

# **The Justification of Financial Futures Exchanges**

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## Abstract

The invention of exchange-traded financial futures by commodity exchanges has been justified by Chicagoan financial economics and law and economics on the basis of the unrealistic assumption that trading is costless. Acceptance of this quite circular argument has led to the delegation of extensive powers of self-regulation as public authorities have abnegated their responsibility to evaluate the regulation of derivatives trading, including matters such as the development of new financial products and the governance of exchanges, in welfare-economic terms. Instead of a prejudice toward market 'freedom', there should be stronger public consideration of the optimal public-private mix of regulatory governance structures. This paper proposes criteria for the evaluation of the functional justification of exchange-traded futures as a guide for public policy aimed at reducing the volatility of financial markets.

## Introduction

In this paper we argue for a fundamental re-evaluation of the role of public regulation of financial markets, especially organised financial futures exchanges. We argue that such an evaluation must break from the assumptions which underlie the concept of 'free' markets, which is highly misleading. Financial markets are *particularly* highly structured and institutionalised markets (Coase, 1986, pp. 8-10), and trading relies fundamentally on the mutual expectations of the participants, and hence either on personal trust or more formalised normative practices underwritten by law. Although 'regulation' commonly is portrayed as an external intervention in the practices of or imposition on market participants, it is in fact endogenous to these markets, and necessary for their very existence. Markets should be understood as social institutions, in which complex exchange transactions take place in a highly structured way, crucially underpinned by various more or less formalised regulatory arrangements.

Hence, the choice of regulatory requirements and arrangements plays a crucial role in establishing the conditions of existence of markets, as well as the dynamics of their operation. The principal approach which attempts to take account of these factors in evaluating the optimal combination of the roles of the market and the state, or the private and the public spheres of socio-economic life, is that of institutional economics. The groundwork for the 'new' institutional economics laid by Coase emphasised the importance of beginning from the study of the actual operation of real markets in order to clarify the social (and especially legal) conditions of their existence. But although Coase was anxious to stress the importance of appreciating the institutional setting of the market, and was highly critical of the policy proposals produced by 'blackboard economics' working with general competitive equilibrium assumptions, he nevertheless accepted those assumptions within appropriate bounds. The subsequent interpretation of his work has, to some extent as a consequence, been unusually mixed, as he himself has acutely felt (Campbell, 1996b). Coase's approach to the analysis of the social context of markets was to identify and evaluate the 'transaction costs' of alternative governance structures. But much of the subsequent law and economics has proceeded with the aim of approximating to the zero transaction costs ideal of perfectly efficient markets, and has sought to demonstrate that the best way to do so is to eliminate all state 'intervention' or regulation. But starting from the impossible ideal of the perfect, frictionless market actually dispenses with the social and human character of activity altogether, and treats all expressions of that character (e.g. communication,

negotiation) as 'costs'. The weakness of explanations working in this way, and therefore the ultimate shortcomings of policies based on those explanations, are now manifest.

The new institutional economics represented by North and Williamson is something of an alternative line of development from Coase. That economics has been able to produce more convincing evaluations of economic institutions by seeking to integrate important modifications such as 'bounded rationality' and 'informal constraints' into the operationalisation of neo-classical economics. This is especially important in analysing financial markets, since it indicates the importance of considering the effects on exchange transactions of the control of information.

Our own perspective (explained more fully in Campbell and Picciotto, 1998) would seek a firmer ontological ground by rejecting the starting-point that economic activity consists essentially of exchange. For, paradoxically, the major limitation of economic theories directed only at exchange is that they cannot develop a consistent conceptualisation of markets as social institutions. Such a conceptualisation requires a social theory which provides an understanding of economic activity in terms of production and distribution, as well as of the separation of the public and private spheres of the state and the market, in order to analyse their interaction.

### **Justifying Derivatives**

The use of financial derivatives is generally justified in terms of their effectiveness in the management of financial risk. Their emergence in the early 1970s accompanied the collapse of the post-war arrangements established at Bretton Woods for monetary management based on fixed exchange rates, pegged to the dollar, which in turn was linked to a fixed price for gold. Though a number of national governments obviously retain a certain power to manage the exchange rates of their currencies, the renunciation of the two Bretton Woods principles signaled the collapse of the international attempt generally to manage those rates effectively, thus leading to exchange rate volatility. An inevitable corollary of exchange rate variation is volatility of base (and therefore prime) interest rates. It is these volatilities which create the arbitrage possibilities which makes financial futures trading at substantial volumes both possible and arguably necessary. In a perfectly administered exchange rate mechanism - say, a unified global currency or a fully contingent financial market, both of which are hypothetical ideals - contract terms relating to future finance are complete and thus riskless. It is the incompleteness of such terms in the presence of exchange and interest-rate volatility that creates risk and, to look at the matter the other way around, it is the handling of this risk that is widely thought to call for a market in financial futures.

This functional reasoning is based on drawing a strong parallel between financial and commodity futures. The original function of commodity futures seems relatively clear. The planning horizons of modern units of production and distribution are such that, on any sort of realistic assumptions about the availability of raw material inputs, given the vagaries of nature, it is absurdly hazardous to rely on continuing spot purchases to guarantee availability of supplies. Planned availability may be based on physical warehousing, but warehousing incurs its own costs. An alternative is to purchase (or purchase an option on) a supply for future delivery, which may simply be done through a tailor-made forward contract. The purchase of such a contract deals with the problem of security of supply, but it both avoids and creates a price risk, for the price paid now for goods to be delivered in the future (that is to say, the present price of future supply) may well not match the spot price at the time of delivery. From the

perspective of the buyer, if the forward price exceeds the spot price at the time of delivery, then security of supply at a fixed price has been purchased at the cost of the difference between the price paid and the spot price. This difference is generally referred to as the 'basis'. Depending on the size of the purchase and the degree to which the buyer's knowledge was imperfect at the time of the making of the forward contract, this risk obviously may be substantial. This would be a disadvantage in relation to a competitor who may have been content to buy supplies at spot prices rather than forward. Thus, the user of a commodity who purchases it forward hedges supply risk by exchanging simple price variation risk for 'basis risk'.

A means of hedging price risk, as well as managing basis risk, is provided by the sufficiently liquid commodity futures exchange. By replacing the tailor-made terms of the over-the-counter (OTC) forward contract with standard terms as to quantity, quality and delivery, and concentrating dealing onto an exchange, the contract becomes tradable. When volatile differences between spot and futures prices create sufficient arbitrage opportunities, buyers with long positions aiming to guarantee future supply may hedge their concomitant basis risk by taking out complementary short positions. In the perfect short hedge, obligations to buy are completely offset by mirror obligations to sell (adjusted for the contracts which will be settled by delivery of the physical commodity). In practice, several successive hedges (a "rolling" hedge) may well be needed to ensure the perfect hedge, in order to match shifts in the basis risk with the availability of futures contracts with appropriate expiry dates. Hence, the heart of the justification for the active, exchange-based trading of commodity futures is 'the need to finance inventories in the face of fluctuating prices' (Houthakker, 1959, p. 138), with powerful attempts being made to explain spreads as the implicit costs of physical storage (Working, 1949). It should be noted that this is a long way from the conventional picture of derivatives as a form of insurance against simple price risk (Williams, 1986, pp. 77-81).

On the basis of this functional justification of commodities exchanges, it is possible to identify the characteristics of commodities which may be considered the 'feasibility conditions' for futures trading in those commodities (Goss, 1972, pp. 4-6). These conditions are essentially physical characteristics affecting storage and delivery of the commodity, such as homogeneity. These obviously do not at all easily fit with financial futures trading. Hence, the inventory management function of commodity markets needs at the very least substantial modification if it is to be used to justify financial futures products, particularly the proliferation of derivatives (Veljanovski, 1986, pp. 14-6). Many sales of physical goods do, of course, involve payment obligations that involve risk through currency and interest rate volatility, and it should be clear that a proper understanding of complex, long-term contracting must take into account the various means by which these risks may be managed. These means may be built in to the contract itself through clauses providing for currency variation, or *force majeure* provisions linked to arbitration, as well as the default rules relating to contractual enforceability (commercial impracticability and frustration) and flexibility of sales security instruments, which provide alternatives to the use of OTC derivatives for hedging (Sykuta, 1995). Appreciation of this opens a very important line of neglected contract scholarship (Sandor, 1973).

However, it must be questionable whether the volume of trade in financial futures can be justified by the need for hedging of the financial risks incurred in normal sales contracting. Without the problem of security of supply inherent to raw material commodities, there is no need to use a derivative such as a swap or a forward contract

unless it is considered necessary as a hedge. Thus, a corporate treasurer with receivables in a foreign currency which is liable to depreciate may choose to hedge to ensure that local costs can be covered. This may be done by a forward contract or, if liquidity is important, by taking out an immediate loan in the foreign currency (repayable from the expected receipts). However, these arrangements are entered into precisely to provide a hedge against price risk, and there is no need to have a tradable instrument to manage the basis risk. This very greatly reduces the need, and hence the justification, for traded financial futures. It suggests that the participants in such markets would be limited to financial intermediaries which by definition would have an 'inventory' of financial assets and liabilities. More importantly, it raises questions about the justification for the active management of the financial risks of such an inventory which the futures market provides, and hence about the justification for exchange-traded financial derivatives.

### **The Narrow Assumptions of Financial Economics**

From a functional perspective, therefore, the challenge is to justify financial futures markets. This question is perhaps best approached through another, subsidiary question, which is 'what is the legitimate reason for the growth in the liquidity of financial futures markets since 1971?'. This growth has been accompanied by the emergence of financial economics, based on neo-classical economics, which has certainly done much to legitimate both the use of derivatives and futures markets, although rarely addressing the fundamental question of justification. Its first (normally implicit) response to the explanation of the growth of financial futures markets at least is obvious. The Arrow-Debreu model of general competitive equilibrium shows that a perfectly efficient, Pareto-optimal allocation of goods will be reached if 'all relevant markets' exist in the relevant traded properties of those goods, including 'contingent markets' in relevant future aspects (Arrow and Debreu, 1983). Forward contracting and futures trading might therefore be expected to play a crucial role (Arrow, 1983), since they help to achieve in reality the theoretical ideal of a fully contingent market. In such a market, it would be assumed that there exists 'a universal regime of futures markets ... extended to all times and all commodities' (Arrow, 1981, p. 4). Growth in the number of futures products and of the liquidity of trade in these products obviously moves towards an approximation of the fully contingent market (Ross, 1976; Sharpe, 1964), and this underpins the claim that securities pricing is rational which lies at the heart of the Capital Asset Pricing Model, or CAPM (Merton, 1973).

However, a moment's reflection shows this theoretical position to be an inadequate basis for policy (as Arrow himself (e.g. 1981, p. 57) perfectly well understood). The number of relevant markets for general competitive equilibrium is tantamount to infinity. No conceivable number of empirically existing markets will approximate to it, and obviously the marginal benefit from a relatively trivial increase in this approximation is itself trivial. The point is worth making only because of the common perception that futures exchanges are perfectly efficient markets. They are not, and it is not possible that they ever could be. As a matter of fact, of course, very few commodities indeed are subject to forward and futures trading, by relation to the number that would be needed for a complete set. To determine why *specific* futures products are traded, one must ask much more precise questions about the sources of financial innovation (Silber, 1975), or to put it another way, about the conditions of existence of explicit markets and the determination of the *optimal number* of futures products (Williams, 1986).

An evaluation of the effectiveness and the limits of markets (and hence of the role for the state) is the task of welfare economics, which unfortunately, however, has had relatively little to say about the justification of financial futures markets. More importantly (which might explain this reticence), when it has addressed the question, it has tended to work with assumptions of perfectly functioning markets (and perfectly functioning possible alternative public provision of asset pricing information) (Hirshleifer, 1971). This makes it impossible to address the fundamental welfare issue, which is the institutional factors underlying the transaction costs both of informal OTC markets and formalised exchanges (as opposed to alternative administrative arrangements), as well as the relative methods of organisation and hence costs of the two. This is very strange as the most widely accepted explanation of the existence of futures exchanges relates them to the minimisation of the transaction costs of forward contracting (Ohlson, 1987; Telser and Higinbotham, 1977). In fact, as Williams has convincingly argued, the underlying question concerns the conditions for the emergence of explicit forward markets, which act as implicit loan markets for commodity inventory, rather than the converse (Williams, 1986, ch. 5).

Williams' conclusion that the primary reasons for this emergence are legal factors (Williams, 1986, p. 174) is of the greatest interest. Derivatives markets crucially depend on legal recognition and support for the conditions of their liquidity. For example, the trading of warehouse receipts, which chronologically preceded forward commodity contracting in Chicago, is more likely to create problems in bankruptcy, as the law may not recognise the lender's right to recover the receipt. Thus, a legal claim that margin money paid by a bankrupt should be treated as a recoverable deposit (*Seligson v. NY Produce Exchange* 394 F. Supp 125 (1975)) threatened to undermine a fundamental condition of existence of futures markets (Williams, 1986, p. 179). This sort of issue is recognised in standard treatments of derivatives trading, but only in the paradoxically attenuated form of 'legal risk' (Reynolds 1995, p. 30-1), in which the operation of 'the law' is seen as posing an external threat to a transaction or asset rather than being seen as part of the institutional means which allow their creation.

Indeed, the emergence of futures trading has everywhere and repeatedly hinged on whether and on what terms it could obtain legal legitimacy. As is well-known, in many countries an initial obstacle was the view, rooted in the suspicion of financial speculation, that trading which anticipated settlement by a payment of differences rather than physical delivery amounted to gambling, and was therefore illegal. Overcoming this required litigation and legislation, both in the initial period of establishment of commodity futures (Lurie, 1979), and more recently for financial futures (Edwards, 1981; Johnson, 1986). Furthermore, the relative advantages of trading futures on organised exchanges, compared to forward contracting, also crucially depend on the ways in which each is regulated. Much of this regulation is by quasi-public or private associations: for example, the transaction costs of OTC contracts are much reduced by the development of standard terms for the main types of contract. The main essential requirement for an organised exchange is sufficient liquidity, which depends on the monopoly given to the exchange by its authorisation and the suppression or control of alternatives, as well as the extent to which it is allowed to attract speculators. This depends on factors facilitating the exploitation of the leverage generated by the system of settlement at the margin (Carlton, 1984), such as the treatment of margin payments in bankruptcy mentioned above. Hence, both the existence of forward trading, and the extent to which it takes the form of futures trading on organised exchanges, *are the result* of legal and other forms of regulation. This is

evident in the recent debates in the USA about the scope and character of regulation by the Commodity Futures and Trading Commission (CFTC), in which the exchanges have argued for a relaxation of the requirements on them so that they can compete more effectively with the OTC market, while the CFTC is seeking to extend its jurisdiction to cover the latter.

All this is treated as incidental by the Chicago dominated financial economics and law and economics of securities markets which has been the principal source of economic theory supporting financial futures exchanges. This has concentrated on the outcomes which follow if it is assumed that, in effect, trading is costless. Fischer Black has said of his and Myron Scholes' seminal (Black and Scholes, 1973) paper on 'The Pricing of Options and Corporate Liabilities' that it proceeded on the basis of a number of 'unrealistic assumptions' including that 'There are no trading costs for either the stock or the option' (Black, 1989, p. 67). Whilst simplifying assumptions are, of course, necessary for all analysis, this, with respect, is to assume away the whole issue, certainly when it comes to formulating economic and legal policy about futures trading rather than calculating abstract asset pricing formulae (cf. Campbell, 1996a).

In most discussions of futures markets there is no real discussion of the necessity, conditions of existence, or desirability of the organised futures exchange (Veljanovski, 1986, p. 13), on which products can be designed, puts and calls made, bid-ask spreads formed and therefore open interests created. It is obvious that the exchange in this sense is a complicated social institution, and one which is underpinned by dense layers of regulation. Certainly, there is a general, vague appreciation that the existence of the exchange depends on its impact on transaction costs: while it cannot make them disappear, hopefully it can help to minimise them. There is also a general assumption that the costs of the exchange, and hence its existence, are justified by its performing the function of price-discovery more efficiently than do informal markets, since it does so openly and hence transparently, so that information is concentrated. Nevertheless, exchange trading does remain subject to transaction costs of obtaining and communicating the relevant information. It is our principal aim here to show that, though the questions whether those costs exceed the benefits of the marginal information or marginal superiority in risk allocation that trading confers, and whether these benefits might be more cheaply obtained by a means other than trading, do not flow from the assumptions of financial economics, they are essential to economic and legal policy formation in real world situations.

### **Welfare Criteria for the Justification of Futures Trading**

When the transaction costs of futures markets are taken into account, it becomes clear that optimal economic and legal policy must be to encourage trading in futures products *only when* the costs of trading are substantially smaller than the enhancement of welfare which follows from the supply of superior pricing information or the more perfect allocation of risk carried out through that trading. Anyone who has actually observed the hurly-burly of an active open-outcry trading floor would at least wish to investigate whether these social conditions really are conducive to more efficient price formation by better-informed participants. In the case of commodity futures which are serving the function of inventory management, a check is provided by the existence of alternatives such as physical storage. The costs of securing an inventory through futures trading cannot exceed the costs of physical storage (or the development of closer approximations to just-in-time production, or the vertical integration of supply, etc.) without creating a pressure to cease trading. Of course, as the major commodity trading

scandals perfectly well show, this pressure arguably may be insufficient to close down unjustifiable trading before major losses have been incurred. But financial futures products are actively traded which manifestly are remote from any justification based on the feasibility conditions of commodity management.

We are unaware of any general theory of financial futures which would allow one to anticipate that there is a necessary connection between the creation of a new financial future, or the growth of liquidity in that future, and the optimisation of welfare (Stein, 1981; 1987). Of course, this correlation is necessarily provided if one assumes that each futures product represents a welfare optimising approximation to a complete set of contingent markets. But this is just what the appreciation of the transaction costs of those markets makes it impossible to assume. Instead, one should recognise that *ceteris paribus* the incomes of dealers (and many of their superiors in the corporate organisations which back the dealing) are dependent on high volumes of trading (Partnoy, 1997), and that they therefore have a vested interest in promoting trading volumes that themselves increase volatility, that calls forth a higher volume of trading to manage the risk created by the volatility, that calls forth a higher volume of dealing, and so on.

Nevertheless, at present it is as if public policy proceeds on precisely the assumption that all growth in liquidity enhances welfare. By delegating extremely extensive powers of self-regulation to organisations dominated by various kinds of financial intermediary, national states have allowed those groups largely to determine what futures products will be traded and how. Those states' regulatory authorities have nevertheless participated fully in creating the institutional system in which the present volume of global financial futures trading can take place. What is more, they have effectively acted as guarantors or lenders of last resort to rescue exchanges or important market participants from the consequences of speculation, no matter how dubiously conducted.

This was seen very clearly in Hong Kong in 1987, when the manifestly unsatisfactory stock exchange had to be completely closed and then resuscitated by what is now the Monetary Affairs Branch of the Hong Kong Government (Securities Review Committee, 1988). More recently, the New York Federal Reserve Bank orchestrated a rescue of the misleadingly-named arbitrage hedge fund Long Term Capital Management (LTCM) in September 1998, on the grounds that its failure could have had such serious repercussions on other market participants as to threaten the economies of major nations, including the USA (Greenspan, 1998, p. 1). This rescue has two possible, and equally disturbing, implications (Hu, 1998). It may be that the Fed, the world's key financial watchdog, erred in helping to shield the world's most sophisticated financial market participants from the consequences of their activities in the markets they themselves had created. These included not only LTCM itself and its Nobel laureate advisers and financial rocket-scientists, but also the investment banks which knowingly advanced loans enabling LTCM to leverage some \$5bn of equity into over \$125bn of assets, but off-balance-sheet positions in derivatives valued at over \$1trillion (Treanor and Tran, 1998; BCBS, 1999; Dowd, 1999). Alternatively, a potentially deadly threat was created for the world's economy by activities the claimed justification for which is that they help manage risk and smooth out turbulence! What is more, in justifying the action, Federal Reserve Chairman Alan Greenspan stated that such defaults are inevitable in 'dynamic markets', although the systemic threat posed by the collapse of LTCM was apparently exceptional (Greenspan, 1998).

This major shift in the basic conduct of economic activity has occurred with a

minimum of public scrutiny or control. It is, of course, entirely arguable that financial engineering is better done privately, but one must not be too coarse in what one understands by this. Practicable policy choice is not between private and public financial governance structures, but has to be concerned with the appropriate regulatory mix. This choice cannot properly be made if the social conditions underlying the transaction costs of futures exchanges are ignored, and therefore private futures dealing as such regarded as an approximation to general competitive equilibrium. At the moment, in the name of market freedom, the broad thrust of regulatory policy is to endorse the development and trading of new financial products with scant attention to whether these products can enhance welfare or whether that trading can be monitored. In essence, institutions have been allowed to develop which place extremely substantial values at risk, without any detailed inquiry into whether those institutions work acceptably and whether it was welfare enhancing to run that risk. The argument that it is necessary to manage value at risk by financial futures can properly be conducted only if it is allowed that, in an important sense, futures trading itself places the value at risk.

However, it would appear that just the wrong attitude is being taken to many financial futures products, as trading in those products is not fully appreciated to be fundamentally a cost. One may suspect that many financial so-called intermediaries are pursuing futures trading as a good in itself because it is taken to be a source of profits to the successful speculator. For particular individuals enjoying annual salaries and bonuses so huge as to constitute above average lifetime incomes, and for firms within specified accounting horizons, this can indeed be so. But, though driven by the pursuit of 'profit', from the point of view of the system as a whole, these activities are costs, and it is perverse to seek their increase as an end in itself. Any economic justification for a futures product, or trading rules, in other than mere tautological terms (that liquidity is sufficient proof of demand for the product), must lie in establishing a justifiable function in relation to the handling of information and the allocation of risk.

It is by no means clear that this can be said to be the case for all financial futures products. It surely is necessary publicly to determine whether all of these markets are economically and socially justifiable, if only because the costs of running financial futures exchanges, including instances of outright waste caused by trading in some of these products, now clearly run into billions of dollars per annum, though, of course, in the absence of the relevant statistics, one can only guess about this. More seriously, given the very great potential threats to the world economy created by financial instability, it should be of the greatest concern to establish the extent to which these institutions contribute to, rather than helping to control, financial volatility. What must be concluded about this is that, working with assumptions of futures markets as contributing to general competitive equilibrium, barely any work has been done on this. One is obliged to pass an entirely unfavourable comment on legal and economic policy based on such inadequate foundations. It is therefore as well to conclude with some indication of what should be done (cf. US Congress GAO, 1994).

### **Conclusion: some policy questions**

Given that economic goods should, so far as possible, be allocated through markets, commodity futures exchanges must be acknowledged to have a welfare enhancing function in the creation of contingent commodity markets. Nevertheless, it seems that global financial trading raises the following questions which should underpin regulatory policy towards that trading:

1. Do all arrangements for trading financial futures and derivatives have a similar

- welfare enhancing function to commodity futures exchanges?
2. If the answer to 1 is no, can disfunctional be distinguished from functional trading?
  3. If the answer to 2 is yes, can disfunctional trading be curtailed or ended?
  4. If the answer to 2 is yes, can functional trading be replaced by alternative procedures which more efficiently perform the same functions?
  5. If the answer to 4 is no, can these trading arrangements be constituted in such a way that the transaction costs of dealing through them are reduced?
  6. If the answer to 5 is yes, what is the optimal regulatory mix for the governance of such trading?

The contribution that we hope this paper can make to answering these questions is this. Debate over the proper constitution of financial futures exchanges typically is locked into an opposition between restrictive state regulation and market freedom, including the freedom to self-regulate. It is our belief that this opposition is unhelpful. The possibility of market freedom arises only after the state has established or underpinned the establishment of the institutions constitutive of that market. This inevitably is a process which has two aspects, for being free to choose implies the rejection of the alternatives not chosen, and so freedom (to choose certain alternatives) is at the same time coercion (by exclusion of others). The point is to optimise the balance.

In the currently dominant understanding of economic and financial policy towards financial futures exchanges, this point typically is not grasped. It is not grasped because that understanding is dominated by a conception of exchanges as (approximations) to the fully contingent markets of general competitive equilibrium. Labouring under this conception, regulatory policy becomes hopelessly one-sided, for it simply becomes a matter of extending deregulation as far as possible, for the market will take up the space left thereby, and this must optimise welfare, because the market is (an approximation to) perfectly efficient.

Once policy debate is itself freed from the conception of financial futures markets as (approximations) to fully contingent markets, that debate can be conducted with an awareness of what surely should not be highly controversial, that such of those markets as have a welfare enhancing function have both positive and negative elements. In particular, the very growth of liquidity which is pursued as an aid to the rational pricing and allocation of risk itself creates volatility in the market which is a source of risk. The down side of this is manifest in the way in which the incomes of traders is highly positively correlated to the creation of risk and crashes. No amount of consideration of the financial economics of futures trading will assist in the determination of policy towards these problems with financial futures exchanges, for those economics are concerned with prices, which are assumed to embody relevant information, and pay no heed to the arrangements for the identification and communication of that information. What, in sum, is missing from present debate about economic and financial policy towards financial futures exchanges is what one would imagine is necessary, were one not to have the benefit of a thorough grounding in financial practice or theory, which is some knowledge of the exchange as an actual empirical social institution.

The constitution of the institutions on which the present volume of financial futures and derivatives trading takes place is not fundamentally a private matter, for it is done or underwritten by the state, but it has been done largely privately. Indeed, it has been done largely secretly. What arguably are the most important economic exchanges now taking place are not subject to public debate in any of the ways which, even now,

one would expect would be the case in respect of other exchanges. Whatever the economic and legal policy which emerges in this way, it is wrong, for it is not procedurally legitimate. The reason it is taken to be legitimate is that, as financial futures exchanges are regarded as (an approximation to) fully contingent markets, it is regarded as unproblematic that economic and legal policy should be dedicated to their encouragement. And indeed, there can be nothing controversial about the encouragement of perfect efficiency. But when this laughable fantasy is rejected as a plausible policy goal, then choice between determinate imperfect alternatives is essential. Do we want to establish the price of and allocate financial risk through financial futures trading if it involves paying traders and those connected with them hundreds of millions of dollars, the allocation of vast capital funds to arbitrage rather than to directly productive investment, and the creation of otherwise avoidable risks of dislocation, including business failure and the redundancy of employees, and ultimately a possible systemic risk? Questions such as this must be asked and answered for all particular financial futures and derivatives products if financial futures trading in general is to be regarded as legitimate.

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