

# On the Efficiency of the Financial System

by James Tobin

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The United States, as befits the major capitalist economy of the world, has the largest, most elaborate, most sophisticated financial industry in the world. New York is rivalled only by London, which thanks to long-standing international connections and experience, maintains a financial role disproportionate to Britain's declining position in world trade and production. Moreover, finance is one of America's rapid growth sectors.

Just the other day, the *New York Times* listed forty-six business executives whose 1983 compensation (salary and bonus, exclusive of realizations of previously acquired stock options) exceeded one million dollars. What struck me was that sixteen members of this elite were officers of financial companies.<sup>1</sup> No wonder, then, that finance is the favourite destination of the undergraduates I teach at Yale, and that 40 per cent of 1983 graduates of our School of Organization and Management took jobs in finance.<sup>2</sup> Their starting salaries are four times the poverty threshold for four-person families. All university educators know that finance is engaging a large and growing proportion of the most able young men and women in the country. Later in the lecture I shall present further information on the economic size of our financial industries.

James Tobin is Sterling Professor of Economics at Yale University, and won the Nobel Prize in Economic Science in 1981. The article is a slightly revised version of the Fred Hirsch Memorial Lecture given in New York on 15 May 1984. We express our thanks to the Hirsch Memorial Trust for agreeing to the publication of the lecture in this Review.

<sup>1</sup> *New York Times*, May 2, 1984, p D1. The representation of financial executives would be larger except that a corporation is required to disclose compensation only for its five highest-paid officials. The *Wall Street Journal*, May 21, 1984, p 33, guessed that as many as 15 to 20 officials of Phibro-Salamon, in addition to the five listed, would have been eligible. Furthermore, most Wall Street firms are partnerships or private corporations and do not report. The *Journal* said it was 'a safe bet' that the senior executives or partners of several leading firms belonged on the list, very likely at the top.

<sup>2</sup> Information on job placements from the School's office of Career Planning and Placement; categorization of positions by the author.

Fred Hirsch, gifted economist and social critic, took all institutions, private as well as public, to be fair game for analysis and evaluation. He was not willing to assume on faith or principle that 'markets' work for the best, or to blame distortions solely on government interventions and regulations. Nor did he have illusions that legislatures and bureaucracies work for the best. In the same spirit I decided to use the rostrum which you have given me as Hirsch lecturer to voice some sceptical views of the efficiency of our vast system of financial markets and institutions. These views run against current tides — not only the general enthusiasm for deregulation and unfettered competition but my profession's intellectual admiration for the efficiency of financial markets. Finance theory itself is a burgeoning activity in academia, occupying more and more faculty slots, student credit hours, journal pages, and computer printouts, both in management schools and in economics departments. And as the newspapers have been reporting, finance academics are finding their way to the street.<sup>1</sup>

## Efficiency

Efficiency has several different meanings: first, a market is 'efficient' if it is on average impossible to gain from trading on the basis of generally available public information. In efficient markets only insiders can make money, anyway consistently. Whatever you and I know the market has already 'discounted'. The revealing standard anecdote goes like this: Finance professor is walking on campus with his research assistant, who says, 'Professor, I see a twenty dollar bill on the sidewalk. Should I pick it up?' 'No, of course not, if it were really there, it would already have been picked up.' Efficiency in this meaning I call *information-arbitrage* efficiency.

A second and deeper meaning is the following: a market in a financial asset is efficient if its valuations reflect accurately the future payments to which the asset gives title — to use currently fashionable jargon, if the price of the asset is based on 'rational expectations' of those payments. I call this concept *fundamental-valuation* efficiency.

Third, a system of financial markets is efficient if it enables economic agents to insure for themselves deliveries of goods and services in all future contingencies, either by surrendering some of their own resources now or by contracting to deliver them in

<sup>1</sup> Recent names in the news include William Silber and Fisher Black, who left New York University and Massachusetts Institute of Technology respectively. Many others, who have not made the full leap, serve as consultants. They serve not only during vacations from classes; a day a week free for consulting during terms is standard in business schools.

specified future contingencies. Contracts for specified goods in specified 'states of nature' are called in economic theory Arrow-Debreu contracts. Kenneth Arrow and Gerard Debreu showed rigorously that a complete set of competitive markets of this kind is necessary and, given some other conditions, sufficient to guarantee the existence of an equilibrium with the optimal properties intuitively perceived by Adam Smith and succeeding generations of free market theorists.<sup>1</sup> I call efficiency in this Arrow-Debreu sense *full-insurance* efficiency.

The fourth concept relates more concretely to the economic functions of the financial industries. They do not provide services directly useful to producers or to consumers. That sentence is an overstatement, because some people enjoy gambling per se, and prefer the securities markets to casinos and race tracks. But the resources devoted to financial services are generally justified on other grounds. These include: the pooling of risks and their allocation to those most able and willing to bear them, a generalized insurance function in the Arrow-Debreu spirit just discussed; the facilitation of transactions by providing mechanisms and networks of payments; the mobilization of saving for investments in physical and human capital, domestic and foreign, private and public, and the allocation of saving to their more socially productive uses. I call efficiency in these respects *functional* efficiency.

Before discussing the American financial system in terms of those four criteria of efficiency, I want to point out that the services of the system do not come cheap. An immense volume of activity takes place, and considerable resources are devoted to it. Let me remind you of some of the relevant magnitudes.

Item: The Department of Commerce categories Finance and Insurance generate  $4\frac{1}{2}$  - 5 per cent gnp, account for  $5\frac{1}{2}$  per cent of employee compensation, and occupy about 5 per cent of the employed labour force. They account for  $7\frac{1}{2}$  per cent of after-tax corporate profits. About 3 per cent of personal consumption, as measured by the Commerce Department, are financial services. These figures do not include the legal profession. It amounts to about 1 per cent of the economy, and a significant fraction of its business is financial in nature.<sup>2</sup>

Item: The measures just reported do not tell the complete story. They cover only the value added by the labour and capital directly employed. If the inputs of goods and

<sup>1</sup> Their seminal article is 'Existence of an Equilibrium for a Competitive Economy,' *Econometrica*, vol 22, 1954, pp 256-290. See also Debreu, *Theory of Value, An Axiomatic Analysis of Economic Equilibrium*, New York: Wiley, 1959.

<sup>2</sup> Figures from US National Income and Product Accounts Tables, *Survey of Current Business*, US Department of Commerce, July 1983.

services purchased from other industries are included, Finance and Insurance use about 9 per cent of the gnp.<sup>1</sup>

Item: Thirty billion shares of stock, valued at a thousand billion dollars, changed hands in 1983. The turnover was 60 per cent of the outstanding shares. Thus the average holding period is about 19 months. Assuming conservatively that costs are  $1\frac{1}{2}$  per cent of dollar volume, traders paid US\$14 bn. In fact, the expenses and after-tax profits of New York Stock Exchange member firms were in 1982 US\$22 bn,  $3\frac{1}{4}$  per cent of the value of transactions. The securities industry employed 232 000 persons, including 61 000 sales representatives, out of approximately 5 000 sales offices.

The turnover of stocks in the United States is greater than in any other country. The closest competitors are Japan, 35 per cent, Germany, 24 per cent, and Britain, 16 per cent.

Our secondary market in bonds, in contrast to stocks, is very inactive. Annual transactions of US\$7.2 bn on the New York Stock Exchange are less than 1 per cent of the par value or market value of the listed bonds. For another comparison, consider one-family homes. Annual sales, of which one sixth are new homes, amount to  $4\frac{1}{2}$  per cent of the existing stock.<sup>2</sup>

Item: Stocks and bonds are by no means the only instruments traded on organized markets. The pages of the *Wall Street Journal* report markets in options as follows: 4 000 contracts on 475 common stocks varying in date and striking price; 100 contracts on 15 stock indexes; 60 contracts on 5 foreign currencies, 11 contracts on 3 interest rates. There are also some five hundred futures contracts traded, varying as to future date, covering 40 commodities, 5 foreign exchange rates, 10 interest rates or bond prices, and 6 stock indexes. There are even 100 'futures options' contracts. Transactions volumes in all these markets are substantial but difficult to measure in terms comparable to transactions in primary securities.

Item: Our 15 000 commercial banks do business from 60 000 banking offices, one for every 3 800 persons. The operating expenses of commercial banks were US\$61

bn in 1982. Of these US\$10 bn were annualized 'occupancy expenses', US\$170 000 per office.<sup>1</sup> In addition 4 250 savings institutions with 25 750 offices had operating expenses of US\$14 bn.<sup>2</sup>

## Information-arbitrage efficiency

The long-standing judgment of almost all academics in economics and finance is yes, securities markets are efficient in this sense. The first study to indicate this result was by Alfred Cowles, the founder of the Cowles Commission, now the Cowles Foundation at Yale. An investment adviser himself, chastened by the stock market's gyrations from 1928 to 1933, he showed statistically that an investor would have done at least as well choosing stocks at random as following professional advice.<sup>3</sup> His conclusions have been confirmed many times in different ways. As a statistical matter actively managed portfolios, allowance made for transaction costs, do not beat the market. Prices are a random walk in the sense that their correlations with past histories are too weak to be exploited profitably.<sup>4</sup> These findings contradict the claims of 'technical' analysis. They suggest, in general, that the mathematical expectation of return from resources used in active portfolio management is zero for the clients of brokers and investment advisers and for the owners of mutual funds.

Efficiency in information-based arbitrage does not come free. It requires resource inputs from arbitrageurs, specialists, market-makers. Random walking does not, of course, mean that prices are unresponsive to new information. To the contrary, it means that they respond promptly and fully — and conceivably with little or no trading.

## Fundamental-valuation efficiency

This brings me to the second kind of efficiency, the accuracy with which market valuations reflect fundamentals. Efficiency in this sense is by no means implied by the technical efficiency just discussed. There are good reasons to be sceptical.

<sup>1</sup> Figures based on *Federal Reserve Bulletin*, July 1983, Table A.1, p 501.

<sup>2</sup> Figures from '83 *Savings and Loan Sourcebook*, US League of Savings Institutions, and *1982 Fact Book of Savings Banking*, National Association of Mutual Savings Banks.

<sup>3</sup> Alfred Cowles, 'Can Stock Market Forecasters Forecast?', *Econometrica*, vol 1, 1933, pp 309-324. Alfred Cowles and Herbert E Jones, 'Some A Posteriori Probabilities in Stock Market Action,' *Econometrica*, vol 5, 1937, pp 280-294.

<sup>4</sup> Burton G Malkiel, *A Random Walk down Wall Street*, New York; Norton, 1973. John G Cragg and Burton G Malkiel, *Expectations and the Structure of Share prices*, Chicago: University of Chicago Press, 1982. (A National Bureau of Economic Research monograph.)

<sup>1</sup> The 9 per cent assumes the same proportion between direct and indirect expenses on labour and capital as estimated in the 1972 input-output table for the US economy. See 'The Input-Output Structure of the US Economy 1972' and 'Dollar Value Tables for the 1972 Input-Output Study', *Survey of Current Business*, February and April 1979.

<sup>2</sup> Figures derived from statistical reports in *SEC Monthly Review*, US Securities and Exchange Commission, and from *1983 Fact Book*, New York Stock Exchange.

The fundamentals for a stock are the expected future dividends or other payouts, or what amounts in principle to the same thing, the expected future earnings. The stock's value is the present discounted value of either of these streams. Casual observation suggests that the market moves up and down much more than can be justified by changes in rationally formed expectations, or in the rates at which they are discounted. This suspicion has been rigorously verified by my colleague Robert Shiller.<sup>1</sup> Evidently market speculation multiples several fold the underlying fundamental variability of dividends and earnings.

Shiller has also demonstrated the analogous empirical proposition for the bond market.<sup>2</sup> The yield of a long-term bond is in principle a kind of average of the short-term interest rates expected to prevail in sequence from now to the bond's maturity. Bond prices fluctuate much more than the variability of short rates can justify. Stephen Golub and others have shown that foreign exchange rates are excessively volatile relative to fluctuations in trade balances.<sup>3</sup>

Equity prices have been a puzzle for the last decade, falling well below the replacement value of the underlying capital assets and the present value of the pay-outs those assets could be expected to earn.<sup>4</sup> Among the hypotheses advanced was one by Modigliani and Cohn, that the market was not allowing for inflation in the streams of earnings and dividends but was discounting real streams by interest rates containing substantial premiums for expected inflation.<sup>5</sup> The authors made a convincing statistical argument for such irrational downward bias, and corroborated it by quotations from professional market advisers displaying the misunderstanding. The Modigliani-Cohn thesis is controversial and is probably not the whole story. Whatever the sources of the chronic undervaluation, it is evidently nothing that arbitrage could or did correct.

Takeover mania, motivated by egregious undervaluations, is testimony to the failure of the market on this fundamental-valuation criterion of efficiency. A takeover mobilizes enough capital to jump the price of the target stock to levels much closer to the fundamental value of the underlying assets, e.g. Gulf's oil reserves. Ordinary

<sup>1</sup> Robert J Shiller, 'Do Stock Prices Move Too Much to be Justified by Subsequent Changes in Dividends?', *American Economic Review*, vol 71, 1981, pp 421-436.

<sup>2</sup> Robert J Shiller, 'The Volatility of Long-Term Interest Rates and Expectations Models of the Term Structure', *Journal of Political Economy*, vol 87, 1979, pp 1190-1219.

<sup>3</sup> Stephen S Golub, 'Exchange Rate Variability: Is It Excessive', Chapter 4 of unpublished Ph. D dissertation, *International Financial Markets, Oil Prices, and Exchange Rates*, Yale University, 1983.

<sup>4</sup> William C Brainard, J B Shoven, and L Weiss, 'The Financial Valuation of the Return to Capital', *Brookings Papers on Economic Activity*, 1980:2, pp 453-502.

<sup>5</sup> Franco Modigliani and R Cohn, 'Inflation, Rational Valuation and the Market', *Journal of Business, University of Chicago* vol 35, pp 24-44.

investors might have detected the same undervaluations, but could not expect to profit from them unless and until other ordinary investors agreed — or a takeover materialized. Takeovers serve a useful function if they bring prices closer to fundamental values. But the fact that markets fail to do so on their own is a serious indictment of their efficiency.

J M Keynes likened the stock market — and he referred particularly to the American market — 'to those newspaper competitions in which the competitors have to pick out the six prettiest faces from a hundred photographs, the prize being awarded to the competitor whose choice most nearly corresponds to the average preferences of the competitors as a whole; so that each competitor has to pick, not those faces which he himself finds prettiest, but those which he thinks likeliest to catch the fancy of the other competitors, all of whom are looking at the problem from the same point of view . . . (We) have reached the third degree where we devote our intelligences to anticipating what average opinion expects the average opinion to be. And there are some, I believe, who practice the fourth, fifth, and higher degrees.'<sup>1</sup>

Speculations on the speculations of other speculators who are doing the same thing — those are 'bubbles'. They dominate, of course, the pricing of assets with negligible fundamentals, zero or vague or nontransferable returns in consumption or production. Gold and collectibles, for example, derive value almost wholly from guesses about the opinions of future speculators. But bubbles are also, as Keynes observed, phenomena of markets for equities, long-term bonds, foreign exchange, commodity futures, and real estate.

Keynes, himself an active and experienced market participant, despaired of 'investment based on genuine long-term expectation'. 'There is no clear evidence from experience,' he said, 'that the investment policy which is socially advantageous coincides with that which is most profitable.' He noted that professionals who bet on long-term fundamentals, while everyone else is engaged in short-term attempts 'to guess better than the crowd how the crowd will behave', run greater risks. Not least of these is criticism for unconventional and rash investment behaviour. Keynes's views would be confirmed today if he observed how professional portfolio managers seek safety from criticism in short run performances that match their competitors and market indices.

<sup>1</sup> This and the quotations and paraphrases that follow come from Keynes's *General Theory of Employment, Interest, and Money*, New York: Harcourt Brace, 1936, pp 156-160. The whole of his Chapter 12, 'The State of Long-term Expectation' deserves reading and re-reading by anyone interested in these subjects.

Keynes's pessimism on the long-term rationality of securities markets led him to the view that the liquidity these markets provide is a mixed blessing. 'The spectacle . . . has sometimes moved me towards the conclusion that to make the purchase of an investment permanent and indissoluble, like marriage, (sic!), except by reason of death or other grave cause, might be a useful remedy . . .' But he concluded that illiquidity would be the worse evil, because it would push savers towards hoarding of money. Today that disadvantage seems less serious than when Keynes was writing, during the Great Depression. Anyway, he advocated as a halfway measure a 'substantial . . . transfer tax . . ., with a view of mitigating the predominance of speculation over enterprise in the United States'. For similar reasons, I have advocated an international transfer tax on transactions across currencies.<sup>1</sup>

### Full-insurance efficiency

My third concept is drawn from the purest of economic theory. Arrow and Debreu imagined a complete system of markets in which commodities are defined not only by their physical characteristics but also by the dates and contingencies — 'states of nature' — at which they are to be exchanged. Such a market, for example, would enable me to contract now for an umbrella on the day of the Harvard-Yale football game in 1990 if it is raining that day and if a Republican is in the White House. In exchange, I could sell a promise to give an economics lecture in New York City in 1994 if I am still in good health and the unemployment rate exceeds 8 per cent. Prices set in such markets would clear supplies and demands in advance for all such commodities, with each participant constrained by his or her budget to promise no more than he or she can deliver. Arrow and Debreu showed that this system would realize the claims for the economy-wide efficiency and optimality of competitive markets.

It can be shown further that securities and insurance markets can mimic the Arrow-Debreu system, provided that the menu of available securities 'spans' the space of 'states of nature'.<sup>2</sup> That is, there must be as many different independent securities as there are states of nature. I could get my umbrella with the proceeds of a security that would pay off in the medium of exchange under the specified contingencies at the time of the 1990 Harvard-Yale football game. At a price, I would be insured against those risks.

<sup>1</sup> James Tobin, 'A Proposal for International Monetary Reform', *Eastern Economic Journal*, vol 4, 1978, pp 153-159. Reprinted in *Essays in Economics: 3, Theory and Policy*, Chapter 20.

<sup>2</sup> Roy Radner, 'Competitive Equilibrium under Uncertainty', *Econometrica*, vol 36, 1968, pp 31-58.

Our actual institutions fall far short of the Arrow-Debreu vision. There are good reasons. Markets require resources to operate; given their costs, it would be inefficient to have a complete set. Many of them would in any case be too thin to be competitive. 'States of nature' are difficult to define and observe. Lawyers and judges would be even busier than they are already on disputes over whether contingencies specified in contracts have occurred. Many relevant contingencies are not independent of the actions of the parties; as insurance carriers know, 'moral hazard' is a real problem.

Nevertheless the Arrow-Debreu ideal provides a useful way to look at our actual institutions and markets. The system does some things very well, e.g. life and disability insurance, even health insurance. It enables individuals and families to trade earnings in their productive years for consumption in retirement and old age. Futures markets allow businesses and farmers to hedge against events that might alter spot prices of commodities they will be buying or selling. Capital markets enable fundamental risks of business enterprise to be taken by the adventurous, while risk-aversers content with lower average returns are protected from many possible sources of loss.

Our financial system allows individuals and households considerable facilities to shift the time pattern of their spending and consumption to accord with their needs and preferences, rather than slavishly conforming to the time profile of their earnings. But it could do better.

For example, the long-term level payment mortgage was a great invention. But mortgage instruments with payments that conform more closely to typical earnings profiles and are flexible in maturity would be helpful to young families, especially in inflationary times. Likewise, older households whose equity in homes is the major part of net worth do not find it easy to consume such wealth while retaining occupancy and ownership. It should not be difficult to devise instruments which would meet their needs. Consumer credit also permits households to advance consumption in time and age, though at what seem exorbitant interest rates. Borrowing against future earnings, against human capital, is much more difficult than against negotiable financial or physical assets. Educational loans would not be generally available without government guarantees and subsidies. They could be longer in term, and lengths and even amounts of repayment could be contingent on the debtors' actual earnings.

The obvious major contingency which our system leaves uncovered is inflation. Twenty-five years ago we thought equities, which are after all titles to real capital goods and real returns earned by their use, were good hedges against inflation. Sub-

sequent experience turned out otherwise, partly because inflation hit us from unexpected sources like Opec, partly because policies to stem inflation lower profits and raise interest rates. Short-term nominal interest rates are better correlated with inflation; consequently variable interest instruments provide rough protection to both debtors and creditors. But the correlation is imperfect. It is not clear why private financial institutions cannot take the next step and develop price-indexed instruments for both savers and borrowers. Those institutions are better placed than the general public to assume the risks of deviations of interest rates from inflation rates. Of course, if the federal government were to issue indexed bonds — Her Majesty's Government has done so — it would be easy for financial intermediaries to offer indexed assets tailored in maturities and denominations to the needs of small savers.

The development of indexed financial instruments, with or without government initiative, would be facilitated by the construction of a price index more appropriate than the present consumer price index. This would exclude the effects of changes in the country's external terms of trade, from shocks to prices of oil or other imports and from movements in the foreign exchange value of the dollar. It would also exclude changes in indirect taxes. These cpi movements are essentially uninsurable for the nation as a whole. An index purged of them is preferable for wage contracts and social insurance benefits as well as for new financial instruments.

New financial markets and instruments have proliferated over the last decade, and it might be thought that the enlarged menu now spans more states of nature and moves us closer to the Arrow-Debreu ideal. Not much closer, I am afraid. The new options and futures contracts do not stretch very far into the future. They serve mainly to allow greater leverage to short-term speculators and arbitrageurs, and to limit losses in one direction or the other. Collectively they contain considerable redundancy. Every financial market absorbs private resources to operate, and government resources to police. The country cannot afford all the markets that enthusiasts may dream up. In deciding whether to approve proposed contracts for trading, the authorities should consider whether they really fill gaps in the menu and enlarge the opportunities for Arrow-Debreu insurance, not just opportunities for speculation and financial arbitrage.

## Functional efficiency

I turn finally to what I call *functional* efficiency, the services the financial industries perform for the economy as a whole.

Very few securities transactions are sales of new issues. They amounted to only US \$100 bn in 1983, and one third of these were issues of financial businesses themselves.<sup>1</sup> Of the issues of nonfinancial corporations, a large share will have represented refunding and restructuring of debt and equity rather than raising funds for new real investments. Even in recent years of high investment, 1978-79, 86 per cent of aggregate gross capital expenditures by nonfinancial corporations could have been financed by internal funds, retained after-tax earnings and depreciation. Retained earnings were in aggregate sufficient to cover two thirds of investment net of capital consumption charges. In the recent recession, internal funds exceeded capital expenditures.<sup>2</sup>

These overall figures, it is true, understate the role of the capital markets. Some businesses with surpluses of internal funds over investment requirements finance the deficits of others, either directly by purchases of securities or, much more usually, indirectly via financial intermediaries. There are no statistics on the gross amount of this activity. However, suppose half of the new nonfinancial securities issues financed capital expenditures by deficit companies — this seems a conservatively high proportion. Then internal funds would be credited with two-thirds of gross 1978-79 capital expenditures instead of 86 per cent, and only with one-sixth of net capital expenditures instead of two-thirds. The calculations include as external funds bank loans and short-term paper, 68 per cent of the total, twice as much as the funds raised in securities and mortgage markets. They also include, on the investment side, corporate-owned residential structures and inventories.

What is clear is that very little of the work done by the securities industry, as gauged by the volume of market activity, has to do with the financing of real investment in any very direct way. Likewise, those markets have very little to do, in aggregate, with the translation of the saving of households into corporate business investment. That process occurs mainly outside the market, as retention of earnings gradually and irregularly augments the value of equity shares. Capital markets and financial intermediaries assist this process by facilitating transfers from surplus companies to deficit companies.

Financial markets, of course, play a much bigger role in financing public capital investments of state and local governments and government deficits in general.

<sup>1</sup> Figures on new issues from *SEC Monthly Review*.

<sup>2</sup> Figures for 'Sources and Uses of Funds, Nonfarm Nonfinancial Corporate Business', from the Board of Governors of the Federal Reserve System, published *inter alia*, in *Economic Report of the President* 1984, Washington: US Government Printing Office, Table B-87, p 320.

Through the markets government securities find their way into the portfolios of individuals and, more importantly, of financial intermediaries.

The traditional role of commercial banks is to facilitate the circulation of funds among businesses, channelling the temporary seasonal and short-run surpluses of some businesses to those businesses with temporary deficits. This circulation is closely connected with the diverse rhythms of accumulation and decumulation of inventories of finished goods, raw materials, and work in process, and of inter-business accounts receivable and payable. Some of the surpluses show up, almost automatically, in excesses of bank deposits over borrowings from banks, while the deficit companies are drawing down their deposits and using more fully their lines of credit.

Banks' intermediation between businesses is mixed with their borrowing from and lending to other types of economic agents — households, governments, and foreigners. As banking has become increasingly generalized, the word 'commercial' has become less appropriate. Likewise, other financial firms and institutions, new credit markets, and even nonfinancial companies have invaded both sides of the banks' traditional commercial intermediation business.

I have noted above that there is little net aggregate transfer of household saving into business investment. Indeed most household saving goes into household investments in residences and consumer durable goods. Commercial banks, savings institutions, insurance companies, and pension funds are vehicles for channelling the surpluses of some households to finance the deficits of others. This is done mainly by mortgage lending and by consumer credit. Since houses, in particular, are beyond the capacity of all but a very few families to purchase from current or accumulated savings, intermediation between surplus and deficit households is a great service to the economy.

A by-product of traditional commercial banking was the provision of a payments mechanism; checkable demand deposits became the predominant means of payment in modern economies. This function, too, is now increasingly shared with other financial institutions and businesses. The link between commercial banking, supplying money, and operating a payments mechanism was more a historical evolution than a planned design. It is logically possible to think of different arrangements, ranging from on the one side a public monopoly in the provision of this public good to complete deregulation and *laissez faire* at the other extreme. We seem likely to stay in the middle of the spectrum, moving in the direction of deregulation.

Total debits to deposit accounts — check clearings, wire transfers, etc. — amount to

more than 100 trillion dollars a year. A dollar of demand deposits turns over an average of once a day. The bank-operated payments mechanism does a lot of work. From the fact that more than 40 per cent of national clearings are in New York City alone we may infer that more than half of check payments are for the financial transactions described above — the flip side of them, so to speak. Transactions directly connected with the flow of goods and services probably amount to no more than a quarter of aggregate debits.<sup>1</sup>

Our financial intermediaries are decentralized and competitive. But they hardly fit the textbook model of pure competition, where firms too small to affect prices compete in supplying homogeneous products. The applicable model is that provided fifty years ago by Edward Chamberlin, monopolistic competition.<sup>2</sup> Like Chamberlin's firms, banks and other financial intermediaries actively seek the custom of depositors and borrowers by trying to differentiate their products as well as by offering attractive interest rates and terms. Product differentiation takes many forms, among them locational convenience, comfortable premises, personal attention, packaging, and advertising.

Symptoms of monopolistic competition are readily apparent. Like gas stations clustered on the same intersections, competing banking offices are adjacent to each other. Like the products of those gas stations, the financial services differ only trivially. To persuade us of the contrary, monopolistically competing firms resort to a great deal of advertising. In 1981, banks and savings institutions spent US\$158 mn on local TV advertising. Financial advertising in newspapers of 64 cities amounted to US\$387 mn, 5½ per cent of advertising other than classified.<sup>3</sup> Another symptom is the prevalence of conventional pricing based on the leadership of large firms in the industry — the prime rate is an obvious case in point.

Many optimistic advocates of financial deregulation attributed the 'wastes of monopolistic competition' — Chamberlin's phrase — to the legal ceilings on deposit interest rates. They correctly observed that banks and other intermediaries were led to fill the profitable gap between lending rates and those ceilings by advertising and non-price competition. They predicted that abolition of the ceilings would eliminate wasteful forms of competition. I doubt that, because the system remains monopolistically competitive even without the regulation of deposit interest and

<sup>1</sup> Statistics of Bank Debits and Deposit Turnover are published monthly in the *Federal Reserve Bulletin*, Table 1. 20.

<sup>2</sup> Edward Chamberlin, *The Theory of Monopolistic Competition*, Cambridge: Harvard University Press, 1933.

<sup>3</sup> *Statistical Abstract of the United States* 1982-83, Tables 966-968, pp 567-8.

because deregulation itself vastly enlarges the opportunities for production differentiation. One by-product of the regulations was to standardize the deposit instruments banks could offer. Since proliferation of non-standardized products is costly, beyond a certain point it is not necessarily a service to the consuming public.

In other countries, where branching and merging of banks and other financial enterprises are not restricted, the industry is highly concentrated. We are probably moving inexorably in this direction. The number of distinct firms, though not the number of offices, will shrink drastically. Competition will be oligopolistic rivalry rather than Chamberlinian monopolistic competition. There will be some economies of scale in the operations of the payments mechanisms, and some improvements in the management of small banks which have comfortably enjoyed local monopolies sheltered by anti-branching laws. But there will be some losses too. The local commercial banker knew his community; at his best, he was a good judge of personal and business risks. Branches of large nationwide lenders following bureaucratic rules are all too likely to deny credit to small new entrepreneurs while their national headquarters take immense billion-dollar risks with foreign countries and big time operators.

## Conclusions

Any appraisal of the efficiency of our financial system must reach an equivocal and uncertain verdict. In many respects, as I have tried to indicate, the system serves us as individuals and as a society very well indeed. As I have also tried to say, however, it does not merit complacency and self-congratulation either in the industry itself or in the academic professions of economics and finance. Nor are its shortcomings entirely attributable to government regulations and likely to disappear as deregulation proceeds apace. Here as elsewhere many regulations have been counterproductive. But the process of deregulation should be viewed neither as a routine application of free market philosophy nor as a treaty among conflicting sectoral interests. Rather it should be guided by sober pragmatic consideration of what we can reasonably expect the financial system to achieve and at what social cost. My lecture today presents some of the problems, but I regret I have no sovereign solution to propose.

I confess to an uneasy Physiocratic suspicion, perhaps unbecoming in an academic, that we are throwing more and more of our resources, including the cream of our youth, into financial activities remote from the production of goods and services, into activities that generate high private rewards disproportionate to their social productivity. I suspect that the immense power of the computer is being harnessed to

this 'paper economy', not to do the same transactions more economically but to balloon the quantity and variety of financial exchanges. For this reason perhaps, high technology has so far yielded disappointing results in economy-wide productivity. I fear that, as Keynes saw even in his day, the advantages of the liquidity and negotiability of financial instruments come at the cost of facilitating nth-degree speculation which is short-sighted and inefficient.

The casino aspect of our financial markets was the subject of a thoughtful and devastating article on commodity futures markets by John Train in the *New York Times* Sunday May 12th. The author, himself in the investment business, pointed out that speculation in these contracts was a negative-sum game for the general public, thanks to the large 'win' of the brokers, estimated at several billions of dollars annually. Only five per cent of the contracts exchanged entail actual deliveries of the commodities. Mr Train berated brokerage houses for misleading amateur clients into this particular casino.

The case points out the general dilemma. Commodity futures contracts serve a significant Arrow-Debreu function for traders with business interests in the commodity; and since hedging will seldom balance supply and demand, some risk-takers, speculators, are needed in the market too. But Arrow and Debreu did not have continuous sequential trading in mind; when that occurs, as Keynes noted, it attracts short-horizon speculators and middlemen, and distorts or dilutes the influence of fundamentals on prices. I suspect that Keynes was right to suggest that we should provide greater deterrents to transient holdings of financial instruments and larger rewards for long-term investors.