model, not in the economic environments and basic entities themselves: As Deichsel states, “the existence of basic entities is not the main point...in economic methodology. Instead, the main point is about the reality of the causal mechanisms postulated by economic models” (2011, 26). Thus, whilst the results of models yield knowledge that departs from empirically verifiable reality, they offer knowledge about mechanisms that hold the potential to interact with reality. Here, the economic knowledge flowing from the employment of models is realistic in that it uncovers potentialities of economic relationships despite its inability to make truth claims or prove epistemic worth in the same manner as the physical sciences.

Clearly, the uptake of models into the economy further affects the epistemic relationship between economics and the economy for models uncover knowledge about realistic potentials, enabling them to be used as tools of practical transformation by market actors. It is no surprise, this being considered, that the rise of abstracted models was followed by research into economic performativity, for the models yielded knowledge about mechanisms that could be utilized in markets: this, in turn, created the
possibility for actors to transform reality into what was once a theoretically described potential. As it was used to develop, for example, a new variety of investment products such as exchange traded funds and options thereof, the utilization of abstracted financial models practically transformed markets. Here, finance theory did not seek to illuminate aprioristic, empirical truths of the marketplace; instead, it sought the development of new mechanisms that could interact with markets, creating a new reality for markets and their participants. Thus, finance theories such as portfolio selection theories were able to become successful in illuminating new potentialities for the markets irrespective of their epistemic worth. In this case, the rules flowing from financial theory were used to constrain markets in manners which constructed the theoretical mechanisms in reality.

Examining the rise of models explains how theory has now become a matter of success versus failure rather than of truth versus falsity: economics is successful if its knowledge concerning potentials becomes actualized in the economy; in other words, whilst economic subject matter is realistic, it is not realized until the model becomes a success. The epistemic reorientation in 1950 that developed abstracted models thus resulted in performative economics, a ‘byproduct’ phenomenon of the new relationship between economics and the economy.

As the objects of economics often involve immaterial concepts and irreducibly complex processes, the discipline cannot provide empirical knowledge in the same manner as the physical sciences, but instead illuminate new potentials for the markets. By rejecting the need for models to be representative and replacing it with a commitment towards “epistemic optimism” (Mäki 1998, 2011), economic models are permitted to fall short of the strongly realist standards held by the physical sciences without comprising
their commitment towards truth. In other words, models must be allowed to be successful in demonstrating Platonic realism without demonstrating empirical realism. Moreover, while economic theory still experiences limitations in its predicative power due to the complexities of relations it must take into account, it has experienced great technological success for its ability to create mechanisms that aid in the formation of markets and equip actors with tools that create new possibilities for expressing their agency. The epistemic value of models, then, must be tailored to ‘economic particularities’ (Mäki 2011) so that we acknowledge not just empirical truths, but possibilities for success in bringing about new empirical realities. This allows for economics to be successful in making claims about reality without the claims actually being true: the claims do not have to be epistemologically proven in their representation of economies. Certainly, models may go on to be successful in transforming markets, becoming real over time, but do not necessitate representation of empirical reality to hold epistemic value. Understood in this way, economics is able to be successful (an attribute of performative economics) without losing its commitment to truth (maintaining an orientation towards realist methodologies). It appears that the rise of abstracted models beginning in 1950 offered a new way of understanding and interacting with the markets, making economic performativity (economics that is successful in being integrated into the economy) possible.

**Weak Performativity: Economics informs the economy**

The illocutionary force of economics
Michel Callon’s influential work on performativity illuminates both the inherent complexities and instabilities of markets and the illocutionary force that economic theory has on such. Callon’s weak thesis of performativity is linguistic in nature, representing “the process of adjustment of statements and their associated world” (2007, 330). Resulting from this is a broad conception of performativity that implies that economics has the power to inform the economy just as an utterance has the power to inform the world it refers to: both cannot create a world *ex nihilo*, but require a range of actors, institutions, and conditions of felicity – in Callon’s terms, *agencements* – that enable the utterance to be accepted and integrated into reality. This weak performativity thesis – further refined by Guala’s research – suggests that economics flows into and affects the economy in three stages: first, economics theoretically disentangles particular market complexities and identifies the mechanisms or initial conditions necessary to bring about desired results; second, this information then is dispersed throughout broad webs of networks that are irreducible to either individual actors or their socio-technical devices, effectively informing the economy; and third, the economic mechanisms, once in the economy, must be mediated through competing political interests and institutional arrangements which alter their original composition. Thus, performativity theses of this nature portray the economy not as a perfect empirical fit to economics, but altered by economics.

How does one come to understand the nature of a weakly performative act as it relates to economics? It begins with linguistics. Allow a performative utterance be understood as “…a contributor to the construction of the reality that it describes” (Callon 2007, 316). Prior to the pragmatic turn, language was understood to be either referential
(propositions that refer to an outside world), logical (establishing relations amongst propositions), or rhetorical (propositions that are entangled with their referents).\(^{34}\) Clearly, many cases could be identified where propositional statements and signs (the logical structure of language) and its use in communicating (the context of the statement) were inseparable, questioning the delineation between grammatical structure and use-context. As a result, Austin (1962) created constantive statements, those statements that described worlds (truth-evaluable), and performative statements, those whose utterances made such worlds possible (non-truth evaluable). Financial scholarship prior to 1950 consisted largely in truth-evaluable utterances; after 1950, this scholarship changed and began grappling with economic potentials, thus making non-truth evaluable claims.

Currently, economics often participates in the constitution of the reality it describes: For example, examining a description of an economic event would be difficult without acknowledging “…the mechanisms through which witnesses are convinced” (Callon 2007, 318). These mechanisms often work to clarify the descriptive statement and provide the context to produce such an event: One could not make the neoclassical claim that individuals are utility maximizing, rational actors without considering the prevailing market arrangements that gave rise to such behavior and subscribing to the prevailing conventions that understand rationality in a particular way. That is, a theoretical economic statement cannot easily be isolated from the socio-technical context that produced its utterance, as economics deals with complex subject matters such as conceptions of fairness, utility, trust, and rationality: often intangible human concepts that form the basis of many economic theories. This realization illuminated that some

\(^{34}\) Refer to Callon (2007) for further discussion.
economic statements, theoretical postulations, and symbolic representations are weakly (if only trivially) performative, for these utterances cannot easily exist without indirectly describing the broad arrangement that produced the event or object they seek to describe. This recognition creates simultaneous conditions of exteriority and interiority (Callon 2005, 2007): an economic utterance includes both an isolated spatiotemporal event in a world external to the act of speech, what Popper refers to as a singular existential statement (Popper 2002, 82-88), and a world that makes such utterance possible. As a result, there exists a relationship between description and action, representation and engagement, for it shows how a theoretical statement is, if only weakly so, “…entangled with the device that produced what it describes” (Callon 2007, 319).

To further clarify this concept, Callon (2005, 2007), refers to the concept of agencements in order to relate performative utterances to economic theory. Agencements are neither the context of a statement (indicative of rhetorical speech) nor the statement referring to it (such as its logical/grammatical structure); likewise, agencements are neither individual human agents nor the arrangement of their technologies that make their actions possible. The context and meaning of agencement, then, is irreducible to individual agents or their social situatedness: agencement is constituted by both and represents the context in which agents express their agency. Agencements must be considered to be arrangements “…endowed with the capacity of acting in different ways depending on their configuration…” (Callon 2007, 320). Defined in this manner, agencements must be seen as a central feature of markets if performativity is to be

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35 This claim is indicative of the unique and complex entities economics must grapple with as opposed to other physical sciences.
illuminated, for they are both the result of innovative processes and also the force that enables innovation to proliferate. As a result, we are left with a clear departure from linguistic movements that emphasized the delineation between the grammatical structure and the use context of the language.

This last turn further clarifies the concept of performativity so it can be applied to economics: if utterances are no longer about propositions and the external world to which they refer – that is, if utterances are no longer representational but fully involved in the worlds of which they speak – they are no longer concerned with being proven true or false in its ability to accurately represent an event, but a matter of success or failure in bringing about such an event: a formula cannot function without a world to make it function, and this world cannot exist without the formula to make it necessary (Callon 2007, 319-326). As a result, Austinian and economic concepts of performativity are similar for they both involve utterances and the realization of those utterances: as such, they are not be subject to truth, but rather judged in terms of success.\(^\text{36}\)

In what follows, it is important to note that the reader will notice that the terms ‘to perform’ and ‘performativity’ will be used in a technical manner specific to economics. This is not to say, however, that Austinian performativity and economic performativity are at odds: all involve pro-active action as opposed to passive description or representation. Consider the following: Most simply, in its non-technical usage, the verb ‘to perform’ would imply an action that has a practical impact on an object. Austinian

\(^{36}\)Searle (1989) would contest this: he has argued that certain performatives may be subject to evaluations of truth just as constantives would be.
performatives\textsuperscript{37} are similar to this for they too involve an action: in making a performative utterance, a speaker makes a practical difference through action for their words carry illocutionary force.\textsuperscript{38} Whilst related, the use of the verb ‘to perform’ by economists is much more technical: it operates to illuminate a connection between economics and the economy. In ‘performing the economy’, economics does not simply impact the economy, but becomes a constituting element of it. ‘To perform’, then, must be understood as a verb representing two actions that unite economics and its object of study: first, ‘to perform’ intends to represent the practical impact of economics on the economy; second, ‘to ‘perform’ represents the integration of economics into the economy, becoming empirically true.

**Weak performativity as market influence**

In attempts to clarify Callon’s thesis, Guala first puts forth the hypothesis that economic performativity undoubtedly exists, though it is weak and highly dependent on various environments, actors, laws, and causal mechanisms that plausibly link the theoretical to the real. Guala’s ‘spurious’ performativity hypothesizes that economics indirectly shapes economic design and formations through identifying conditions that will bring about the desired results in markets. The subsequent employment of these conditions, such as “…setting the rules, incentives, and punishments” (Guala 2007, 152),

\textsuperscript{37} As Austin (1962) has theorized, there exists variations between explicit, primary, and implicit performatives. For purposes of this discussion, ‘Austinian performatives’ are intended to refer only to explicit performatives, the only type of utterance that Searle would agree to be truly performative. Refer to Searle (1989, 536-537) for discussion. 

\textsuperscript{38} Success may come to performative utterances only insofar as particular conditions of felicity are satisfied. See Austin (1962).
is accomplished by various institutions and actors once the theoretical knowledge enters is dispersed into the economy.

To achieve weak performativity, economics must first be concerned with testing theoretical claims and frameworks. For example, if market theories are concerned with efficiency and rationality, economics must design ‘laboratory’ conditions that make these conditions attainable. This testing process is able to “…demonstrate abstract theories by way of transforming them into explicit mechanisms” (Guala and Callon 2007, 167). For example, in studying auctions, economic engineers cannot simply assume that individuals are rational and self-maximizing agents. In order to construct these systems, which are governed by general assumptions of rationality on the part of both buyers and sellers, engineers must first ensure that efficiency and rationality is possible by “…creating a hospitable environment…[rationality] is a capacity or a potentiality, and the goal is to create the ‘right’ circumstances for it to be actualized” (Guala 2007, 147). By testing theoretical parameters, economists can find the factors (institutions, rules, etc.) that will, probabilistically, bring about the desired result.

Consider a launch of a new product into the marketplace: the flow of a product in the market from its conceptual stage to end user changes the world of all actors involved, both stricto sensu and sensu amplo, for they all must come to represent the product or process if its integration into the market is to be successful. As such, the innovation process is one that has the power to shape actions, identities, devices, and understandings in favor of a process or product that is not yet fully realized. Just like a product entering the market, economics has the ability to perform “…the particular forms of subjectivity that it implies” (Callon 2005, 11) by becoming represented not just in isolated academic
circles, but throughout the networks economists interact with as the information spills over to affect other actors, their worldview, and their devices. Performativity may be illuminated by Callon’s recent reframing of economic inquiry because an agent’s uptake of theory first occurs and then proliferates through various technologies and social structures, directly informing – but not dictating - the material world of users. In this sense, economics is able to perform the economy for it provides knowledge, impacting its object, but also becomes integrated in its object as its mechanisms proliferate.

The case of high value telecom auction markets is particularly telling in demonstrating this process. In these markets there often exists a high uncertainty of underlying asset value,39 creating an unstable and inefficient auction environment because buyers and sellers could, at any time, ‘go rogue’ and disintegrate the delicate balance of interests that exist. With the proper framing of economic inquiry (what factors will maximize efficiency and rationality?), the initial conditions that are most likely to bring about rational behavior are identified and made into concrete mechanisms that aid in achieving a more stable environment. With telecom markets, the results of economic inquiry led to computerized systems that were able to create conditions which facilitated efficiency and rationality by controlling the “…quality, amount, and flow of information between buyers and sellers” (Guala 2007, 146). Currently, the initial conditions illuminated by economics (devices that regulate proper flow of information) are

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39 Telecom auctions pair sellers (governments) with buyers (corporations) in order to auction licenses for frequencies. The complexities of these auctions results from the innumerable variables that contribute to the value of the license itself: there is uncertainty on valuation on behalf of government for the buyers know more of the market than the sellers; there is also uncertainty regarding valuation for the sellers because the value of a license depends on “…the ownership of other neighboring licenses…and optimal allocations” (Guala 2007, 146).
employed in all high stakes auctions so that all participants can be as informed, rational, and efficient as possible, leading to a more stable market.

Weak performativity requires that these mechanisms are grasped and brought into being *indirectly* by the prolific number of actors who must mediate their competing interests to redesign real markets in an (undoubtedly altered) image of the economist’s model. That is, once economic inquiry finds the initial rules, constraints, and institutions necessary for successful results, the mechanisms become available for uptake and implementation by others. As did occur in telecom auctions markets in the 1990s (Guala 2001, 2007), the process of integrating theory into the markets is inherently complex. For example, the conditions ensuring rational behavior (identified by experimental economics, game theory in particular) led to *two* kinds of telecom auction platforms, closed bid\(^{40}\) and spontaneous continuous ascending\(^{41}\) auctions, each one benefitting either the buyer or seller. The seller (the government) had fears of selling the licenses for too little and would thus reject spontaneous continuous ascending auction models because overtly aggressive bidders could discourage competition, lowering the prices of winning bids. Because of these fears, the seller would advocate sealed-bid auctions because their structure would discourage aggressive behavior and result in higher prices. However, as this closed-bid structure risks that buyers (telecom corporations) could, unbeknownst to them, outbid competitors by too high a margin and be held accountable by shareholders

\(^{40}\) Closed or sealed bid auctions are auctions where buyers submit private bids for a single item and remain blind to other competitor bids. The number of bidders may be unknown, there may or may not be reservation prices, there is typically no opportunity for negotiation after bidding closes, and the winning bid may or may not be made public to other competitors.

\(^{41}\) Spontaneous ascending auctions are auctions where bidding for multiple items occurs in rounds. Each progressive round has a minimum bid based on the results of the previous round, and buyers submit bids which are made public once the round is completed. In the spectrum auctions, there are set increments for bidding, typically a fixed percentage (typically between five to ten percent) of the current high bid (paraphrased from Milgrom 2000, 247-249).
who disapproved of outrageous spending, buyers were against this model. Buyers would thus advocate for a spontaneous continuous ascending auction model as it informed them of other bids, allowing for continuous revaluations. While the issue was eventually resolved in favor of the buyers, further negotiations had to be made whether to charge high entrance fees, which would profit the sellers but decrease the number of parties in the auction, or charge low entrance fees, which would cost the seller millions but increase the number of participants, non-serious and highly aggressive bidders included (Guala 2007).

These opposing interests illustrate how the original conditions for theoretical actualization identified by economics are immensely altered once they are grasped by market participants and enter the market: in competing with other theories, infrastructures, and powerful interests, economics comes to yield a less than perfect representation of the theoretical in the economy itself. Thus, economics informs market processes and becomes embedded in them, but does not construct the processes in their totality. This undoubtedly questions the importance of the weakly performative thesis, for it appears that economics need not have much normative force if it is to perform the economy. In describing possibilities for markets and having those descriptions be dispersed in the economy by others, the weak performance of economics appears to represent economics as nothing more than a tool. As such, performativity of this nature appears trivial and unsurprisingly common in the economy; a critique that will be returned to later in this chapter.

A further example of weak performativity is notable when one considers the effects of the neoclassical economic program on the marketplace. The neoclassical
program was performed in the economy, Callon argues, because the program’s ideological base concerning commodification (impersonal exchange) became evident in markets and, additionally, the devices theorized by neoclassical economics became utilized by agents to aid in calculating their interests (2007, 343). For example, the creation of money made measurable what was not before; it was able to disentangle from the broad networks of relations and understandings a “common scale of equivalence” (Santos and Rodrigues 2009, 987) that informed general processes. This development allowed for the commodification process to occur and for market transactions to proliferate at an unprecedented rate. The development of property rights, to provide an example, necessitates commodification - a central tenet of the neoclassical theory - in order to alienate objects so that buyers and sellers can agree on common value (Santos and Rodrigues 2009). Here, neoclassical tenets have been dispersed throughout markets for decades and have thus aided in the development of worldviews and devices that inform new possibilities for human action. In much the same capacity, Sharpe’s mathematical derivation of beta, discussed above, was able to disentangle a simple relationship between risk and return from both the complexities in the market and the previously unresolved theorems, providing a new way of talking about and understanding the markets. Traders who were informed of beta shared its postulations with others, whose worlds – and trading patterns - then became altered as well.

As has been demonstrated, weak performativity appears prevalent in market formation and illustrates the application of theoretically derived mechanisms – initial conditions such as institutions and rules – to fluid, inherently complex, and competitive markets and the actors that constitute them. Clearly, the weakly performatative aspect of
economics is subtle and becomes blurred with that of the natural sciences: both are used to inform reality, yet do not directly alter the reality that the participants already experience. In the case of the telecom auctions, the behavior of auction participants was not changed by the economist, for actors continued on with their determined interests and used such interests to reach compromises concerning the ‘textbook’ mechanisms initially illuminated by the economist. Likewise, the theoretical postulations of neoclassical economics did not construct the economy to support its agenda, but instead informed the economy by having its postulations dispersed and mediated by others, becoming integrated with the economic processes it sought to study.

In weakly performative cases, economics affects the economy by identifying information or socio-technical devices that create new possibilities of action that can be subsequently integrated into the market: Neoclassical economics informed the economy through its replacing of personal relationships by impersonal exchange (Callon 2007, 343), Sharpe’s concept of beta informed the economy by developing a simple way to understand risk and return, and game theorists were able to isolate mechanisms (various auction formats) that brought about particular results (efficient and rational bids). Thus, performativity of this nature has the potential to expand markets by disentangling particular processes and allowing them to be swept into the flow of the market mechanism, compete with current devices, and either become successfully utilized in markets or not. As a result, Callon’s and Guala’s conceptions of weak performativity are unsurprisingly common in economics, notably in their ability to indirectly inform market design by illocutionary force.
Strong Performativity: The economy *reflects* economics

A case study in options theory

Of the recent performativity literature, David MacKenzie’s (2003, 2007, 2008) is perhaps the most concrete and precise. Concentrating on how financial derivative markets are created and maintained, MacKenzie argues that a tight form of performativity is evident. Barnesian performativity, named after Barry Barnes’ influential 1983 article and 1988 book, refers to processes in which knowledge becomes self-referential. As Barnes states, “I have conceived of a society…as a distribution of self-referring knowledge substantially confirmed by the practice it sustains” (1988, 166). As will be discussed, the employment of the Black-Scholes equation in arbitrage allowed what appeared to be an initial heavily abstracted theory of options pricing to become a near-perfect representation of reality. This model, once able to pass econometric testing, became the infrastructure used to legitimate the explosion of derivative instruments seen today. The Barnesian performativity thesis suggests, quite strikingly, that the Black-Scholes equation was successful because it was able to change the reality of pricing patterns, not because it was able to discover previously veiled patterns in a world external to economic practitioners, nor simply because it could be put to use by actors shaping a new market. A case study into the history of the Black-Scholes theorem is useful to explain and illustrate MacKenzie’s insights into performativity.

Performativity has been most widely demonstrated in the creation, development, and maintenance of derivatives markets based on Fischer Black’s, Myron Scholes, and
Robert Merton’s landmark 1973 theory of options. Various forms of options have been traded in varying levels of formality since the seventeenth century (MacKenzie 2008). Valuing these options, until the 1950s, was complicated and relied primarily on intuitive parameters such as the current and future estimated price of the underlying asset, the option’s strike price, length to expiry, current and future estimates of interest rates, and estimates of expected volatility (MacKenzie 2007). Clearly, an organized and appropriate method for valuing options did not exist with the multiplicity of subjective and easily variable parameters. However, the discovery of patterns in stock price fluctuations – Log Normal Random Walk Theory (1965) – allowed most of the intuitive parameters of options valuation to dissipate. As Log Normal Theory demonstrated that stock prices followed the typical distribution of a statistical bell curve, future price estimates and estimates in price changes could be fixed as log normal. With this development, Black, Scholes, and Merton were able to develop their options theory using the following parameters on European options: no paid distributions, log normal price patterns, fixed volatility, riskless interest rate, no transaction costs, and no market reaction to transactions (MacKenzie 2007, 57-59).

Because of the above assumptions, the Black-Scholes theorem was not realistic when first created. For example, Rubinstein and Gastineau both demonstrated that the model led to the consistent undervaluation of options in the Chicago ad hoc put and call

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42 Options may be defined as financial derivatives that are written (sold) and held (bought) by market participants. *Buyers* of options have the right, not the obligation, to buy (a call option) or sell (a put option) assets at their contract’s predetermined strike price. Call options are bought at specific prices, so prices would have to increase to profit. Purchasing a put option affords an investor the option to sell at a set strike price, necessitating a drop in price for profit. European options may be exercised only at the contract’s expiration date; American options may be exercised at any time during the contract.
market throughout the 1970s (Gastineau 1975, 197-200). Furthermore, Gastineau’s (1975) work demonstrated that over the short term, stock price movements are not log normal as the model assumed, but ‘fat-tailed’ in that prices had “extreme movements which happened far more frequently than implied by log normality” (MacKenzie et al 2007, 74). Being unable to account for these highly variable parameters, Black-Scholes was not a close empirical fit for the market.

Additionally, there were other, more elegant theories of options developing around the same time as Black-Scholes. For example, Cox, Ross, and Rubenstein developed a binomial model of options valuation that enabled the analysis of products other than securities (such as debt) that deviated from log-normal fluctuations, events that saw varying interest and borrowing/lending rates, and events with variable volatility (1979, 229-263). Kassouf (1965), additionally, created a model using complex regression analysis, six coefficients, and variable parameters – features that Black-Scholes lacked. When Kassouf’s model was empirically compared with Black-Scholes model’s valuations of simulated call option prices, no difference in valuations between the models was found.44

Despite its unrealistic assumptions, pricing discrepancies, and competing theorems, Black-Scholes was granted legitimacy in the market and became used as a primary model for options valuations. MacKenzie (2007, 2008) points to two reasons why Black-Scholes came to command the way in which traders thought about options.

43 There were several causes of this, though most likely was the model’s use of fixed (historical) volatility. As future volatility could not be measured statistically as the model necessitated, traders becomes reliant on measurements of historical volatility which appeared to skew the model towards undervaluation.
44 For example, one study concluded that “neither model produced significantly better returns than the other, implying that the options investor can use either model…and achieve equivalent results” (French 1983, 407).
First, its cognitive simplicity in relation to both Cox’s and Kassouf’s models – while all empirically similar in their results – allowed more individuals to grasp the theory and practice it on the trading floor. Traders could not afford to waste time on complicated equations and risk making mistakes in the fast-paced trading environment, nor were they keen to adopt new mechanisms they themselves could not easily discuss with others or understand. As Black-Scholes had only one parameter – volatility – for which estimates were necessary, traders could approximate values and easily reason about such parameters without high-level mathematical training. Conversely, with the other models, “the user…is called upon to deal with more unknowns that the average human mind can handle” (Gastineau 1979, 253), resulting in the relegation of competing theorems to primarily academic environments. Additionally, Black-Scholes valuations were publicly available, unlike those of other theorists, who kept them private due to copyright law. As Fischer Black had created an options price service, most traders could easily purchase and distribute the model’s valuations.\footnote{While Kassouf also made his model public, its complexity discouraged its use: traders could not easily understand what they were supposed to be doing, much less complete equations at a pace necessary to make competitive and efficient trades.} As a result, the widespread availability and ease of use allowed Black-Scholes to become the dominant model traders relied on for options pricing; it became embedded in the language and culture of the market.

Up to this point, options theory appears to straightforwardly support weak performativity because it was used to inform but not dictate market processes. As was clearly demonstrated by Gastineau, Black-Scholes consistently undervalued options throughout the 1970s by approximately 2\%.\footnote{In the period spanning 1973 to 1985, Rubinstein’s research found that deviation on the same options with the same length to expiry but differing strike prices was consistent at 2\% between Black-Scholes and actual market prices.} This appears to indicate that the theory
was not yet constructing the market it informed. For this theory to be performative in the strong (Barnesian) sense, it must be demonstrated that Black-Scholes caused new pricing patterns instead of simply illuminating them: in other words, the knowledge put forth by the theorem “…must be substantially confirmed by the practice it sustains” (MacKenzie, 2007). Interestingly, the deviation between Black-Scholes and market prices fell to less than 1% in the period spanning 1980-1987 (Rubinstein 1994, 774). Is this evidence of strongly performing theory?

Due to its widespread adoption in the markets, Black-Scholes gained legitimacy as a viable theory and one that could be used to discover arbitrage opportunities. As the model enabled traders to find relatively over- and under priced options, profit could be pulled from price discrepancies operating in various options of the same asset. For example, if Option A was identified as relatively inexpensive as compared to Black-Scholes prices and Option B was identified as relatively expensive, all traders had to do was buy A whilst selling B. This practice of spreading made market prices more reflective of Black-Scholes’ previously undervalued pricing patterns because Black-Scholes prices were being used as a model for what efficient prices should be. To further clarify: As the implied volatility on a Black-Scholes graph is always a flat line, and most traders used this line to find deviations to practice spreading, any successful spread brought real prices and their deviations closer to the Black-Scholes line. By exploiting any discrepancies using the Black-Scholes model, traders made the model real instead of a hypothetical representation of reality. Thus, Black-Scholes appears to be performative because it confirms the Barnesian thesis that “the use of an aspect of economics alters

47 The Black-Scholes model assumed that the implied volatility of any option written on the same stock with same length to expiry was the same, resulting in a flat line.
economic processes so that they are more like their depiction by economics” (MacKenzie 2007, 77).

The prevalence of the Black-Scholes model changed the market to conform with the theory’s valuations in another way as well. Because the market prices were typically 1-2% higher than the model’s, and the model was the most widely accessible, easiest tool to use to judge prices, there was competition from market makers to write down the price of options to be more reflective of the prices hypothesized by Black-Scholes: “Black-Scholes prices were…imposed even on those writers of options who believed such prices to be too low: they either had to lower the prices at which they sold options or see their business taken away from them by the adherents of Black-Scholes” (MacKenzie et al 2007, 72). This competition aided in changing the prices of options to be more consistent with those postulated by Black-Scholes, making the theory a near-perfect substitute for reality. Additionally, these lower priced options led to an increase in trading volumes, which then led to lower transaction costs (ibid). These lower transaction costs are also evidence of the performative nature of options theory, as the Black-Scholes model operates under the assumption of no trading expenses. As the volume continued to increase, the costs of trading came closer and closer to fully performing the theorem’s initially denaturalized assumptions.

Here, Callon’s concept of framing occurred by first creating the Black-Scholes theorem with its acceptable parameters of study, then by legitimating new market structures and technologies which enforced this form of options pricing, and finally – more generally – by institutionally legitimating futures and options trading. This framing, however, gradually overflowed and overwhelmed the frame: the performance of Black-
Scholes in real markets produced results that the theorem was not built to take into account, leading to counter-performativity, or, market changes that are different to what the market postulated. Despite this, the performativity of Black-Scholes continues to be well evidenced by its incorporation into the language and culture of market participants. Consequently, derivatives markets and options cannot be discussed today without reference to Black-Scholes: the market is unable to function without it. This example illustrates quite clearly how the interweaving of representations (utterances) with interventions (actions) is becoming the new standard of financial economics (MacKenzie 2007, 6-8): analysis is no longer given on the assumption of exteriority but is becoming fully integrated into technical, cultural, cognitive, and social processes which comprise the market; performativity of this nature demonstrates that economics does not simply affect its subject with theoretical ideas, but holds the potential to interact with, change, and create the very subject it studies by way of empirical, technical, and social intervention (deliberate or not).

What MacKenzie’s work illustrates is that in financial economics, the self-referential processes hypothesized by Barnes’ works are first constructed, accomplished, and subsequently deconstructed in a fluid motion, implying that markets are the practical accomplishment of successful economic inquiry. Thus, the entities described by theory – economic indicators, valuation strategies, legal rules, and market configurations at large – may very well come to exist in reality, not just in hypothetical environments.

**Strong performativity as market construction**

Guala’s “genuine performativity” is roughly the same as MacKenzie’s Barnesian performativity, in that it illustrates how the theoretical does not simply inform, but create
the worlds it refers to. Whereas MacKenzie’s performativity evidences a tight looping mechanism, Guala’s conception relies on slightly broader processes: for him, genuine performativity is accomplished by the normative weight of economics and the prestige associated with it as a discipline.

As was previously demonstrated with weak performativity, the market uptake of concrete mechanisms derived from economic theory is typically an exhaustive and unpredictable practice in decision-making, negotiation, and compromise, which can affect innumerable actors and socio-technical devices. Guala’s strong hypothesis states that it is these very complexities that empower economists and lead to strong forms of performativity. Genuine (strong) performativity, he suggests, occurs when an economist’s experimental mechanisms are able to bypass institutional intervention and change markets directly. Strong performativity of this nature enables economists to intervene in the economy through the normative prestige bestowed on their scientific methodology and precision: “Unlike the Hayekian economist, who gives up on precision and control…the experimental economist can sell her expertise as designer” (Guala 2007, 151), for her ability to bypass competing interests to isolate the conditions necessary to bring about desired results, whether it be fairly abstract efficient equilibriums or rational behavior. With its newfound prestige birthed from market complexities, economics becomes authoritative and uses its authority to directly intervene or set the normative standard in markets.

To support Guala’s hypothesis is Callon’s stronger thesis, summarized by his statement that “…economics performs, shapes, and formats the economy, rather than observing how it functions” (1998, 2). This thesis posits that markets appear to be
constructed, and not simply affected, by the theory that informs them. Thus, with this strong expression of performativity, it is not the resulting mechanisms (initial conditions) that economics discovers that circulate socially through broad networks, “…it is the laboratory setting itself” (Guala and Callon 2007, 183). That is, performativity of this nature is not about constructing worlds ex nihilo outside the realm of academics, but redefining where academics practice in the first place.

In the case study of telecom auctions markets, weak performativity existed because economists aided in the design of the markets by identifying market conditions that would bring about maximal rational behavior. Common knowledge of market participants was a matter of mutual rationality. That is, each actor became aware of the other’s capacity for rational behavior and operated under this assumption: their behavior was not directly engineered by the economists in question. With the strong thesis, however, it is necessary to go one step further to demonstrate that economics constructed the resulting auctions market. In the case of the telecom auctions, not only did the economists (game theorists) identify the initial mechanisms that would favor either buyers or sellers (auctions platforms), they subsequently advised these participants in the market. As Guala states, after this direct intervention the common assumption of participants became “…I know that you know that I know…that you have a game theorist on your team” (Guala 2007, 147), effectively bringing behavior in line with each theorist’s ‘textbook’ strategy. Not only did economics first inform the markets by providing initial conditions, as the weak thesis suggests, economics became a matter of bringing markets in line with its theory, as the strong thesis suggests. As Paul Milgram acknowledges, “…the U.S. communications regulator adopted nearly all its important
rules from two proposals: one by Preston McAfee and the other by Robert Wilson and me. Economic theory dictated nearly all the rule choices...Various reviews suggest that the new auction design realized the theoretical advantages that had been claimed for it” (2000, 246).

Guala’s results support Callon’s (1998) claim that neoclassical economics has created conditions in reality for homo economicus to be successfully transferred from hypothetical environments into real markets. As Callon argues, the rational, atomized economic actor is not discovered through economic inquiry as an a priori existent, but instead constructed: her self-maximizing actions are indeed possible, but only in engineered environments (i.e. auctions markets) which facilitate the behavior described by neoclassical economics (rational, self-maximizing utility). This neoclassical behavior does not exist in nature: it exists due to economic inquiry and its ability to (1) frame conditions of interest, (2) identify mechanisms to bring about required results in the frame, and (3) be employed directly by economists to engineer processes or in setting the normative standard, thus resulting in a strong form of performativity, or, an economy that begins to resemble economics.

A further example of the strong thesis exists with Garcia-Parpet’s case study on the strawberry auctions markets in France, where an economist constructed the market to match his theoretical competitive model of auctions (Garcia-Parpet 2007), or the case of the economist Jeffrey Sachs, who advised the Bolivian government to employ textbook monetary theory to solve the hyperinflation crisis occurring in the 1980s (MacKenzie, Muniesa, Siu 2007). Both of these cases represent Guala’s genuine performativity and Callon’s stronger thesis for they “…marked the beginning of an exceptional level of
individual influence” (*ibid*) of the normatively empowered economist: The forces that allowed theory to become strongly instantiated in the economy were internal to economics in that it was theoretically strong enough to achieve the power to construct the economy in its theoretical likeness. With the strong form of performativity, “matters of laboratory validity are at stake” (Muniesa and Callon 2007, 183), for economic theory becomes a matter of success versus failure in its ability to construct markets in its likeness. As a result, the successful performativity of economics creates new markets whose ‘truth’ is found in the theoretical foundations that ‘won out’ over other competing conceptions.

**Summary**

There are many conclusions resulting from the emerging research, two of which are of immediate importance to this project. First, a unified concept of performativity must be constructed in order to address the inner tensions and lack of equivocal statements in the current scholarship. To this end, the performative thesis, broadly speaking, will be defined as one that depicts economics as a (1) force unto itself and (2) a force that comes up against external interests and either succeeds or fails in overtaking them. Second, performativity – as a byproduct of the epistemic turn in 1950 - yields valuable information about how we are to understand the relationship between economics and the economy.

**Unifying the variants of economics performativity**

*Weak performativity is overwhelmed by external forces*
It may be concluded that the literature describing weakly performative processes depicts economics as an independent force that is routinely overwhelmed by external forces. Consider the following: weakly performative processes are strikingly common yet rarely lead to strongly performative events (the construction of ‘textbook’ markets). This routine collapse of performativity suggests that economics - instead of being enabled by - is often overwhelmed by forces external to or in competition with it. As critics often point out, it is the required leap to the strongly performative thesis – that economics can become successful or ‘made true’ by construction - that is perhaps the most damaging to the legitimacy of claims about performativity.

For example, while there is no doubt that neoclassical economics has indirectly informed the economy in a variety of ways (weakly performing the economy), Callon’s thesis that this program has, because of its pervasiveness, constructed *homo economicus* in its totality (strongly performed the economy) cannot be true: If *homo economicus* has successfully been constructed in reality, the guiding tenets of neoclassical economics that gave rise to *homo economicus* and allowed him to flourish would have to be actualized as well. This is clearly not the case, as capitalist societies today exhibit strong forms of uncertainty and dynamic competition (Dequec 2008, 1175), characteristics that would collapse the neoclassical thesis and its resulting *homo economicus*.48 Because the behavioral assumptions of the neoclassical program that created *homo economicus* could never be realized, Callon’s position that weak performativity requires a leap to strong

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48 *Homo economicus* is considered a perfectly rational, utility-maximizing economic actor. To maintain these traits, *homo economicus* must exist in an environment of perfect certainty (no rivalry and no risk, for example). *Homo economicus* would be unable to uphold these traits in a real-world environment: For example, Kahneman and Tversky (1979) have conducted studies demonstrating that decision making under conditions of uncertainty creates risk-adverse tendencies in economic actors. As a result of risk, decision making ceases to maximize utility, becoming ‘irrational’. Thus, critics argue that Callon is not justified in arguing that *homo economicus* has been constructed in its totality.
performativity becomes indefensible: “what ends by being within [Callon’s frame] is not
the market as an actual practice, but on the contrary a ritualized expression of an ideology
of the market” (Miller 2002, 224). As Santos and Rodrigues (2009, 992) further argue,
performative research that necessitates the connection between weak and strong theses
“…assumes that markets produce the effects that economic theories predict they do,
without providing any explanatory mechanism that can account for those effects”. Thus,
Callon’s link between weak performativity (economic influence and embeddedness) and
strong performativity (economic construction) yields results that question its very validity
as it tends to neglect the opposition that economics encounters in its entrance into the
economy.

Furthermore, Callon states that economics struggles against “…dominant agents
designing and imposing modalities of encountering” (2007, 349), suggesting that whilst
economics provides the initial conditions, the formation of markets and their modification
and use of these conditions is decidedly a political process. As Santos and Rodrigues
emphasize, as the market is a fluid being it is prone to frequent overhaul which “gives
rise to struggles that aim at imposing new rules capable of internalizing [the previous
effects of economics]” (2009, 990). This statement illustrates that weak forms of
performativity are easily overwhelmed by competing interests: economics operates as a
force unto itself in its ability to influence markets, but is often overwhelmed by other
stronger influences such as political and institutional interests.

As a result, it must be concluded that that there exist external forces that routinely
overwhelm economics and prevent it from strongly performing the economy. Weak
performativity must be understood to claim nothing more than the following: first, that
economics holds the force to influence the economy, becoming subtly embedded in it; second, economics is often prevented from constructing its mechanisms in real economies for it very often is opposed by forces more powerful than it.

These forces acting in opposition to economics may be defined as political and institutional interests and the power struggles they create. Thus, as some argue, it may indeed be more fruitful to look to political processes and the mediation of interests (Fligstein 2001) rather than attempting to describe how the process of economic inquiry informs these participants in their quest to build stable markets. The reader is left with an understanding of weak performativity that emphasizes its commonality; performativity of this nature is easily overwhelmed by most external interests that it encounters, being able to conclude nothing more rigorous than the statement that economics holds the normative power to inform and become subtly embedded in the economy.

**Strong performativity overwhelms external forces**

Strong performativity claims that economists may either directly intervene in economic processes, thereby constructing the theoretical in reality, or that economics permeates economic niches so completely that the economy begins to resemble what used to be a theoretical potential. Strong performativity in economics is similar to weak performativity for it too advances the position that economics is a force unto itself that opposes external interests, though it is much more contentious. For example, the literature review demonstrates that strong performativity in the economy is intensely difficult to prove as it claims to overwhelm forces external to economics in their entirety. Guala’s strong thesis that economics alone can engineer behaviors and institutions relies on case studies of auction markets (2001, 2007, Muneisa and Callon 2007) to provide
empirical evidence of this. However, critics suggest that the evidence resulting from these case studies is not strong enough to prove that game theorists were able to construct these markets in their totality through employment of their auction theory, for there exist too many forces to adequately address and discount them all. As these critics argue, theorists such as Guala and Callon who advocate stronger forms of the performativity thesis often neglect the existence “…of important elements [external to economics] that exert a powerful influence on the economy” (Duquech 2008, 1176) such as the political and institutional interests that reigned over weakly performative processes. As Santos and Rodrigues (2009, 993) posit, whilst economic discourses clearly influence the markets, it is the new relationships forged from these markets that hold considerably more power than economics in accounting for “…the emergence and dominance of certain discourses and ways of interpreting the world”.

Even if theorists could provide a case study that would be unanimously agreed upon as an instantiation of strong performativity – MacKenzie’s highly contentious work on the performativity of options theory is perhaps the closest theorists have come to empirical validation – it would represent an extremely rare event. As MacKenzie himself states, “Barnesian performativity…may be rare and hard to identify unequivocally. What is probably unusual about the case of option theory…is the existence of a single, stable, canonical form of the theory: the Black-Scholes-Merton model” (MacKenzie 2006, 51). While the case of Black-Scholes certainly supports the strong thesis, its happening is so rare that performativity of this nature experiences severe limitations to achieving widespread application in the study of economics in the economy.

49 For a prominent critique of Guala’s constructivist approach, specifically its technocratic narrative, refer to Nik-Khah (2006) and Mirowski and Nik-Khah (2007).
Despite its contentious claims, it may be concluded that strong performativity tends to neglect external forces in favor of focusing on conditions internal to economics, focusing on the normative and empirical strength of the discipline itself. The accounts of strong performativity that were surveyed depicted economics and economists as being providers to institutions or market intermediaries such as analysts and traders, being able to equip them with devices through which their modes of understanding and their agency becomes altered in ways previously impossible. For example, MacKenzie argues that strongly performative events in financial markets are made possible primarily by the mechanism of arbitrage invented by financial economists. Strong performativity occurred with Black-Scholes reaching a canonical status amongst traders who employed arbitrage, which altered reality to empirically fit the model. In substituting the abstracted model’s parameters for reality, traders traded down market prices to match Black-Scholes’ theoretical postulations, resulting in an economy near identical to its representation in economics. Conceptualized this way, strongly performative events are made possible by mechanisms created by economics, mechanisms which can succeed in capturing a niche of the economy and overwhelming the dominant interests already at play.

For Guala, conditions enabling strong performativity appear to be internal to economics as well. While his work has been criticized as being overtly technocratic, Guala suggests that economics may strongly perform the economy in conditions of uncertainty – such as market formation - that enable the economist to directly intervene

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50 “…the most important channel by which the Barnesian performativity of finance theory is achieved is the use of the theory to identify, exploit, and thus diminish discrepancies between ‘model’ and ‘reality’” (MacKenzie 2008, 268).
and change or construct markets. By depicting the economist as both a scientist and engineer, Guala is able to demonstrate how market actors and institutions become reliant on the specialist knowledge produced by the discipline. As was the case in telecom auctions markets, uncertainty and failure to achieve unanimous agreement amongst intermediaries resulted in ‘textbook’ auctions markets that were constructed directly by game theorists. In this case, markets were strongly performed by economists who created rules to guide the behavior of market actors in conformity with their theory. Whilst different from MacKenzie’s conceptualization, Guala’s account of performativity still supports the claim that the forces needed to strongly perform the economy are conditions internal to economics: the strong performativity of the economy is enabled by the economist qua engineer. Despite this new approach, however, Guala appears to struggle in constructing a theory that is as strong or as interesting as MacKenzie’s work into Barnesian performativity. Whilst the claim that economists may come to engineer the economy due to their normative strength is one that holds potential for development, Guala’s thesis may be criticized as being relatively uninteresting. Consider other disciplines: engineers use engineering knowledge to construct objects; composers use their knowledge of composition and theory to create symphonies; teachers use their knowledge to educate others. Here, Guala’s strongly performing economist uses specialist knowledge to construct economies. Whilst being too demanding on the individual power of economists themselves, Guala appears to state a relatively common phenomenon: the practical application of knowledge as a tool of a discipline.

While all the strong accounts of performativity represent distinct achievements, they result in positions that appear either untenable (the construction of homo
economicus), too demanding (technocratic construction of auction markets), or severely limited (Barnesian options theory) due to the isolated focus on economics and its ability to overwhelm opposing forces by virtue of its normative and empirical force. Inquiries into weak performativity, conversely, appear trivial due to the widespread representation of this process in market formation and the ease at which its progression is overwhelmed by external forces such as political processes. Whilst the inner tensions of the performative thesis involve an often irreconcilable relationship between being overwhelmed by interests and overwhelming them altogether, it has been suggested that economic performativity, as a general concept, may be unified as all theorists appear to depict economics as an independent and normative force that confronts external forces such as political and institutional interests. As such, economics is successful if it is able to overwhelm these interests and a failure if it becomes overwhelmed: successful economics is performative economics.

It thus appears that the current scholarship addressing performativity is in opposition to political-cultural approaches to understanding the economy, for performativity is routinely depicted as coming up against power struggles and interests and either succeeding or failing to overtake them. In other words, whether performative processes are overwhelmed by interests or manage to overwhelm them, performativity depicts economics, in all cases, as being confronted and opposed by external forces instead of being enabled by them. As a result, current literature concerning market formation argues that markets can either be formed by the successful performativity of

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51 Political-cultural approaches, generally, view market and institutional formation as the result of inter and intra power struggles for control of ownership, stability, and authority. For a detailed discussion concerning these approaches and how they vary, refer to Fligstein (2001), Evans (1995), or Zeigler (1997).
theory or through competition and the mediation of political interests. Is it always the case that performativity and political-cultural approaches form a dichotomy, or are there conditions that permit their reconciliation? This is a question that will be addressed in Chapter Three.

**Performativity illuminates new understandings of economics**

As was previously discussed, the development of abstracted models signaled a shift in the way scholars thought about and interacted with the economy. As a result of this epistemic reorientation, economics became able to illuminate potentials of the economy; this in turn paved the way for economic performativity, a phenomenon that witnesses economics affect its object and become embedded in it (albeit in varying degrees). To be clear, performativity is not a thesis that concerns itself with the nature of markets in general, nor does it seek to demonstrate how economics has changed its relationship to the markets. Instead, performativity is a byproduct of the epistemic turn after 1950, implying that its existence – as a relatively recent economic phenomenon - has much to contribute to our understanding of the relationship between economics and the economy.

As performativity demonstrates how economic theory becomes embedded in its object (whatever niche of the economy it may be interacting with, from derivative to auction markets), the process questions the extent to which economics is able to maintain its scientific independence from its object. The growing embeddedness of theory in the markets, illuminated by research into performativity, makes it clear that economics impacts its object in manners impossible with physical sciences. Whereas it is largely non-controversial to claim that many objects of the physical sciences exist independently
of theory, no matter how the theory chooses to manipulate its variables, it is much more complex with the objects of economics. As performativity illustrates how, for example, economic theory invented the mechanisms necessary to construct new markets and products, it is not as plausible after 1950 to claim that economics is a science wholly external to its object. In performing the economy, the postulations made by economics must be actualized, effectively embedding the theoretical or the not-yet-realized into real markets. This implies that the mutual fund, exchange traded fund, and derivatives markets would likely not exist as they do without the epistemic reorientation that permitted performing theory in the first place.

However, it is crucial to recognize that the performativity thesis is not sufficient as it currently stands. As was argued previously, strong performativity is too rare and concedes too much to economics. Weak performativity, conversely, appears trivial due to its commonality yet inability to be sustained or strengthened in the economy over time. In what follows, it will be recommended that the performativity thesis be reconceptualized in order to take into account the variety of external forces that economics contends with in coming to perform the economy. The suggested reconceptualization will make the performativity thesis in both its weak and strong forms more plausible, thus aiding in developing a more accurate depiction of the relationship between economics and the economy.
Chapter Three

Performativity Reconceptualized

As the above demonstrates, conceptualizing performativity as a broad event is intensely difficult due to the often competing and unresolvable inner tensions between its weak and strong instantiations. Despite these tensions, however, performativity as a general concept has been framed in a manner that opposes political market formation for it either succeeds or fails in overtaking interests in periods of turbulence such as market formation. In what follows it will be suggested that external forces do not simply come up against the performative potential of economics: instead, external forces are a crucial mechanism of all forms of performativity and are required for the success or failure of performative economics over time. In demonstrating that external forces are a necessary component of any performative event, economic performativity will be reconceptualized as a broad happening that is enabled by conditions of exteriority – such as political or institutional interests -instead of opposed by them. This weakens the force of the strongly performative thesis as it illustrates how economic performativity is always reliant on forces external to economics. This reframing also gives the weak thesis more force as it demonstrates how economic theory, no matter how weakly performed in the economy, is performed because it is necessary to the organization and stability of market participants. Reconceptualizing performativity in this manner will not only aid in addressing the current critiques of the performative literature, but make performativity a more plausible event that has merit in contributing to our knowledge of the relationship between economics and the economy.
Conditions of Externality

Weak performativity is enabled by external forces

To reiterate, weak performativity appears commonplace for it seeks nothing other than to claim, quite simply, that economics affects the economy. In examining the conditions necessary for successful performativity in the weakest sense, it is essential to examine external forces, for they are the mechanisms by which economics first enters into the economy.

Austinian conceptualizations of performativity posit that economics possesses illocutionary force for its ability to affect the economy. Thus, for weak performativity to become successful, Austin’s speech act conditions must be evident. These conditions claim that for an utterance to hold illocutionary force, speech acts (in the present case, economic theories) rely on the receiver’s recognition and the speaker’s communicative intention. If the pronouncement of theory is understood to be an utterance or speech act in the Austinian sense, it follows that theory cannot be a force unto itself: it requires others to recognize, understand, and promulgate its communicative intent in order to grant it its illocutionary force. For example, the epistemic reorientation in financial economics through 1950 to 1970 relied heavily on uptake of the theoretical approach by those in positions of authority. Friedman’s work, including his canonical piece, The Methodology of Positive Economics, often advocated for theorists such as Modigliani and Miller whose abstracted models at the time attracted heavy criticism, if not outright neglect. The illocutionary force of the pair’s irrelevance propositions became possible not solely
through the normative force of their theory,\textsuperscript{52} but through the authority of others and the prestige this bestowed upon the new economic models.

These conditions are connected with the concept of mitigation.\textsuperscript{53} Mitigation is prevalent in weak forms of performativity, for receivers and speakers must mediate interests, implied meanings, and shared understandings in order to fully transfer knowledge, often weakening the illocutionary force of an utterance. When mitigation occurs in economics, it implies “…a weakening of the speaker’s commitment to the truth…conveyed in the utterance and hence a reduction of the ensuing obligations for the speaker” (Thaler 2012, 910). Mitigation, therefore, allows for refusal to carry out the action or support its utterance. This is found readily in weakly performative economic processes for theories are often overrun by competing interests or heavily altered by institutions or actors before entering into the economy. This process was heightened after the epistemic orientation of the 1950s for theorists were newly concerned with how economics \textit{ought} to be done, making the receiver’s values and conventions paramount in any successful uptake of economics in the economy. By making normative claims, finance theory was mitigated by receivers who had the power to choose where and to what extent to apply its mechanisms, weakening its ability to become strongly performed yet permitting it to influence the economy. The concept of mitigation, therefore, appears to be a necessary condition for the success of weak performativity for it demonstrates how receivers may grasp the utterance and alter it according to their own frames of

\textsuperscript{52} As the irrelevance propositions and other models outlined how portfolio selection \textit{ought} to be done instead of examining the methods that were currently in use, they became performative only through becoming recognized as valuable by others and proliferating throughout the economy.

\textsuperscript{53} To borrow Fraser’s definition, mitigation is “the reduction of certain unwelcome effects which a speech act has on the hearer” (1980, 341).
meaning: as was the case with the telecom auctions markets, the theoretical is first seized and then mediated by others before it can go on to influence the economy itself. Understood in this way, economics requires forces external to itself if it is to perform the economy in even the weakest capacity: any economic knowledge that becomes weakly performative is not trivial in this sense, for actors must grasp it as knowledge that is useful.

Whilst related, the condition necessary for Callon’s weak performativity is slightly less demanding than the Austinian speech-act conceptualization as it necessitates the use of *agencements* instead of explicitly defined authority or force. For example, Callon argues that *agencements* allow for the object of focus of economics to be changed from individuals (which encourages the neoclassical image of atomistic actors) to individuals and their devices combined into an irreducible relationship. These relationships, as previously discussed, form social context, frames of meaning, and the potential for various forms of human agency. In short, by reframing the study of economics from individuals to *agencements*, broad and encompassing social conventions are illuminated. As Beunza and Garud (2008) state, social conventions act as frames that enable actors to react to new information in manners made possible by the frame in which they operate: frames explain how actors process information and decide what is meaningful or not.

When a frame is abandoned, it is done so because of external forces such as the social context and how actors residing in it react to new information (Beunza and Garud 2008, 31). For example, prior to the creation of the Black-Scholes theorem there existed no unilateral consensus as to how best to calculate the price of options. Because of these
conditions of uncertainty, Black-Scholes was a welcome change and of immediate value to market intermediaries for it defined a new way of interacting with the markets, creating mechanisms that enabled action (i.e. arbitrage) previously thought impossible. As the model gained recognition in the marketplace, the prevailing conventions used to understand options became abandoned in favor of Black-Scholes for it provided stability and organization to an environment that had none: performativity began when economics created new mechanisms and new possibilities for action and understanding, new agencements that shaped the way in which actors interacted with markets. By combining devices and actors into agencements, Callon demonstrates that “…economic theories and artefacts format the economy by shaping the way in which value is created” (ibid, 33).

**Agencements**, thus, are conditions of weak performativity, for they illuminate the conventions that give the speaker’s utterance a declarative force: “…intentions must be seen as reliant on conventions that must be previously in force” (Corredor 2009, 298). Thus, depending on prevailing social conventions, the level of mitigation that occurs in economics will vary, which in turn varies the illocutionary force of economics.

In any case, however, the Austinian speech act conditions and Callon’s concept of agencements are all necessary for the successful performativity of economic theory in the economy. What binds these conditions together is the common reliance on the authority of either actors (market participants or economists), institutions, or conventions that create frames of meaning, frames that ultimately create the value and direct inquiry in the economy. Moreover, these conditions are all external to economics. That is, actors and their devices, social context, and speaker-receiver relationships are all conditions of exteriority yet are the forces required to give economics its meaning and subsequent
illocutionary force in the economy: weak performativity becomes possible only through the mediation of economics by forces external to its discipline.

Thus, for economics to be successfully performed, it must be mediated through all competing interests upon entrance into the economy (akin to Austin’s speech act conditions), deemed to be of importance and value to the actors (made possible by their social conventions and *agencements*), and then be successfully utilized in the economy (made into a new frame of meaning). It thus appears that the weak performativity of economics is made possible by external forces such as interests. This realization may assist in addressing critics’ concerns about the triviality of the weakly performative economics: by being reliant on external forces for success, weak performativity is conditional on sources of authority and their needs for organization and stability. As such, weak performativity must be granted normative strength if actors are to refer to its mechanisms and knowledge in constructing their economies. Any successful weak performativity of economics occurs because the mechanisms it develops are necessary to institutional survival or by their capacity to enhance the organization of competitive markets. While quite common, the weak performativity of economics provides the necessary infrastructure to ensure stability for economic actors and must not be discounted as trivial.

**Strong performativity requires external forces**

As strongly performative events develop from weakly performative processes, processes that are enabled by forces external to economics, it appears problematic that theorists advocating strong performativity accept, *talis qualis*, that conditions internal to economics are responsible for market construction. For example, the strongest thesis
concerning performativity available at this time, MacKenzie’s performativity of options theory, claims that arbitrage was the mechanism that enabled Black-Scholes to strongly perform the economy. However, strong performativity through price adjustments could not occur without the appropriate conditions instilled by weakly performative processes: For the Black-Scholes model to be employed in arbitrage strategies, sources of authority external to economics were first needed to give Black-Scholes value and redefine the pricing mechanisms in options markets. In this case, the strong performativity of Black-Scholes was not possible without forces such as political and institutional interests, forces that first allowed for the model to gain recognition in the market. As previously discussed, the initial recognition, availability, and cognitive ease with which Fischer Black’s pricing sheets could be used enabled them to become integrated quickly and efficiently into options markets which, at the time, lacked a clear structure and pricing strategy. So too with Guala’s depiction of the economist-turned-engineer, whose authority would never come to command economies without predetermined social conventions that permitted such intervention. Understood this way, Guala’s stronger thesis becomes more interesting: instead of simply stating that economists may use their knowledge to construct economies, it may be stated that economists are permitted to manipulate real economies insofar as the prevailing social context renders it necessary.

Thus, it may be concluded that strongly performative events are born from the same conditions of externality that permit or deny their predecessor, weakly performative processes. Without the dispersion of theory into the marketplace and its subsequent uptake by institutional, political, and other economic actors – more generally,
society and its conventions - economics could never strongly perform the economy: it would be overcome by competing interests and institutions.

Moreover, economics requires external forces in order to be sustained and institutionalized in the economy. For example, once it entered into the marketplace, Black-Scholes became the standard reference for valuing options, enabling arbitrage as well as the creation of new products that were based on arbitrage. These products aided in materially constructing the abstracted worlds that Black-Scholes and portfolio selection theories described. While the power of economics was indeed a central force in the performing of the economy as it created the arbitrage mechanism, external forces such as institutional interests were needed in order to legitimize and conventionalize the exploitation of arbitrage opportunities: these products could not have been developed and traded without first being qualified through the Commodity Futures Trading Commission (CTFC) and their 1982 launch of intangibles trading on the Chicago Mercantile Exchange (MacKenzie 2008, 180-182). Economics, in this regard, had to successfully pass through institutional ‘checkpoints’ in order to become strongly performed in the economy.

Perhaps more strikingly, the CTFC itself was an institution developed to institutionalize the growing popularity of products made possible by Black-Scholes, portfolio selection theories, and arbitrage mechanisms. This institution became necessary as it connected and regulated assets, exchanges, and tradeable futures or options contracts (ibid). In its authoritative capacity, the CTFC created rules in response to popular theories, rules that worked to either enable or constrain market behavior: these rules had the power to allow economics to strongly perform the economy by “…defining how

55 There are many products that were created to exploit arbitrage opportunities, one being the creation of futures contracts on indexes such as the S&P 500 (used to enhance portfolio insurance strategies).
competition and conflict can be regulated” (Fligstein 2001, 18) and which products could come to market. Without institutional legitimacy, large scale arbitrage and the products that enabled it could not occur, making the strong performativity of Black-Scholes reliant on sources of authority for success.

Whilst economics creates the mechanisms necessary to strongly perform the economy, the mediation of interests institutionalizes the mechanisms and, in turn, makes economics reliant on external forces for its successful performativity over time. Said another way, the products and trading mechanisms birthed from Black-Scholes could not be seized and acted upon by market intermediaries without first becoming organized, legitimated, and institutionalized by forces external to and stronger than economics: theory cannot become strongly performed solely by conditions interior to economics alone; strong performativity must also recognize external forces and the role they play in permitting the performativity of theory. The creation of the CTFC, in the case of options theory, was certainly a byproduct of economics but was also the force that enabled economics to become strongly performed and sustained in the first place.

Lastly, strong performativity, in the long term, disintegrates into weak performativity as actors react to new information, implying that external forces are able to dominate even the strongest performativity of economics. The gradual counterperformativity of Black-Scholes in the economy demonstrates that external forces continue to hold considerable influence even when economics is strongly performing a niche of the economy. To return to the case study of Black-Scholes: As MacKenzie suggests, the market crash of 1987 disrupted trading so that the arbitrage that linked
securities to futures markets could not occur. Because of this failure of arbitrage, a practice that kept prices stable and reflective of Black-Scholes prices, prices became artificially and deeply depressed. Moreover, as the crash was “…a grotesquely unlikely event on the log-normal model of stock price movements underpinning that theory” (MacKenzie 2008, 191), Black-Scholes became unable to instruct traders in the new environment. In the years since this event, options prices have never again been a close fit to the flat line hypothesized by Black-Scholes, leading to what MacKenzie calls counterperformativity. Here, MacKenzie uses the performative thesis to argue that because the Black-Scholes model was unable to account for discontinuous price movements, it was unable to adjust to the markets fast enough, leading to the model’s failure to perform the economy in highly volatile conditions. This event, for the performativity theorist, represents a collapse of the strongly performative thesis into a weakly performative process, as Black-Scholes still continued to inform markets through creating the vernacular that allowed traders to discuss the concept of implied volatility, a foundation of modern markets. What should be of note to the advocate of strong performativity, however, is that forces external to economics were also evident in the collapse of the Black-Scholes theorem in the economy.

The failure of Black-Scholes was also due to the overrunning of the theory by competing interests. As advocates of the political approach might argue, the model was not counterperformed; market actors were constructing their actions in manners that

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56 Trading disruptions from the crash that hampered arbitrage were: network delays, the fact that many stocks ceased to be traded in the volatile environment, large and unpredictable price swings, and the NYSE’s ban on DOT systems (DOT systems allow traders to select large baskets of stocks and place orders for the entire basket, enabling arbitrage).

57 On the log-normal model, the fall in the two month S&P 500 futures price in October of 1987 had a probability of $10^{-166}$ (Jackwerth and Rubinstein 1996, 1611-1612).
would create stability and defend their positions in reaction to new information entering the market. Beginning in the 1980s, actors were seeking out new alternatives to valuation as fears spread that Black-Scholes amplified price drops in periods of volatility (MacKenzie 2008, 192). Interestingly, chartists used technical analysis to predict the 1987 crash in advance, giving market actors an opportunity to abandon the Black-Scholes pricing mechanism before it was too late. This shift indeed made reality less like the model, though it was due to forces external to the model and not the model’s failure in accounting for new environments. Understood from this point of view, it appears that Black-Scholes was not counterperformed in the economy as it was not the mechanism that caused prices to shift away from its predictions; instead, Black-Scholes was abandoned for new mechanisms that were able to provide greater stability to actors and ensure institutional survival of the American financial markets. That is, markets were formatted not solely by the performativity and counterperformativity of theory, but through political struggles that witness the embedding of a competing actor’s interests into the market: in this sense, economic theory is not seen as the primary contributor to the development of the economy. Certainly it is unquestionable that there existed explicitly economic reasons that contributed to the crash, but these are not enough to disprove political, social, or institutional explanations: Even in its strongest instantiation, the performativity of economics continues to be reliant upon external forces for its success or failure over time. In reframing the performativity thesis in this manner, the strongest representations of performativity in economics become less controversial for economics is permitted to construct the economy; it does not, by virtue of its own normative and practical strength, come to command the markets it studies.
It has been demonstrated that as external interests are a necessary condition of both strong and weak forms of performativity. That is, interests external to economics are the mechanism by which performativity as a general concept is successful or not. Economics relies on external forces for successful performativity for three reasons: first, strongly performative events develop from weakly performative processes, processes which are first created by forces external to economics; second, economics appears to require institutional backing for its sustained performance of the economy; and third, strong performativity eventually disintegrates as actors react to new information, implying that external forces continue to dominate over even the strongest instantiation of economic performativity. Interestingly, these conclusions appear to relate to political-cultural approaches to understanding markets.

Implicating the Political-Cultural

The above questions whether the political - performative dichotomy is correctly conceptualized because it demonstrates how external forces play a considerable role in the successful performativity of theory. That is, if external forces are responsible for the creation, sustainability, and eventual failure of performativity in all its variants, the performative thesis begins to look less like a statement of opposition to political-cultural approaches to market formation and more like a statement that implicates them. If political-cultural approaches are able to adequately explain how economic performativity is possible, any successful performative event thus necessitates reference to political-cultural understandings of markets.
Consider the three phases of markets: emergence, stability, and crisis (Fligstein 1996, 2001; Fligstein and Markowitz 1996). As Fligstein demonstrates, emergence occurs when actors struggle to achieve stability where there is no standard set of social relations; market stability is maintained by dominant actors defending their hierarchy versus competitors; and finally, competitors of dominant actors may “…reintroduce more fluid social movement-like\textsuperscript{58} conditions” in order to induce market transformation or crisis (Fligstein 1996, 656).

As DiMaggio and Powell (1983) posit, markets are organizational fields where actors, in conditions of instability and uncertainty, struggles towards constructing a hierarchy that aids in organization. In these conditions of instability where there exists no common conventions to guide the relations of market participants, new markets are able to emerge. As Fligstein argues, “…actors need a coherent view of organization that allows them to simplify their decision making processes” for in disorganized systems, no one is able to \textit{a priori} or \textit{post hoc} determine the best decision making strategies (1996, 660). Thus, actors need mechanisms by which to disentangle the complexities of the markets and aid in the determination of appropriate conventions in order to stabilize relations. Understood in this way, political market formation appears to be the process by which economics comes to perform markets, for economic theory is able to create stable worlds by inventing mechanisms that provide reproducible results for actors. Economic theory disentangles complexities and frames new possibilities for action which, when dispersed throughout an emerging market, create coherent and stable conventions which

\textsuperscript{58} Periods of market crisis and transformation resemble social movements for the, like social movements, market actors attain success based on the “the size…and resources of their group, the existence of an opportunity to act, state actors willing to negotiate grievances, and the ability to build a political coalition around a collective identity” (Snow et al, 1986, as paraphrased by Fligstein 1996, 662).
guide relations. As such, it follows that certain theories hold greater potential for intervention with the market than others depending on the history and complexities of the market in question. In options markets, for example, traders had no common conventions or clear method to employ in order to valuate, trade, and understand options. As a result, options were usually thought of as a gamble instead of a legitimate method to hedge portfolios. As the Black-Scholes model was able to provide traders predictable, simplified tools, the disorganized market quickly stabilized and gained legitimacy which has permitted the proliferation of derivatives products seen today: economic theory was the tool that was able to solve the problems in the most efficient manner. Here, the political cultural approach to market emergence illuminates how economic performativity of the economy is possible: In examining the emergence of markets it appears that economic theory is adopted into social organization processes because it provides the mechanisms by which actors can disentangle and stabilize their worlds. As a result, performativity appears to implicate the political-cultural approach instead of opposing it: economics aids in the organization of markets by providing the mechanisms to frame complexities, enabling the rise of conventions and structures of governance, thus affecting the economy.

After emerging, the stability of markets occurs when actors attempt to defend the resulting conventions and hierarchies through institutionalization. At this stage, “…laws and accepted practices begin to reflect the interests of the most organized forces” (Fligstein 1996, 662). As economics comes to be socially integrated in markets as a tool of organization, there comes to be demand for institutional laws and arrangements in order to ensure the resulting structure is maintained over time. As the most organized
force operating in options markets prior to 1980 was Black-Scholes (operating through the
dispersion of Fischer Black’s trading sheets), it was this mechanism that became
institutionally entrenched in the market structure. The creation of the CTFC, for example,
was one structure of governance that ensured the ongoing stability of options markets
after the markets achieved social and conventional organization. Here, institutionalization
contributes not only to the preservation of markets, but illustrates how performativity in
the economy occurs over time. By becoming embedded in the structures of governance of
markets, economic theory comes to constitute the markets, resulting in an economy that
is reflective of economics. Again, any successful performativity of the economy relies on
external institutional structures if it is to be sustained over time: Fligstein’s political-
cultural approach not only illuminates how performativity is possible over time, but
demonstrates how this process remains subject to external, political processes throughout
its occurrence.

Lastly, concerning times of economic turbulence: markets in crisis or markets
undergoing transformation, Fligstein argues, tend to display traits typical to social
movements in that competitors challenge the dominant structure in order to seek new
hierarchies, conventions, and structures of governance (1996, 2001). Markets tend to
enter turbulence for three reasons: there are decreasing reasons to cooperate with ruling
preferences; there are either new or reintroduced methods of organization; and legislating
bodies may enact a new set of rules or arrangements that changes participant behaviors
(Fligstein 1996). In examining cases in which economics comes to successfully perform
the economy and cases where such performativity disintegrates, these three factors tend
to appear. To provide an example, consider the failure of Black-Scholes to sustain itself
as a benchmark for options valuations (to sustain its strong performativity). New methods of organization developed in reaction to volatile markets of 1987 as traders began questioning the perceived infallibility of portfolio insurance, a product that was birthed from Black-Scholes’ prevalence in the market. As a result of decreased willingness to abide by Black-Schole’s parameters, traders sought out new mechanisms and abandoned the organizational structure that operated under the assumption that Black-Scholes was empirically correct in its pricing theory.\textsuperscript{59} As MacKenzie demonstrates, the reorganization of options markets after 1987 was attributed largely to “…the managers of ‘respectable’ institutions such as pension funds that wished to avoid overt pursuit of a strategy [Black-Scholes] that was ‘tainted’ by its association with the crash” (2008, 199-200). Moreover, increased legislation and technological advancements restricted the ability of traders to practice large-scale acts of arbitrage manually, signaling a transformation in the governance and conventions of markets. Instead of large manual trades, autoquote systems were provided that automatically calculated the necessary hedge of “modest sized trades” (ibid) and allowed contracts to be executed without human intervention. While these legislative and technological developments may not be primary contributors to the fall of Black-Scholes pricing strategies \textit{per se}, its emergence in reaction to market crisis contributed to a complete transformation of market culture and now acts as the foundation of most electronic trading protocols seen today (Zaloom 2006). During market crisis, it appears that transformation is initiated by political-cultural actors and not solely by the counterperformativity of economic theory.

\textsuperscript{59} “…after October 1987 the market for the type of portfolio insurance sold by [market participants] dwindled rapidly” (MacKenzie 2008, 199).
To conclude, it has been demonstrated that political-cultural approaches hold the potential to contribute greatly to the understanding of economic performativity. By demonstrating how institutions and actors must coordinate actions to achieve stability in periods of market emergence, continuation, and crisis, political-cultural conceptualizations of markets may demonstrate how economic theory is swept into the economy and used as an organizational tool. Thus, it has been suggested that economic theory, whilst performing the economy, may also contribute to political and institutional conceptions of control that work to create hierarchies and conventions for interested actors. As it is these interested actors that permit economic theory to first enter the marketplace, become convention, and become institutionalized, they also hold the power to overcome its development at any point. As a result, one may additionally conclude that successful instances of economic performativity necessarily implicate political-cultural forces. Thus, while the concept of performativity may certainly be true of economics, it requires restraint in stating that economics, by virtue of its own normative and practical strength, holds the power to command economies and construct markets in its likeness. From the above, the current conceptualizations of markets that claim either political-cultural development or performative development must be called into question: performativity’s reliance on external forces and the political-cultural ability to demonstrate the mechanisms by which organization is formed in markets do not oppose each other, but rather rely on one another for a fuller account of the relationship between economics, politics, and the construction of markets.
Future Directions for Inquiry

Two positions have been advanced. First, it has been demonstrated that all variants of economic performativity rely on forces external to economics to achieve success. Second, steps were taken to demonstrate where the political-cultural and performative accounts of markets may be reconciled or, at the very least, have their dichotomization in current scholarship called into question. Political-cultural frameworks of understanding markets aid in illuminating how performativity is possible and how economics interacts with political interests, structures of governance, and institutions at large. Performativity appears to implicate political-cultural forces in its success: performativity must not be considered a victory for economics against external forces, but instead is successful on their very condition. These insights permit the conclusion that – in opposition to current literature - just because performativity is evidenced in market construction does not eo ipso make political-cultural approaches false or irrelevant. This necessitates reconceptualizing the academic landscape: instead of dichotomizing market processes as either performative or political-cultural, new conceptualizations of markets may be found in subsuming the performative within political-cultural scholarship.

In subsuming performativity within political-cultural conceptions of market formation, economics is granted its performative force on condition that it coordinates and contributes to socio-political interests and institutional needs for market organization. Economics maintains its scientific integrity for it must yield knowledge about mechanisms that are able to become actualized: it must maintain realism in its methods if it is to be successful in performing the economy and enhancing the organizational capabilities of structures of governance. As discussed, this approach may address some
common critiques of performativity and make its thesis more plausible: this reconceptualization may weaken the strongest forms of performativity to take into account the variety of interests that economics must contend with, and may strengthen the weakest forms of performativity in economics so that its occurrence, whilst common, is viewed as necessary to the organization and stability of markets.

It is hoped that this new approach will yield fruitful avenues for research: To what extent does performativity rely on political processes and institutions for actualization? To what extent do technocratic narratives enter into this relationship? Is economics able to maintain its independence as a science if its success is dependent on interests, or does this position risk depicting economics as a political tool? What knowledge will this new political-performative relationship with the economy uncover?

In all, this project has sought to extend the understanding of performativity as both an economic and political process, and one that changes the way in which we theorize about economics and the economy. The transformation of economic scholarship from descriptive to prescriptive was detailed to demonstrate how the discipline came to have performative power. Undoubtedly, the transformation questioned the epistemic relationship between economics and its object. As a result, it was argued that the rise of theoretically and experimentally deployed models does not detract from the epistemic worth of economics as a science for it must seek realistic possibilities that enable the performativity of its concepts in reality. Chapters One and Two demonstrated that economics is able to maintain its commitment to realism by illuminating realistic potentials for markets.
The internal variations of the current performative literature were also discussed and organized into a broad conception of performativity as a process that comes up against external forces in periods of market transformation. Offering a counterpoint, it was suggested that economic performativity does not struggle against external forces but is instead enabled by them. This reconceptualization was necessary to constrain the concept of performativity so as to be more palatable for critics and to offer opportunities for further research into the integration of performativity with political-cultural approaches to examining markets. To conclude, it was suggested that economics is able to be successful in performing the economy insofar as its knowledge can be employed to enhance the organization and stability of political and institutional hierarchies.
References


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