Commercial banks, the central bank,
and endogenous money

Arne Heise\(^1\) criticizes previous attempts to model banking behavior and presents the outline of an alternative approach which he believes is consistent with a Keynesian approach. His critique includes an analysis of the Post Keynesian approach (dubbed “neo-Banking”) of which Moore, Rousseas, and I are chosen as representatives. While I find some of his “positive” contributions appealing, much of his critical contribution displays a misunderstanding of what I take to be the Post Keynesian approach. However, rather than counter Heise point by point, I will summarize the Post Keynesian endogenous money alternative in nine points. Because of space constraints, my comments can only outline Post Keynesian views on the nature of financial “intermediation,” central banking, and endogenous money. However, I will use footnotes where appropriate to refer readers to detailed treatments.

Before proceeding, I want to make it absolutely clear that I, like John Hicks, “am a convinced liquidity preference man, but I do covet some freedom of choice about the way (or ways) the doctrine shall be expressed” (Keynes, 1973, p. 83).\(^2\) I will take my liquidity preference with a dose of endogenous money. I am not, nor have I ever been, a “Horizontalist.” The Horizontalist position is an extreme endogenous money approach accepted by Moore and, perhaps, by Kaldor.

1. The endogenous–exogenous dichotomy

In much of the literature, and in Heise’s comments, the endogeneity–exogeneity dichotomy is not made clear.\(^3\) This dichotomy may be used

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\(^1\) Arne Heise, “Commercial Banks in Macroeconomic Theory,” this issue.

\(^2\) My apologies to Kregel, from whom I took this quote (see Kregel, 1988).

\(^3\) For discussions of this dichotomy, see Cooley and LeRoy (1981), Desai (1989), Moore (1988), and Wray (1990).
in any of three different senses. First, a variable is exogenous in the control sense if government policy is the primary determinant of its value. In orthodox models, the money supply is normally taken as exogenously controllable, while in Moore's Horizontalist approach, the interest rate is exogenous in the control sense. On the other hand, a variable is exogenous in the theoretical sense only if its value is determined independently of endogenous variables of the model. Even in the case of an exogenously controllable money supply, theoretical exogeneity would depend on the rule used to set money targets. If the central bank chooses its targets based on the values of endogenous variables (spending, unemployment, inflation, interest rates), the money supply is weakly endogenous in the theoretical sense. Only if the central bank were to ignore all endogenous variables would an exogenously controllable money supply also be theoretically exogenous. Finally, exogeneity in the statistical sense refers to independence of error terms of estimated equations from unobserved explanatory variables. In the case of money, it is extremely unlikely that the conditions required for statistical exogeneity could be met since central bank reaction functions almost certainly contain variables correlated with error terms of money demand equations. This means that money demand cannot be identified so that estimated parameters are biased. In conclusion, exogeneity in the theoretical and statistical senses is unlikely to hold in any approach or in the real world, even if the central bank can exogenously determine the quantity of money. The term as used by most authors must refer to exogeneity only in the control sense.

2. Reverse causation

Ignoring for a moment exogeneity in the control sense, even if orthodox economists and Post Keynesians agree that the money supply must be theoretically and statistically endogenous, however, they do not agree on the nature of this endogeneity. According to the orthodox story, an increase of bank reserves allows the money supply to expand, which increases spending (either directly or indirectly through interest rate effects) until money demand rises to equality with the quantity of money. In contrast, the Post Keynesian approach advocates "reverse causation": desired spending rises, which requires finance; if financial institutions accommodate this demand for finance, the money supply increases as spending arises (Davidson, 1972; Moore, 1988; Wray, 1988, 1990, 1991a). Post Keynesians insist that economic growth requires not deficit spending, which can only be financed by credit creation (Terzi, 1986–87). In the presence of reserve requirements, banks must then economize on reserves or expand reserves. As Davidson (1989) and Moore (1989) correctly argue, the reverse causation argument does not mean that spending must increase before the money supply expands. Indeed, it may be virtually impossible to sort out the chronological order of events in the real world, and, given the wide variety of liabilities that function as money, it may be difficult to establish empirically the relations between money and deficit spending. Thus, it may be very difficult to distinguish empirically between the orthodox and Post Keynesian stories.

3. Is the money supply exogenously controllable?

Exogeneity in the control sense emphasizes the ability of the monetary authorities to hit monetary targets through the use of three primary instruments: the discount rate, open market operations, and required reserve ratios. This view was seriously challenged thirty years ago by Tobin's (1971) "New View," which emphasized the discretionary roles played by banks and their customers. Banks can exercise discretion over the quantity of excess reserves held, while customer preferences regarding currency, time deposits, and demand deposits play a role in determining reserve requirements and leakages. Thus, the deposit multiplier may vary. However, Monetarists were able to show that the deposit multiplier was

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5 Exogeneity is also used as a normative statement concerning proper monetary policy. Thus, Friedman advocates a constant growth rate path to be followed by the central bank—making the money supply exogenous in both the control and the theoretical senses. However, Friedman must admit that the money supply has been statistically exogenous in the past precisely because the central bank does not follow his policy rule.

6 In orthodox theory, money demand is a function of interest rates and income. When the money supply is increased, equilibrium is restored as income and interest rates adjust.

7 Furthermore, money is created not only to finance spending, but also to finance purchases of financial assets and other things that do not show up in GNP (drugs, masterpieces). This means that the rate of growth of the money supply may not be closely related to the rate of growth of GNP when speculation is occurring in, for example, financial markets. The explosive rate of growth of the money supply in the early to mid-1980s is partially explained by speculation. As an example, it was not uncommon for Texas thrifts and banks to grow at a rate approaching one thousand percent per year as they financed speculation in "fur-bearing trout farms" and the like. See Mayer (1990) and O'Rourke (1989).
empirically fairly constant, reducing the New View to a theoretical anomaly (Brunner, 1968). Post Keynesians revived the attack by emphasizing that a constant multiplier would also be consistent with accommodating central bank behavior, or with financial innovations that continually expand those types of assets that function as money. Furthermore, emphasis was given to a variety of techniques that could be used by financial institutions to economize on reserves. Finally, as will be discussed below, it was argued that central bank attempts to constrain reserve growth tightly in order to hit targets would conflict with the most important function of the central bank, which is to act as a lender of last resort. Thus, Post Keynesians reject exogeneity in the control sense. As the relations between narrowly defined money and reserves (and between M1 and spending) broke down in the 1970s and 1980s, and as the Federal Reserve Bank (Fed) proved embarrassingly poor at hitting its targets, the Post Keynesian position seemed to be verified (Friedman, 1988). Many Monetarists have since abandoned the belief that the central bank can hit targets, and at least some of them have denied that they ever believed that the money supply is exogenously controllable. I expect that monetary targets will soon join the Laffer Curve in the trash heap of discarded hoaxes—orthodox economists are now turning to inflation targets for monetary policy.

4. Definitions of money, liquidity, liquidity preference, and money demand

Even if we all accept that the money supply is endogenous in the control, theoretical, and statistical senses, there is still plenty of room for disagreement. Much of Heise’s disagreement with the Post Keynesian approach to endogenous money has to do with differences of definition. First, he apparently defines money so that it is equivalent to high-powered money. Second, high-powered money is also equivalent to liquidity in his terminology. Third, liquidity preference is identified with money demand, which is always a demand for high-powered money. Of course, one may define terms in any manner that proves useful. Unfortunately, Heise’s definitions not only prove to be cumbersome, they lead him to several incorrect conclusions. In contrast, the usual Post Keynesian definitions help to clarify important theoretical relations. Money is defined as a debt issued primarily to transfer purchasing power from the future to the present (Minsky, 1986; Wray, 1989, 1990) Thus, money can be created by private agents to finance deficit spending. Liquidity is a characteristic of assets, and the most liquid assets are counted as money, of which high-powered money is the most liquid type. The types of assets that should be included as money change over time as innovations generate new assets and sometimes displace others. Liquidity preference is the preference for liquid assets, which can be characterized as something akin to a stock demand. On the other hand, it is useful to characterize money demand as a flow demand for finance. In a modern capitalist economy, money demand is satisfied primarily by an expansion of bank liabilities. The liquidity preference of the nonbank public can be satisfied by the stock of bank liabilities, while the liquidity preference of banks can be satisfied by high-powered money. Thus, there is a hierarchical arrangement such that the (law-

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8 Even if the deposit multiplier for narrowly defined money were constant, this would be irrelevant if innovations had generated a wide variety of types of money that were commonly used, but that fell outside the control of the central bank. Furthermore, such innovations could be endogenously induced by central bank attempts to control narrow money.

9 Fazzari and Minsky (1986) examine the Fed’s attempt to target the rate of growth of reserves and the money supply in the early 1980s. As the financial system was brought to the verge of crisis, however, the Fed abandoned its targets and put on its “lender of last resort hat,” providing reserves as necessary to prevent default on liabilities by the banking system.

10 See Thornton (1988). In a lecture before the Denver Association of Business Economists (1989), Thornton was even more explicit in his denial that he (and many other Monetarists) had ever accepted exogeneity in the control sense. He argued that since those assets that count as money continually change over time, it is impossible to specify a monetary target that would be correlated consistently with spending or prices. Thus, he advocated “tight money policy,” which is defined as the tightest policy required to achieve zero inflation.

11 For a detailed discussion of the types of assets that should be included in a definition of money, see Wray (1990, pp. 13-16). Money should be broadly defined to include all debts that transfer purchasing power from the future to the present. Only certain forms of money function as media of exchange or as means of payment. For example, the use of a credit card transfers purchasing power across time (and, thus, is to be included as money) and reduces the need for bank liabilities since only the final settlement at the end of the month (when the net credit card debt is retired) requires use of a bank liability as a means of payment.

12 Furthermore, those assets that function as money in a boom may lose their monetary attributes in a depression (Wray, 1990).

13 For reasons to be discussed below, liquidity preference has more to do with a given size of balance sheet, while money demand has to do with growth of the balance sheet.

14 Banks have a variety of options for satisfying their preference for liquid positions.
abiding) nonbank public has little need for high-powered money in modern capitalist economies.

5. Money demand versus liquidity preference

The distinction between money demand and liquidity preference is useful for analyzing bank behavior. When planned spending rises, the nonbank public issues debt to finance spending. Banks purchase this debt by issuing those liabilities that can be used to finance spending, that is, media of exchange. The debt issued by the nonbank public allows it to “spend now, pay later” by promising to deliver “money” (the unit of account) later. The “money” to be delivered will almost always take the form of bank liabilities, functioning as the means of payment. Thus, the liabilities issued by banks satisfy three of the functions of money: they act as a unit of account, as a medium of exchange, and as a means of payment. Clearly, money demand and privately supplied money cannot be independent, nor can the supply of any privately issued financial asset be independent of demand. While a supplier might incorrectly gauge prospective demand for widgets so that they are produced for inventory, this independence is not possible for financial assets: anyone can write IOUs, but these cannot become assets unless they are accepted. The Post Keynesian position is merely that when money demand rises, which is represented by the creation of nonbank debt, this is met by an increase

They have developed “liability management” so they may issue liabilities and capture reserves in wholesale and retail markets; they have developed off-balance sheet contingent commitments so they may obtain reserves as needed through the issue of liabilities or the sale of assets; they develop other correspondent relations with financial institutions (other banks, insurance companies, holding companies, bond houses); they take positions in assets that have a high probability of generating income flows over the short term; they hold assets with good secondary markets; they take positions in foreign currency and interest rate swaps, options, and futures (in an attempt to hedge positions and/or shift risk); and, if all else fails, they turn to the central bank for reserves.

15 Significantly, Moore does not distinguish between money demand and liquidity preference. In his approach, money demand is a demand for hoards. In the case of commodity money, hoarding is seen as antisocial behavior, while in a credit money economy, hoarding of bank liabilities is “convenience lending” to the banking system. On the other hand, the demand for finance of planned spending is identified as a demand for credit (Moore, 1989, p. 483). Because Moore has ignored the liquidity preference of banks and because he dismisses the negative consequences of rising liquidity preference of the public, he has accepted a “Horizonalist” approach in which all credit demand is always met and liquidity preference (or, in his terminology, money demand) plays no significant role.

6. Asymmetrical response of money supply to money demand and liquidity preference

While banks will generally meet rising demand for money, they will not normally expand the money supply when liquidity preference rises. The reasons are simple: rising liquidity preference will be associated with reductions of planned spending, with a shift of public preferences toward the most liquid bank liabilities, and with rising reserve requirements coupled with a reserve drain at the individual bank level. Rising liquidity preference is also associated with falling profit expectations, which is not the sort of environment in which banks are likely to expand their balance sheets. Even if some agents are still willing to borrow (for example, to meet commitments) and some banks are willing to meet this by expanding their balance sheets, these banks will find it increasingly difficult to meet this demand for credit. A bank that expands more quickly than others will lose reserves through the clearing drain, raising

16 As Keynes emphasized, no one would hold money as a store of value unless the future were uncertain (Keynes, 1973, p. 116). Liquidity preference plays no role unless the future is nonergodic. See Davidson (1978).

17 In the aggregate, it is impossible to “liquidate” assets without a debt deflation. Similarly, it is impossible to increase aggregate holdings by attempting to refrain from spending. Thus, rising liquidity preference primarily causes price adjustments rather than quantity adjustments at the aggregate level. See Boulding (1944) and Keynes (1973, p. 217).

18 Mott (1985–86) and Wray (1988, 1999) argue that liquidity preference is inversely related to profit expectations. Kregel (1988) argues that liquidity preference theory and the multiplier theory of effective demand are merely "flip sides of the same coin," which also indicates that liquidity preference and profit expectations should be inversely related.
average costs since reserves will have to be recaptured in expensive wholesale markets or at the discount window (incurring "franked costs") (Dow and Saville, 1988). Thus, banks that try to buck the trend are penalized. In conclusion, rising liquidity preference is met primarily by rising interest rates, rather than by expansion of the money supply.

7. Liquidity preference as a theory of asset prices

Liquidity preference theory is neither a theory of money demand nor merely a theory of the interest rate. Instead, it is a theory of asset prices, or a theory of value, for the whole spectrum of assets, including those on the balance sheets of banks. When liquidity preference rises, asset prices adjust to restore equality among expected returns (the "marginal efficiencies" of each). Prices of the most illiquid assets will fall the most, while prices of liquid assets may not fall (and those of the most liquid assets, such as Treasury bills, might even rise). In summary, falling liquidity preference occurs in conjunction with rising prices of illiquid assets and with rising money demand, and is met by expansion of the money supply as spending rises and physical assets are produced. Asymmetrically, rising liquidity preference is associated with falling money demand and spending (and with reduced output of real assets).

8. Price and quantity constraints

Banks do not fully accommodate the demand for credit—they always use a combination of price and quantity rations in their loan-making activity. Given a degree of liquidity preference, as bank balance sheets expand, perceived lender's and borrower's risk rises so that banks raise retail loan rates of interest. In consequence, the money supply curve is upward sloping with respect to the interest rate. However, innovations and revisions of rules of thumb shift it out to the right. Due to problems of adverse selection and adverse incentive, price rations alone would tend to increase default risk and losses on loans. Furthermore, prices do not serve as a sufficient check on credit demand: a speculative boom will always generate Ponzi schemes because speculators quite naturally believe that they know

23 Rising liquidity preference may cause some neccessary borrowing and generate Ponzi finance schemes in which money demand rises. This might be met by some banks that temporarily buck the trend.

24 Lender's risk is a function of the leverage of equity, reserves, safe assets, and prospective income flows. As a bank increases such leverage ratios, the probability that income flows will fall short of payment commitments increases, as does the probability that losses on assets will exceed bank equity. Similarly, borrower's risk increases as equity and prospective income flows are leveraged. Since most loans are made primarily on the basis of expected income flows of the borrower, rather than on the basis of collateral, bank risk increases as borrower's risk rises. Thus, loan rates of interest should rise as either lender's risk or borrower's risk rises.

25 This discussion follows that of Minsky (1957) and Rousseau (1986). Moore (1989) wrongly assumes that these rightward shifts of the money supply curve must be exogenous. Actually, such shifts are due to endogenously generated innovations as financial institutions continually seek new ways in which to finance the credit demands of customers. Central bank constraints also induce such innovations. Moore also argues that an upward-sloping money supply curve implies that there must be a long-term upward trend of interest rates. Of course, there has been a "ratchet effect" over the past two decades through which interest rates have tended to rise secularly, never to fall to the rates experienced during the early 1970s. This is consistent with an upward-sloping curve with shifts. Presumably this trend will continue until a Minsky-type debt deflation reduces debt load and allows the economy to start again with a "robust" financial system and low interest rates.

26 See Stiglitz and Weiss (1981) for a discussion of adverse selection and adverse incentive. As Dow and Saville (1988) argue, banks are risk-averse and operate in uncertain world in which it is impossible to know what interest rate would adequately compensate for risk. Thus, they use quantitative limits on individual borrowers to reduce exposure, which means that there is always a fringe of unsatisfied borrowers.
better than anyone what the future will bring. 27 Thus, banks use a wide variety of rules of thumb to ration credit: they require collateral; they limit the size of loans to individual borrowers based on borrower equity, market share, leverage of prospective income flows, established relations, and past repayment records; and they try to write contracts with incentives to reduce default. 28 Furthermore, banks use rules of thumb regarding their own leverage ratios to limit exposure of owner equity and protected assets (primary and secondary reserves) to loan loss. For example, a bank might limit loans to any individual borrower to a certain ratio relative to bank equity or protected assets; or, rules of thumb regarding total balance sheet leverage are established. 29 Such behavioral rules are established through supervisory pressure, bank experience, innovations, and "whirlwinds of optimism and pessimism." For this reason, bank experimentation continually expands the sorts of activities and leverage ratios deemed prudent. In the absence of episodes of debt deflation, the boundaries of acceptable behavior expand until a crisis occurs. 30

27 The Texas thrift crisis serves as a good example of such behavior. An interest rate of 20 percent is insignificant whereas speculators believe returns might reach 160 percent or even 1000 percent. Such returns were common in Texas real estate deals (over the short run).

28 The Bank for International Settlements argues that new financial instruments are priced through a combination of rules of thumb and competitive pressure, with the result that they are systematically underpriced relative to risk. As a result, banks use nonprice rationing to reduce risk. See BIS (1986), Dow and Saville (1988), and Wray (1990).

29 Of course, regulations adopted by supervisory agencies codify some of these rules of thumb. For example, before 1980, thrifts were supposed to hold 5 percent net worth against deposits, they could not obtain more than 5 percent of their deposits from brokers, they were prohibited from writing real estate development loans for more than 75 percent of the appraised value of improved land, and they could loan an equivalent of no more than 100 percent of their equity to any individual borrower (Mayer, 1990). All of these rules were designed to limit risk exposure.

30 This, of course, is the proposition known as Minsky's financial instability hypothesis. Significantly, recent innovations in financial markets have reduced credit rationing. The development of huge pools of "managed money" (insurance funds, pension funds, and money market funds) has increased the availability of nonbank finance. Similarly, the development of "junk bonds" has expanded the types of activities deemed credit-worthy and reduced the role played by banks. Historically, banks and similar institutions have served as "expert judges" in allocating credit to "worthy" endeavors, so that credit was denied to many potential borrowers. The development of "auction-like" credit markets has reduced this role and made credit available to nearly anyone willing to pay the price. Wojnilower (1987) argues that this has significantly increased the fragility of the financial system.

9. Role of the central bank

Central banks also necessarily rely on a combination of quantity and price constraints to implement monetary policy. 31 There are always a wide variety of goals of policy, many of which may well be impossible to achieve. 32 Ultimately, however, the central bank of any capitalist economy has two primary goals: provision of government finance and maintenance of stability of the financial sector. Historically, central banks were first established to provide government finance (Goodhart, 1989). The Bank of England did not take substantial responsibility for maintenance of financial stability for nearly two centuries after its foundation (Wray, 1990). In the meantime, private banks established relations with one another to develop clearing houses, to facilitate circulation of privately issued money, to develop discount operations to economize on reserves, and to operate lender of last resort facilities to stop runs. However, through a combination of private initiative and government regulation, a pyramidal reserve system was gradually developed through which the central bank became the mono-supplier of bank reserves (Knapp, 1924; Wray, 1990). While this was at first seen by the government merely as a method of ensuring availability of government finance, it was later recognized that the pyramidal, monoreserve system would enable the government to stop financial crises from spreading. Over the past half-century, central banks have demonstrated their willingness always to place financial stability before any other goals. 33 This does not mean that central banks fully accommodate bank demand for high-powered money, but that they will abandon quantity and price constraints if necessary to maintain parity between privately issued bank money and high-powered money. 34

In summary, the Post Keynesian position regarding banks and money

31 This does not mean, however, that central bank price and quantity constraints are sufficient to check an expansion of bank liabilities. Nor does it mean that the central bank can peg interest rates. See Wray (1990).

32 Examples of impossible monetary goals include price stability, full employment, and low interest rates during depressions. According to Post Keynesians, such goals require much more than easy or tight monetary policy.

33 To some extent, the tight money policies of Volcker and Greenspan have helped to generate the financial crises that became common in the 1980s. Each time the system was brought to the verge of collapse, Volcker and Greenspan put on the "lender of last resort hat." They will certainly be remembered as the most interventionist chairmen of the Fed.

34 Maintenance of parity between bank liabilities and high-powered money is essential for maintaining the "moneyness" of bank liabilities. In the absence of such poli-
can be stated in the following propositions: (a) money transfers purchasing power from the future to the present, to allow deficit spending; (b) banks intermediate from borrowers (who issue liabilities accepted by banks) to depositors (who accept bank liabilities)\(^{35}\); (c) an increase of planned spending (primarily a function of rising profit expectations) leads to an increase of the flow demand for money, which is substantially (but not fully) met by an increase in the flow supply; (d) rising liquidity preference (a “stock” demand) raises interest rates and lowers asset prices, but is not likely to lead to an increase of the flow supply of money; (e) while central banks are ultimately responsible for financial system stability, they operate with a wide range of discretion in constraining reserve growth; (f) the quantity of reserves is not normally an operative constraint on bank lending because reserve-economizing behavior allows expansion of bank balance sheets even in the presence of a fixed supply of reserves; (g) however, as banks expand the size of their balance sheets, rising lender’s and borrower’s risk will place upward pressure on interest rates; (h) the primary function of a private bank in a capitalist economy is to use a combination of price and quantity constraints to ration credit to worthy borrowers—that is, to those with a very high probability of meeting commitments—and those that successfully accomplish this task are rewarded with profits. Experimentation continually expands those activities deemed worthy—arguably far beyond those activities with social value.\(^{36}\)

\(^{35}\)In orthodox theory, in contrast, banks intermediate from depositors to borrowers. According to Heiskanen, the Post Keynesian endogenous money approach argues that banks intermediate from the central bank to borrowers. Actually, Post Keynesians insist that loans create deposits, which indicates that the intermediation is always from borrowers to depositors.

\(^{36}\)That is, financial markets provide the finance required for destabilizing “whirlwinds of speculation.” Thus, there is a justification for social control over credit.

REFERENCES


A “new view” of the role of banking firms in Keynesian monetary theory

1. Introduction

Anne Heise’s provocative essay (1992) raises valid questions about the adequacy of two Post Keynesian models of banking—which he terms the neo-Banking school and the “new view” or portfolio choice approach. The “neo-Banking school” asserts that because banks can create liquidity (via “near monies”) at a fixed markup over their own cost of funds, they supply as much credit as nonbank units demand. Heise criticizes this approach on two counts. First, a fixed markup on loans is unlikely because increased lending with given reserves increases the bank’s liquidity premium. Second, banks may not meet credit demand beyond some level because of bank managers’ liquidity preferences. Both problems are rooted in the neo-Banking school’s view of banks as a passive transmission mechanism between central banks and nonbank units. I agree.

For both Heise and myself, banks are first and foremost firms—controlled by managers and owners, they seek to earn net income, to grow, and to avoid catastrophic loss. We would agree that a Post Keynesian model must center on how banks make irreversible and time-mismatched commitments in an atmosphere of fundamental (Keynesian) uncertainty. Indeed, I have suggested (1988, 1989) a banking-firm model of this description. Heise sees several flaws with this model, which he describes as a ‘‘new view’’ (approach wherein) banks are risk-neutral portfolio managers” (Heise, 1992, p. 3). First, it focuses on banks’ short-run adjustment behavior in disequilibria with disappointed expectations, but does not show how unemployment can persist in the longer run. Second, it does not allow for banks’ risk neutrality. Third, my formal model discounts the impact of Keynesian uncertainty because it uses subjective probability to delimit the range of stochastic outcomes.

The author is Assistant Professor of Economics, University of California, Riverside.