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# The Law and Economics of Hoarding

By Keith Sharfman \*

## Introduction

Many governments have condemned the practice of “hoarding”—particularly when it comes to “essential” commodities like food. Anti-hoarding laws have been fairly common in recent times in poor countries like India, and such laws were equally pervasive in ancient times.<sup>1</sup> While these laws are ubiquitous, it is difficult to define “hoarding” in a meaningful and precise way, and it is also hard to justify rules against hoarding (however defined) on efficiency or social welfare grounds. Yet, scholars regularly refer to “anti-hoarding laws” as though it were obvious what is meant, and most of these scholars (including some economists) just assume, without any analysis or justification, that these laws make sense.<sup>2</sup>

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<sup>1</sup> For a modern example of an anti-hoarding initiative, see the discussion of India’s use of rationing, confiscation, and requisitioning in its effort to mitigate the effects of the Bengal famines of 1943-44 in *FAMINE INQUIRY COMMISSION REPORT ON BENGAL* 149-51 (New Delhi: USHA 1984). See also MARTIN RAVALLION, *MARKETS AND FAMINES* 78 (Oxford University Press 1987) (describing “military action against hoarders and smugglers” in Bangladesh in 1974); MASAO YOSHIDA, *AGRICULTURAL INTERVENTION IN EAST AFRICA: A STUDY OF THE COLONIAL ORIGINS OF MARKETING POLICIES, 1900-1965* 42-53 (Tokyo: Institute of Developing Economies 1984) (detailing restrictions of foodstuffs movements, including export bans, bans on sales by unlicensed traders, and quantity restrictions on sales to non-natives).

<sup>2</sup> The most egregious example of this is AMARTYA SEN, *POVERTY AND FAMINES: AN ESSAY ON ENTITLEMENT AND DEPRIVATION* 76-83 (Clarendon Press 1981) (vaguely describing export prohibitions and “procurement schemes” as a policy response to hoarding and assuming that hoarding—rather than poverty—is the problem that needs to be regulated). For an example of definitional ambiguity with respect to hoarding, see Brian D. Wright & Jeffrey C. Williams, *Anti-Hoarding Laws: A Stock Condemnation Reconsidered*, 66 *AM. J. OF AGRIC. ECON.* 447 (1984) (providing but a single sentence to describe the anti-hoarding law they are evaluating: “Suppose an anti-hoarding law can be enacted that effectively liquidates private stocks whenever the price ceiling is reached. Such a law could make a consid-

Conventional scholarly treatments of anti-hoarding legislation thus fail to deal with three difficult questions—one definitional, one descriptive, and one normative in character. Definitionally, precisely which activities do anti-hoarding laws seek to prevent? Descriptively, which group(s) within a society would favor such laws? And normatively, what is the effect of such laws on social welfare? This article seeks to answer these questions by closely analyzing one of the first recorded instances of anti-hoarding regulation, the *Babylonian Talmud's* ban on the hoarding of fruit and other essential commodities.<sup>3</sup>

Part I introduces the Talmudic passage that bans hoarding, describes the alternative compliance strategies that the Talmud considers, raises some textual and theoretical difficulties with the passage, and offers an interpretation of the passage that defines hoarding in a precise and consistent way. Part II offers a variety of moral and economic assessments of anti-hoarding rules, arguing that conventional moral and economic understandings seem to coincide on desired outcomes in this area, and observing that, consistent with an economic model developed by Martin Weitzman,<sup>4</sup> anti-hoarding rules may well comport with efficiency and morality given certain underlying conditions. Part III reevaluates the Talmudic passage in light of the Weitzman model, concluding that the Talmud's narrowly tailored anti-hoarding policy with retail consumers as the only regulated class may well be a sensible way to operationalize the Weitzman model's insights. Part III also identifies certain market conditions—price ceilings, highly inelastic demand, and short shelf life—which, when present, cause hoarding costs to be particularly high and thus make anti-hoarding rules especially appropriate.

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erable improvement in social welfare.”).

<sup>3</sup> See THE BABYLONIAN TALMUD: SEDER NEZIKIN, Baba Bathra 90b (I. Epstein ed., The Soncino Press 1935) [hereinafter *Baba Bathra*]. This Talmudic passage has been analyzed before by other scholars for historical purposes, but never so far as I am aware as a way to shed light on the modern economic theory of hoarding. See, e.g., Ben-Zion Rosenfeld & Joseph Menirav, *Methods of Pricing and Price Regulation in Roman Palestine in the Third and Fourth Centuries*, 121 J. OF THE AM. ORIENTAL SOC'Y 351, 367-369 (2001) (quoting the passage from *Baba Bathra* 90b and concluding that the Talmud's anti-hoarding policy was “directed against those who hoarded in self-interest at the expense of society” by causing prices to increase—an economic effect that the authors find “reasonable to suppose” but do not themselves demonstrate on the basis of modern economic theory).

<sup>4</sup> Martin L. Weitzman, *Price Distortion and Shortage Deformation, or What Happened to the Soap?*, 81 AM. ECON. REV. 401 (June 1991).

## I. Legal Background: The Talmudic Ban on Hoarding

### A. Sources and Methodology

A useful point of departure is one of the earliest recorded instances of anti-hoarding legislation, the Babylonian Talmud's ban on fruit hoarding.<sup>5</sup> The Talmud is a collection of academic discussions that took place in the great Jewish houses of learning, such as Sura and Pumpeditha, in the post-Temple period, which lasted from roughly 70 to 500 C.E.<sup>6</sup> These discussions, which the Talmud records in their original Aramaic and Hebrew, were used (and continue to be used even today) as a major source of "Jewish law," which is to say, the body of law that governs the behavior of observant Jews in whatever society and country they happen to live. Quite apart from their legal significance, the discussions comprising the Talmud are also of historical interest in that they reflect the state of rabbinic (as distinct from biblical) Jewish law at the time the Talmud was compiled. The Talmud also contains narrative, homiletic, and exegetical passages that, strictly speaking, do not have the force of law.

Jewish law has often been a fruitful area of inquiry for comparative legal scholars, as well as for economists, game theorists, and scholars of law and economics.<sup>7</sup> The aim in this article is compara-

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<sup>5</sup> *Baba Bathra*, *supra* note 3, at 90b.

<sup>6</sup> For an introduction to the Talmud, see JACOB NEUSNER, *THE TALMUD: INTRODUCTION AND READER* (Scholars Press 1995).

<sup>7</sup> Examples of comparative scholarship employing Jewish law include Robert Cover, *The Supreme Court, 1982 Term Foreword: Nomos and Narrative*, 97 HARV. L. REV. 4 (1983); Suzanne Last Stone, *In Pursuit of the Counter-text: The Turn to the Jewish Legal Model in Contemporary Legal Theory*, 106 HARV. L. REV. 813 (1993); Kenneth Shuster, *Halacha as a Model of American Legal Practice: A Comparison of Halachic and American Punishment Methods*, 19 NOVA L. REV. 965 (1995); Douglas H. Cook, *Negligence or Strict Liability? A Study in Biblical Tort Law*, 13 WHITTIER L. REV. 1 (1992); Arthur Gross Schaefer & Beverly Bickel, *Morality in the Marketplace: Consumer Protection, Regulatory Policy, and Jewish Law*, 17 LOY. L.A. INT'L & COMP. L. J. 85 (1994); Ben Zion Eliash, *To Leave or not to Leave: The Good Samaritan in Jewish Law*, 38 ST. LOUIS U. L.J. 619 (1994); Steven F. Friedell, *The "Different Voice" in Jewish Law: Some Parallels to a Feminist Jurisprudence*, 67 IND. L.J. 915 (1992); Comment, *The Pharisees and the Sadducees: Rethinking Their Respective Outlooks on Jewish Law*, 1993 BYU L. REV. 925 (1993); Saul Levmore, *Rethinking Comparative Law: Variety and Uniformity in Ancient Law*, 61 TUL. L. REV. 235 (1986). See also Samuel J. Levine, *An Introduction to Self-Incrimination in Jewish Law, with Application to the American Legal System: A Psychological and Philosophical Analysis*, 28 LOY. L.A. INT'L & COMP. L. REV. 257, 258 n.2 (2006) (collecting additional examples).

tive, though some tools of law and economics scholarship are also employed. A close analysis of the specific anti-hoarding rule found in the Talmud will hopefully lead to a deeper understanding of anti-hoarding regulation at a more general level as well as provide a basis for comparison with contemporary anti-hoarding initiatives.

## B. The Talmudic Ban Against Hoarding

The Talmud records a discussion<sup>8</sup> “[c]oncerning those who hoard fruit,” a practice the Talmud considers the moral equivalent of usury. First, the Talmud tries to define the practice. “Who . . . may be classed among fruit hoarders?” Someone “like Shabbethai the fruit hoarder,” says one rabbi, “who accumulated fruit and sold it when the price rose.” Does this mean that anyone who buys fruit and later resells it at a higher price is automatically deemed a fruit hoarder? Not necessarily, says the Talmud, recounting the practices of two great sages, Samuel and his father. Samuel’s father used to “sell fruit during the prevalence of the early market price at the early price.” By contrast, Samuel “retained the fruit and sold them [to the poor], when the late market prices were current, at the early market price.” Whose practice is preferred? “The father’s action is better than the son’s.” Why? Because “[p]rices that have eased remain so.”

After recounting the practices of Samuel and his father, the Talmud elaborates further on the parameters of the regulation against hoarding. The regulation applies not only to fruit but also to other “things which are life’s necessities” such as “wines, oils and the various kinds of flour.” These goods are distinguished from non-necessities such as “spices, cumin and pepper,” to which the prohibi-

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Examples of economic scholarship include AARON LEVINE, *ECONOMICS AND JEWISH LAW: HALAKHIC PERSPECTIVES* (Yeshiva University Press 1987); MEIR TAMARI, *WITH ALL YOUR POSSESSIONS: JEWISH ETHICS AND ECONOMIC LIFE* (The Free Press 1987); ROMAN OHRENSTEIN & BARRY GORDON, *ECONOMIC ANALYSIS IN TALMUDIC LITERATURE: RABBINIC THOUGHT IN LIGHT OF MODERN ECONOMICS* (Brill Academic Publishers 1992).

For game theory, see Robert J. Aumann & Michael Maschler, *Game Theoretic Analysis of a Bankruptcy Problem in the Talmud*, 36 J. OF ECON. THEORY 195 (1985).

Finally, for law and economics, see Geoffrey P. Miller, *Ritual and Regulation: A Legal-Economic Interpretation of Selected Biblical Texts*, 12 J. LEG. STUD. 477 (1993); Saul Levmore, *Rethinking Group Responsibility and Strategic Threats in Biblical Texts and Modern Law*, 71 CHI.-KENT L. REV. 85 (1995).

<sup>8</sup> *Baba Bathra*, *supra* note 3, at 90b.

tion does not apply. We are further told that “the prohibitions mentioned apply only to one buying from the market” for the purpose of resale but not to one storing produce for one’s own consumption.

The hoarding prohibition might thus be summed up as follows: retail consumers may not purchase fruit (or other essential commodities) for the purpose of reselling it once price has risen. To avoid a violation in the event one has inadvertently acquired a quantity of an essential commodity in excess of one’s consumption needs, two compliance strategies are suggested: (1) selling late at the early price; or (2) selling early before the price rises. We are further told that the second strategy, selling early, is preferable.

### **C. Textual and Theoretical Difficulties**

The passage poses on close reading a number of difficulties, three of which I focus on here. First, exactly which activities are being banned? Second, why is the competitiveness of Samuel’s father preferable to Samuel’s seemingly more charitable behavior? Third, and perhaps more fundamentally, what is so bad about hoarding and so good about preventing it?

#### **1. Hoarding Defined**

The first issue—what conduct is proscribed?—is a matter of textual interpretation. Because there are several possible approaches, it may be helpful to separate the question into four components: (1) is there a ban on *withholding* an essential commodity from sale or effectively withholding it from sale by charging too high a price?; (2) is there a ban on *purchasing* too much of an essential commodity (*i.e.*, a kind of “position limit” rule)?; (3) does the hoarding prohibition, whatever it means, apply to all market participants or is there a narrow regulated class—at the production, wholesale, retail, or consumer levels—to which it applies exclusively?; and (4) if the regulation applies to other commodities besides fruit, why is fruit singled out for special mention?

As to the first component, withholding the relevant commodity from sale by means of charging excessively high prices, it is unlikely that the regulation recounted in the text was intended as a form of direct price control. This is so not because the text in isolation will not bear such an interpretation, but rather because the Talmud explicitly regulates prices elsewhere at a more general level by allowing buyers to void transactions where the seller has received a price exceeding the competitive price for the same good or service by

more than sixteen percent.<sup>9</sup> Given the Talmud's general rule banning markups of more than sixteen percent, it would be odd to think of the rule against hoarding as a price ceiling regulating the conduct of sellers. It makes more sense to understand the ban on hoarding as a narrow prohibition on *purchasing* conduct in an essential commodity market that would not offend the general rule against *sale* profits exceeding sixteen-percent. The Talmud later makes this point itself: 'The prohibitions mentioned apply only to one *buying* from the market, but in the case of him who brings in for storage of his own, this is permitted.'<sup>10</sup>

The second component, the "position limit" suggestion, has more promise. While the Talmud never explicitly sets a limit on the quantity of fruit or other essentials that one may buy, there is good reason to think it does so indirectly by prohibiting consumers from profiting on resales. There is no historical evidence that Samuel and his father were producers, wholesalers, or retailers of fruit. Rather, it is likely that they earned their living from their work as rabbis and communal leaders.<sup>11</sup> Like other retail consumers, they probably bought fruit principally for their own consumption, selling or giving any excess to their neighbors or to the poor. It seems fair to assume, therefore, that their participation on the seller side of the fruit market was not extensive, but more likely happened only because they inadvertently purchased slightly more fruit than, as it turned out, they needed. The primary goal of the text thus appears to be to prohibit consumers from intentionally accumulating, as "Shabbethai the fruit hoarder" did, a store of essential commodities in excess of consumption needs for the purpose of resale. Secondarily, if one should accumulate an excess inadvertently (as appears to have happened to Samuel and his father), the text advises how one may dispose of the excess without violating the law against hoarding.

The above discussion of the "position limit" interpretation also illuminates component (3): to whom does the prohibition apply? Only to purchasers at the retail level.<sup>12</sup> The regulation against hoard-

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<sup>9</sup> See THE BABYLONIAN TALMUD: SEDER NEZIKIN, Baba Mezia 50b (I. Epstein ed., The Soncino Press 1935); Aaron Levine, *supra* note 7, at 64 (discussing *ona'ah*, the rule capping price markups at sixteen percent).

<sup>10</sup> *Baba Bathra*, *supra* note 3, at 90b (emphasis added).

<sup>11</sup> *But see* JEFFREY I. ROTH, INHERITING THE CROWN IN JEWISH LAW: THE STRUGGLE FOR RABBINIC COMPENSATION, TENURE, AND INHERITANCE RIGHTS 6-7 (University of South Carolina Press 2006) (suggesting that some scholars of the Talmudic era considered it inappropriate to earn any compensation for their rabbinic activities).

<sup>12</sup> See *supra* Part I.A.1

ing does not, as we have interpreted it, forbid producers, wholesalers, or retailers from accumulating large quantities of fruit or other essential commodities and storing them for purposes of later resale.<sup>13</sup>

The fourth interpretational issue—why is fruit singled out for special mention?—calls for some speculation. Fruit in Jewish law is emblematic of *baal tashhit*, the biblical prohibition against economic waste, which is derived from the rule forbidding the Israelite army from chopping down fruit trees in its conquest of Canaanite cities.<sup>14</sup> If, as the rabbis appear to have felt, the practice of hoarding is socially wasteful, it makes sense to emphasize hoarding with respect to fruit and deemphasize the hoarding of less essential commodities since fruit usefully and memorably connotes Judaism's negative attitude toward economic waste.

Now that we have outlined the acts of hoarding that are forbidden, we are ready to examine the two compliance strategies recounted in the passage, those of Samuel and his father.

## 2. Competition versus Charity

On first reading, it looks as though Samuel is acting charitably in selling fruit to the poor in the later period when the market price is high at the early, lower price, while his father appears to act competitively in selling early at the prevailing (competitive) price. That being the case, why does the Talmud, which is after all a morally instructive text, prefer competitive over charitable behavior?

Several possible answers come to mind. First, the Talmud may be expressing an ethic that "father knows best." That is, if one is faced with two morally equivalent choices where the only difference between them is that one choice is more established or traditional than the other, the "father knows best" ethic would say to choose the more established option since all else is equal. This ethic is so pervasive in Western thought today that one would be hard-pressed to find a literary work recounting a disagreement between a parent and child where the child's view is looked upon as superior.<sup>15</sup>

The problem with this interpretation is that it ignores the text's stated reason for its preference, namely, that "[p]rices that have eased remain so."<sup>16</sup> This assertion about prices does not preclude the

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<sup>13</sup> *Id.*

<sup>14</sup> Aaron Levine, *supra* note 7, at 160; *Deuteronomy* 20: 19-20.

<sup>15</sup> There are, of course, exceptions, such as Shakespeare's preference for Cordelia's views over those of her father, King Lear.

<sup>16</sup> *Baba Bathra*, *supra* note 3, at 90b.

possibility that promoting fealty to parents is a secondary goal of the text, but it does suggest that “father knows best” is not the whole story. Alternative theological interpretations suffer from the same and other difficulties.<sup>17</sup>

Another, non-theological explanation for the Talmud’s preference is that the rule against hoarding has little to do with morality but rather is intended to benefit fruit merchants and other sellers of essential commodities.<sup>18</sup> An organized “fruit lobby” would naturally oppose Samuel’s practice of charging below-market prices, which would tend to depress the profits of fruit wholesalers. Encouraging small market participants like Samuel’s father to sell at prevailing market prices, by contrast, would be less damaging to the industry. The difficulty with this “special interest” approach is that, like the “father knows best” approach, it does not seem to accord with the Talmud’s stated justification—“prices that have eased remain so.” Concededly, the Talmud’s editors may simply have been mistaken about their facts, or alternatively were trying to conceal from the reader their true motivations. Perhaps. But price effects are rela-

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<sup>17</sup> For example, were it not for the Talmud’s claim about hoarding’s adverse effect on prices, it might have been reasonable to argue that the Talmud’s anti-hoarding policy derives from the manna story recounted in the book of *Exodus* and its expository midrashic literature, which suggest that hoarding is wrong not because of any impact on prices (remember, the manna was free!) but rather because hoarding implies a lack of faith in God’s ability or desire to provide sustenance in the future. See *Exodus* 16:19-20 (banning the collection of manna in excess of the specified daily portion and rebuking those who violated the prohibition); 2 MEKILTA DE-RABBI ISHMAEL 103 (Jacob Z. Lauterbach, ed., Jewish Publication Society of America 1933) (quoting in connection with the manna story Rabbi Eleazar’s exegetical remark: “He who has enough to eat for today and says: ‘What will I eat tomorrow?’ Behold he is of little faith.”). Deriving the Talmud’s anti-hoarding norm from another story in Scripture, that of Joseph in Egypt (see *Genesis* chapter 41), is also unlikely. While this story may be thought a condemnation of hoarding, because the Egyptian grain buying policy that Joseph convinced Pharaoh to adopt led to the Israelites’ immigration to Egypt and ultimately to their enslavement, the story could just as easily be read as an endorsement of hoarding, since as an anti-famine measure the pro-hoarding policy succeeded. *Genesis* 41:57. Moreover, as with the ban on excess manna collection, the Talmudic goal of price reduction was neither the objective nor the effect of Joseph’s state-run, grain-buying program.

<sup>18</sup> This “special interest” or “public choice” account of economic regulation has an extensive literature. See, e.g., George J. Stigler, *The Theory of Economic Regulation*, 2 BELL J. OF ECON. & MGMT. SCI. 3 (1971); Richard A. Posner, *Theories of Economic Regulation*, 5 BELL J. OF ECON. & MGMT. SCI. 335 (1974); Sam Peltzman, *Towards a More General Theory of Regulation*, 20 J. OF L. & ECON. 211 (1976).

tively easy to observe, and the Talmud's discussion, which was written long after the Jews had relinquished control of ancient Israel, seems to have been purely academic and disinterested. Assuming (as is likely) that special interests were not at work, an alternative account for the preference is needed.

Minimizing enforcement costs is one possibility. That is, the Talmud's preference for selling early at the low price may best be understood as an effort to minimize the costs of compliance and deterrence associated with the anti-hoarding regulation. Samuel's suggested practice, to sell late at prices below prevailing market rates, is costly to the seller. Market prices in the later period are presumably higher for a reason: they reflect storage costs incurred between harvest and the time of sale. In a Samuel-type regime, consumers-turned-sellers would be unable to recoup their storage costs, and thus would have a strong incentive not to comply with the anti-hoarding rule. Moreover, noncompliance would be difficult for regulators to detect, because Samuel's rule merely regulates the terms of sale (which typically are a private matter between buyers and sellers) but does not ban late period sales from taking place altogether. By contrast, in a community complying with the practice suggested by Samuel's father, sellers would receive the full market price for their commodities and would not suffer any losses beyond those caused by ordinary market risk. Moreover, late period sales would be uncommon in such a society, and any that take place would raise suspicions that the seller has violated the anti-hoarding rules. For these reasons, Samuel's father's rule is more likely to induce compliance and thus the Talmud prefers it.

### **3. What's Wrong with Hoarding?**

Even if Samuel's father's rule is a more efficient enforcement mechanism than Samuel's, a basic question remains unanswered: what is so bad about hoarding? The easy answer, for many economists anyway, is "absolutely nothing." People hoard commodities when they believe that price will rise in the future. As a practical matter, this means that less of the commodity will be available in the initial period when hoarding takes place, but also that more of the commodity will be available in ensuing periods as people consume or sell their stockpiles. If one has confidence in markets as a general matter, it is difficult to object to hoarding.

In fact, though, people do object to (as well as defend) hoarding on both moral and economic grounds. In the next section I argue that the moral and economic bases for objecting to hoarding appear to coincide. The moral case against hoarding is based on notions of dis-

tributional equity—*i.e.*, that hoarding raises prices and thereby deprives poor people of commodities that are essential to their survival. The economic case is based on considerations of allocational efficiency.

## II. The Morality and Economics of Hoarding

### A. Morality

In just about every society, the word “hoarding” has a negative connotation.<sup>19</sup> It suggests self-interested, acquisitive behavior that has detrimental effects on others in the form of higher prices and/or material deprivation. Put another way, people find hoarding immoral because of its perceived economic consequences. If it could be shown that some forms of hoarding have these consequences while others do not, people would continue to deplore the former but not the latter. Viewed in this way, the moral assessment of hoarding collapses into an economic one.<sup>20</sup> To the extent that a particular form of hoarding causes net social losses, it is both immoral and inefficient. If, however, the social consequences of a particular form of hoarding are neutral or a net positive, then this form of hoarding is neither immoral nor inefficient. Moral assessments of hoarding thus turn on economic ones. On this view, morality could justify a ban on hoarding only if such a ban would make economic sense.

Because a moral assessment of hoarding depends on an economic one, we can proceed directly to an economic assessment.

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<sup>19</sup> A fascinating recent example of hoarding’s negative connotation comes from animal rights law, which in the last few years has seen new legislation in Illinois and other states forbidding something called “animal hoarding.” 510 ILL. COMP. STAT. 70/2-10 (2004). Merely owning many animals cannot trigger liability for animal hoarding. Liability turns rather on how the animals are treated. See Lisa Avery, *From Helping to Hoarding to Hurting: When the Acts of “Good Samaritans” Become Felony Animal Cruelty*, 39 VAL. U. L. REV. 815 (2005). In other words, it is really abuse or neglect rather than the hoarding of animals that is forbidden. *Id.* But because of hoarding’s negative connotation, there are rhetorical advantages to using the hoarding label. *Id.*

<sup>20</sup> See Sen, *supra* note 2 (providing example of conflation between moral and economic assessments of hoarding).

## B. Economics

### 1. The Conventional Economic Defense of Hoarding

The conventional economic defense of hoarding has been well stated by Kenneth Arrow, who argues that “when situations of scarcity arise, hoarding is always blamed. But the evidence for the degree and effects of hoarding is usually difficult to come by . . . . If the famine is prolonged, then hoarding at the beginning means greater stores will be available later on.”<sup>21</sup>

Hoarding worries Arrow only if it is “excessive,” which occurs only if the hoarder is not “correct in his expectations.”<sup>22</sup> More precisely, if the market as a whole perceives scarcity to be greater than in fact it is, too much hoarding will occur. But note that it is equally possible for the market to underestimate the actual degree of scarcity, which would result in *too little hoarding*. Note too that this sort of estimation error is always a risk in every market, not just markets for essential commodities. In other contexts, people can reduce the risk associated with market estimation errors by purchasing insurance, a device Arrow suggests using to hedge against hunger.<sup>23</sup> If poor people cannot afford to purchase either food or food insurance, the government could purchase either or both for them. But distributional concerns, which to be sure are felt most acutely in markets for essential goods, do not in themselves justify a ban on hoarding, given that other government interventions like insurance would seem to be more efficient.

### 2. The Weitzman Model

With a very imaginative model published in the American Economic Review, Martin Weitzman demonstrated that rational hoarding by individual consumers in a shortage economy could lead to inefficient outcomes.<sup>24</sup> The model’s intuition is fairly straightforward. A “shortage” in a given market exists when the quantity demanded for a given good exceeds the quantity supplied. Under nor-

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<sup>21</sup> Kenneth J. Arrow, *Why People Go Hungry*, 29 THE N.Y. REV. OF BOOKS 24-26 (1982) (reviewing Sen, *supra* note 2).

<sup>22</sup> *Id.* at 25.

<sup>23</sup> *Id.*

<sup>24</sup> Weitzman, *supra* note 4, at 401.

mal competitive conditions, price will rise until supply and demand equalize and the market "clears." However, when a market is not clearing for some reason, such as when there is a state-mandated price ceiling on the relevant commodity, a queue or some other form of non-price rationing inevitably develops. In such a market, suppliers of the good simply receive the subcompetitive cash price. Buyers of the good, on the other hand, pay the cash price but also incur an "effort" cost waiting in the queue. To defray some of this effort cost, buyers will elect to purchase larger quantities of the good in each transaction and, in the process, incur a "storage" cost in the time they hold the commodity prior to its consumption. The actual price that buyers "see" in a shortage economy is thus the cash price plus effort and storage costs. In other words, while the seller sees a subcompetitive price, the buyer in effect sees a higher price "as if" the market were clearing.

Weitzman's model shows how this divergence between the buyer's "as if" price and the cash price the seller receives is potentially a source of inefficiency. When a consumer responds to a queue by purchasing larger quantities per transaction than he otherwise would if there were not a queue, he imposes an externality on other consumers by reducing the quantity even further below the competitive level and thereby lengthening the queue. A longer queue increases waiting costs, which in turn causes later consumers to buy an even larger quantity per transaction and to incur even greater storage costs. Weitzman calls this cycle, where each consumer's individually rational hoarding activity imposes higher waiting and storage costs on other consumers, a "shortage syndrome." Thus, in a second best world with a fixed, subcompetitive quantity of a given good, consumer hoarding can lead to inefficiently high levels of waiting and storage costs (what Weitzman refers to as "non-directly productive search and storage activity").<sup>25</sup>

The most obvious policy solution to the shortage/hoarding phenomenon is to allow prices to rise. But this may be politically untenable in some circumstances. An alternative, second best solution is to initiate some kind of anti-hoarding policy, as suggested by Wright and Williams.<sup>26</sup> Neither they nor Weitzman tell us exactly how to do this, however. Wright and Williams suggest in a general way that a law should be enacted to require holders of the good in question to liquidate some or all of their stocks whenever the mandated price

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<sup>25</sup> See Weitzman, *supra* note 4, at 408.

<sup>26</sup> Wright & Williams, *supra* note 2, at 454.

ceiling is reached.<sup>27</sup> How this “stock condemnation” rule would be implemented in a manner distinct from outright confiscation remains unclear.

While modern economic scholarship affords little help to the policy maker seeking to design an anti-hoarding regulation, I argue in the next section that the Talmud’s anti-hoarding regulation is properly understood as an effort to operationalize an anti-hoarding policy in response to shortage syndromes of the Weitzman variety.

### **III. Applying the Weitzman Model to the Talmudic Policy**

#### **A. The Sixteen Percent Rule Prevents Markets from Clearing**

Recall from our earlier discussion that, under Jewish law, buyers can void sales transactions in which they were charged a price more than sixteen percent higher than the competitive price for the same good or service prevailing at the time of the transaction.<sup>28</sup> This sixteen percent rule has many of the same characteristics and effects as the price controls contemplated in the Weitzman model. Whether the sixteen percent rule makes good policy sense is a discussion for another time and place. For our purposes, we may take the rule as a given constraint under which the policy makers in the Talmud had to operate. The problem the rabbis faced was to design an effective anti-hoarding policy for those markets not clearing due to the sixteen percent rule.

Like a price ceiling, the sixteen percent rule causes queuing and storage costs in any market in which the rule affects the volume of transactions. There is every indication from Talmudic discussions that if the sixteen percent rule had an effect anywhere, it certainly had an effect on behavior in produce markets.<sup>29</sup> In these markets, privately rational but socially inefficient hoarding may well have taken place, and if so the Weitzman model applies. Thus, prohibiting consumers, as the Talmud did, from purchasing essential commodities for the purpose of later resale may well have been a sensible way to prevent search and storage costs that are socially wasteful.

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<sup>27</sup> *Id.*

<sup>28</sup> *See supra* note 9 and accompanying text.

<sup>29</sup> Aaron Levine, *supra* note 7, at 206.

## **B. The Essential/Non-Essential Distinction**

Though we have shown how the Weitzman model applies to situations where markets do not clear, we have yet to explain why the Talmud's ban on hoarding covered only essential commodities. If the sixteen percent rule (and thus the costs associated with hoarding) affects all commodities, then why not ban hoarding across the board?

The answer may be that hoarding is more socially costly in some commodity markets than in others. These cost variations derive, principally, from two sources: (1) divergences in demand elasticities across goods markets; and (2) divergences in shelf life among goods.

### **1. Elasticity of Demand**

Where demand for a good is relatively inelastic, the social costs from hoarding it are relatively high because consumers will not as readily purchase substitutes in lieu of the hoarded good. The Talmud's essential commodity list—fruit, wine, oil, and flour—may well correlate with highly inelastic demand functions. In these markets, the benefit from anti-hoarding rules may be especially high.

What is the harm in banning hoarding across the board even in cases where benefits are relatively low? The harm is that hoarding regulation is not costless. Hoarding rules are costly for a government to craft and enforce, as well as for consumers to learn. Moreover, these rules are inherently imperfect in that they cannot be tailored to fit the individual consumer's idiosyncratic queuing and storage cost functions. Poor consumers with a low marginal utility of time, for instance, are likely not to mind longer lines as much as wealthier consumers. Rich consumers with plenty of space for secure storage may not mind storage costs as much as poor people, who likely have less space.<sup>30</sup> Because a uniform anti-hoarding rule cannot apply differentially to individual consumers, such a rule has real economic costs and thus ought to be used sparingly—that is, exclusively in the high benefit case.

### **2. Shelf Life**

Another reason why hoarding is more costly in some markets than in others has to do with variations in shelf life. The more durable a good, the less it costs to store because the risk of spoilage be-

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<sup>30</sup> This may explain why in the Talmud's hypothetical it was relatively wealthy people who purchased more than they needed initially, stored it, and later sold the excess to the poor.

fore consumption is lower.<sup>31</sup> Put another way, the consumer with stored inventory on hand has the option to consume now or in any later period during which the good remains consumable. A longer shelf life gives the consumer a longer time horizon and thus a greater ability to engage in “intertemporal substitution” of consumption activity from an earlier to a later period. Because they spoil quickly, perishable goods are more costly to store than durable goods, and thus hoarding in perishable goods markets entails greater social costs than hoarding in durable goods markets.

In view of the economic differences between the hoarding of perishable and durable goods, it is not surprising that the commodities on the Talmud’s essential list (fruit, wine, oil, and flour) are more perishable than those on the non-essential list (spices, pepper, and cumin) and that the Talmud regulates hoarding only with respect to those commodities that are relatively more perishable. To be sure, these lists are only exemplary and nonexhaustive. But they do suggest a sensitivity to sorting goods markets according to whether hoarding costs are sufficiently high for anti-hoarding regulation to be cost-justified.

## Conclusion

This article has analyzed the legal and economic implications of commodity hoarding through the example of one of the earliest recorded bans on hoarding, that of the *Babylonian Talmud*. Applying Martin Weitzman’s “shortage syndrome” model to a practical context, we have shown how the Talmud’s anti-hoarding law may well have been in the public interest from the perspectives of both morality and economics. The Talmudic policy’s central insight is that the non-productive search and storage costs associated with a non-clearing market can be avoided, as a second best solution, by prohibiting consumers from purchasing goods in such a market for the purpose of resale at a later time.

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<sup>31</sup> While the Talmud recognizes this economic proposition only implicitly in the passage discussed in this article, the recognition is explicitly elsewhere. See THE BABYLONIAN TALMUD: SEDER KODASHIM, Menahoth 103b (I. Epstein ed., The Soncino Press 1948) (suggesting that on account of its perishability, bread cannot as a practical matter be purchased in large quantities and stored for later consumption).