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Aims and Scope

The Journal of Prices & Markets, published by the Ludwig von Mises Institute of Canada, is a journal that seeks to improve the understanding of the role of markets in the economy. Submissions should seek to shed light on contemporary issues while being grounded in a praxeological reasoning. Prices & Markets welcomes submissions from a variety of fields such as politics, sociology, and psychology, where ever they can bring relevance to economic and financial questions.

Mission

It is the mission of the Ludwig von Mises Institute of Canada to educate the public to the importance of placing human choice at the center of economic theory, to encourage a revival of critical historical research, and to advance the Misesian tradition of thought through the defense of the market economy, private property, sound money, and peaceful international relations.

“Economics is mainly concerned with the analysis of the determination of money prices of goods and services exchanged on the market. In order to accomplish this task it must start from a comprehensive theory of human action.... [I]t must not restrict its investigations to those modes of action which in mundane speech are called “economic” actions, but must deal also with actions which are in a loose manner of speech called “noneconomic.”

— Ludwig von Mises

Unintended Consequences

A Refinement to the Typology of “Goods”

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One of Carl Menger’s greatest contributions was to outline the nature of the problem under examination in economic science. Although it would take a further sixty years for Lionel Robbins to give a proper definition of the scope of economics as “the science which studies human behavior as a relationship between ends and scarce means that have alternative uses” (Robbins 1935: 16), it was Menger’s original groundwork in defining the characteristics that define an economic “good” that made possible these subsequent developments. A “good”, properly defined, must fulfil four criteria (Menger 1871: 52): 1) it must satisfy a human need, 2) it must have a causal connection to satisfy the need sought, 3) someone must be cognizant of this causal connection, and 4) someone must have command over the good. When all of these four prerequisites are present, a “thing” becomes a good. And the corollary holds true: a loss of any of these criteria results in a good losing its goods-character.

A unified definition of what defines a “good” made possible a standard theory that could analyse the principles of supply, demand and price determination, regardless of the specific nature of the good in question (Rothbard 1962: pp. 162-69). In this way, it matters not whether

the economist is dealing with a haircut, an automobile, a tool or an insurance policy, the general principles guiding the allocation of each good is standard.

Notwithstanding that all economics goods as Menger defines them can be treated within the same standard framework, additional questions arise when a good fails to meet one of his criteria. Bohm-Bawerk (1962: 30) contended that the “basic *economic doctrine of the theory of goods* ... was in need of correction in several respects, or at least of such revision as to make it truly comprehensive and universally valid.” Specifically the thorny issue in need of an answer was whether legal rights and contractual relationships could be classified as “goods” from the viewpoint of economic science. As Bohm-Bawerk stressed, the nature of a good is “not a purely objective attribute of a thing, but a relationship that must exist between a thing and an economic subject” (Salerno 2008: 100). His refinement to Mengerian goods theory was in adding a fifth point lacking in Menger’s enumeration: that the individual must have knowledge of the object’s usefulness in satisfying a want *irrespective* of his ownership of the good (Bohm-Bawerk 1962). This final point allows for not only a physical control over the good (as in Menger’s fourth criterion) but also that someone must have mental “ownership” (i.e., knowledge) of the goods usefulness.

These definitional criteria of goods are admirable in two respects. First, they constrain the type of objects eligible to be economized and thus set a limit on the type of question that economics can answer in a positive way (though the science can still give informed speculation on economizing-type behaviour of goods not fulfilling the criteria of an economic good). Second, and perhaps more importantly from the standpoint of technical economics, the criteria allow one to distinguish between goods that directly satisfy a want (a consumers’ good) and those that are capable of only doing so indirectly (a higher-order, or producers’ good). This final point is important as all goods are valued according to how well they satisfy an individual’s want. This theory of “imputation”, pioneered by Menger, maintains that all factor prices of higher-order goods are determined by the final good they help to produce. Rothbard (1962: chap. 7) took this theory to its full conclusion to show how time preference, the rate of interest and an expected value of a consumers’ good interact to determine all prices throughout the economy.

Pigeonholing Money in a Typology of Goods

Fitting money into a typology of goods that makes only a binary distinction between consumers’ goods and producers’ goods leads to somewhat irreconcilable conflicts. On the one hand it is apparent that money in and of itself is not an input factor in making any consumers’ good. On the other hand it is commonly noted that money confers no direct utility to the holder; its value is derived from its ability to be exchanged for other goods, whether consumers’ or producers’ goods in nature.¹ It is for this reason that some economists, notably among them Ludwig von Mises, adopted a three-way classificatory scheme for goods.

It is usual to divide economic goods into the two classes of those that satisfy human needs directly and those which only satisfy them indirectly: that is goods, or goods of the first

1 Herein I treat money *qua* money, and abstract from non-exchange uses, such as numismatic demands.

order; and goods, or goods of higher orders. The attempt to include money in either of these groups meets with insuperable difficulties. It is unnecessary to demonstrate that money is not a consumption good. It seems equally incorrect to call it a production good.

Of course, if we regard the twofold division of economic goods as exhaustive we shall have to rest content with putting money in one group or the other. This has been the position of most economists; and since it has seemed altogether impossible to call money a consumption good, there has been no alternative but to call it a production good. (Mises 1971: 79, footnote omitted)

With no obvious fit in the existing goods dichotomy, Mises (following Karl Knies) opts for a third category: media of exchange (Mises 1971: chap. 5). Unfortunately such a broadening of the goods typology is not without its own difficulties. Barnett and Block (2005) find this solution unconvincing because all actions must be either oriented towards producing a good or consuming it. If the scope of actions is binary, and all goods are bestowed their character because of an action making use of it, it must follow that all goods must be either classified as either consumers' or producers'.

While this provides one solution to the classificatory problem of “what money is” it leaves open many unanswered questions. Foremost among these is whether there can be more than one criterion according to which we can classify goods. By focusing exclusively on whether a good is present or future oriented, one removes the possibility that there are alternative attributes of all goods as valued by their users. As an additional difficulty, while Barnett and Block (2005) solve one problem with Mises' ternary classificatory scheme for goods, namely that money is different than both consumers' and producers' goods, their solution introduces the difficulty that money is quite different from all other producers' goods. After all, “[p]roduction goods derive their value from that of their products. Not so money” (Mises 1953: 86). Unlike all other goods, the value of money comes not from using it but by getting rid of it (Rothbard 2004: 756). All other goods trade and have their price determined on a specific market, but the price of money - its purchasing power - has no unique market on which it is determined (Yeager 1968: 64). While all other economic goods can be dealt with adequately with equilibrium models, money can only arise and be analysed in disequilibrium (Mises 1938: 75). Increases in the supply of money yield no improvement to the “welfare of the members of society”, unlike when other goods increase in supply (Mises 1953: 86).² Money can only be useful if a pre-existing array of prices exists from which to base its demand, while other goods can be valued even if their prices are unknown (Rothbard 1981: 3–4). Finally, all money income can be directed in one of three ways: expenditure on consumers' goods, expenditure on producers' goods, or additions to one's cash balance (Rothbard 2004: 219). Given the three channels money can be directed to, does it not follow that there are potentially three types of goods representative of them? (Of course, this brings us back to the original problem - why only three different types of goods?)

The usual distinction between different types of goods distils to whether a good directly

2 Although, as we will see, “[t]hat money does not satisfy consumptive or productive goals does not impair in the least its ability to supply its own – monetary – services, on which account precisely there is a demand for it” (Gertchev 2004: 65-66).

provides utility to its user, as is the case with consumers' goods, or whether it only indirectly does so as is the case with producers' goods. This distinction, incidentally, can also be expressed by way of present and future goods, and is useful in demonstrating why it is that producers' goods derive their value from that of consumers' goods. The distinction also creates difficulty for money, as money is a present good on the one hand and also has attributes more akin to a producers' good on the other.

All goods are valuable to their holder to the extent that they can be used for the utility they can create or because they can be exchanged for other goods that the holder can derive utility from. Of course, if value exists because of a goods use value or because of its exchange value, these values must also be able to be applied directly (in the present) or indirectly (at some future date). In table 1 below, I outline a typology of goods that results from these two distinctions.

		Type of Value	
		Use	Exchange
Time Dimension	Present (Direct)	Consumers' Goods	Medium of Exchange
	Future (Indirect)	Producers' Goods	Nonmonetary Financial Assets

Figure 1: Typology of Goods

The conventional typology of goods focuses on the use value column. As all goods are valued according to how useful they are to the individual so too, as the common reasoning goes, must money be valued. The value money confers to the holder comes not from its ability to be used as such, but rather from its ability to be exchanged for other goods that will be able to do so. This exchange value is apparent as discussions of the demand for money centre on the demand to hold real money balances, not nominal sums. It should also be clear from discussions of the definition of money that commonly centre on its role as the generally accepted medium of exchange. (Though, as I've shown elsewhere (Howden 2015a), defining money in such terms begs the question of what money is rather than answers it.)

The value that a good confers can either be in the present or after some period in the future. It is this distinction between present and future goods that demarcates the difference between consumers' goods and producers', or capital, goods. Yet a different way to consider this dimension, as in Hülsmann (2002), is between means and ends. This interpretation can be distilled further as to whether a good is able to directly provide value, as is the case with

consumers’ goods, or whether it will only create value in a roundabout or time consuming way, in which case it will be defined as a producers’ good.

The two axes in figure 1 are not ad hoc, but representative of the *only* two dimensions one can be concerned with when assessing the value their goods will bestow on them. On the one hand, any good can only provide value to the user by its use or by giving it away to someone else (to get something in return). On the other hand, due to the the fact that actions today are aimed only at the future, value can either be accessed in the here and now or at some future date. It would be nonsensical to discuss the value that something will give to an individual by its use in the past (as the value has already been realised). In the same way, if an exchange had already taken place the individual would not have the good any longer and no value could be realised.

The typology of goods in figure 1 resolves many of the difficulties in the existing binary or ternary classificatory schemes. It also introduces new difficulties.

On the one hand, distinguishing between value in exchange and value in use allows one to avoid pigeonholing money into inappropriate categories. It also allows one to include goods that are difficult to address, e.g., stocks, bonds and financial derivatives, into a category specifically tailored for them. As such it leaves no doubt as to the role that non-monetary financial assets serve in the production process – not as inputs that mature into consumers’ goods in the future, but as “inputs”, or claims, that mature into money.

		Type of Value	
		Use	Exchange
Time Dimension	Present (Direct)	Consumers' Goods/ Money Held for Reservation Demand	Medium of Exchange
	Future (Indirect)	Producers’ Goods	Nonmonetary Financial Assets

Figure 2: “Money” in a Typology of Goods

The assignment of money to the north-east quadrant of the typology is done with some caveats in mind. One difficulty with money is that economists use one word to describe two goods (Howden 2013; 2015a, compare with Rothbard 1962: pp. 756–62). In some instances money is demanded because the individual desires a good to exchange to make payment for another good or to settle a debt obligation. Alternatively, money is demanded to be held in reserve and thus provide a hedge against perceived uncertainty by the individual (Howden 2015b). Because of this two-fold nature to money, it is actually appropriate to place it in two

categories dependent on the role the individual is holding it for, as in figure 2.

Money held as a guard against perceived uncertainty confers their holder with a value not only in the present, but also without needing to be exchanged into something else. Indeed, money may be held with the expectation that in the future they *may* be exchanged into another good, but in the meantime the individual foregoes no benefit by holding a cash balance. In other words, the cash balance the individual holds as a reserve is not idle, notwithstanding the fact that the money is not apparently being put to use (Hutt 1956; Hülsmann 1996: 12; Hoppe 2009; Bagus and Howden 2013). In this way, money held to satisfy the individual's reservation demand is akin to a consumers' good, and thus it belongs in the north-west quadrant. Alternatively, individuals hold money to satisfy their exchange demand (what most economists have in mind when they discuss money as the generally accepted medium of exchange) and as such it belongs in the north-east quadrant of figure 2, which is why I have labelled it as containing the "media of exchange", of which money could be one such good (though not necessarily the unique good).

Conclusion

Perhaps the main benefit of this typology is that it allows the economist to define the relationships between goods in a way that reveals where value comes from. It is commonly understood that value is imputed to producers' goods by way of their discounted marginal value in creating a consumers' good, but what of other goods, e.g., money and nonmonetary financial assets?

Less commonly understood is where money gets its value, or purchasing power, from. From the typology it becomes clear that money must be valued exclusively according to its claim on consumers' goods, as in figure 3 (an insight recently reached through a different analysis in Braun 2014: chap. 16). Indeed, it could not be any other way. Even if held to be exchanged against producers' goods, those goods derive their value from their ability to produce consumers' goods.

		Type of Value	
		Use	Exchange
Time Dimension	Present (Direct)	Consumers' Goods/ Money Held for Reservation Demand	Medium of Exchange
	Future (Indirect)	Producers' Goods	Nonmonetary Financial Assets

Figure 3: Imputation of Value Between Goods

A more striking insight is that the value of non-monetary financial assets derives from their ability to be converted, or exchanged, into money. This tells a consistent story as standard asset-pricing models in two ways. First, the amount of money that a nonmonetary financial asset redeems for is determined by the profitability of the ultimate claim, typically a producers' good involved in the production of a consumers' good. The value of the nonmonetary financial asset thus increases if, 1) the ultimate value placed on the consumers' good increases, 2) the productivity of the producers' good increases (such that its discounted marginal product increases), or 3) the value of money increases, which can only happen through a relative fall in the ratio of the stock of money to the value of produced consumers' goods. Second, the certainty with which the nonmonetary financial asset can be converted to money will affect its value through the standard channels, i.e., default risk, duration risk, etc.

The four-fold typology of goods provided here allows for one additional benefit. While it expands the scope of mutually exclusive goods, at the same time it must be apparent that the value of each is ultimately determined according to the standard market force of consumer preferences and values combined with the related concept of supply. When coupled with a novel method to look at the causal chain of how value is transmitted to various goods from its origin (at the value of consumers' goods) one can gain insights into the scope of factors affecting the prices of goods beyond those apparent by way of the more standard consumers' good/producers' good dichotomy.

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Bounded Rationality

A Causal-Realist Account of the Endowment Effect and Ownership Premium

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The causal-realist line of economic thought stresses that goods obtain their value to the holder through a regression to their serviceability in meeting certain fundamental wants. Menger (2007) observes that "...the differences we observe in the magnitude of value of different goods in actual life can only be founded on differences in the magnitude of importance of the satisfactions that depend on our command of these goods" (pp 121-122)". The pool of goods consists of lower order goods which directly satisfy fundamental wants, and are therefore of direct value for this purpose, and also higher order goods which can be employed over time to gain greater command over lower order goods, and thereby indirectly satisfy fundamental wants. This valuation through imputation is referred to as the "regression theorem" of value and refers to the fact that the subjective value

applied to all goods is ultimately an imputation of the serviceability in meeting fundamental wants through direct or indirect means.

It has been well-established by behavioural experimentation that people tend to be subject to an “endowment effect” —the tendency to value what they own/possess more than what they do not own/possess. This type of preference ordering is manifested in the observable fact that people demand a higher payment to give up an item than they would be willing to pay to acquire the same item, even without transaction costs. This asymmetric tendency in exchanges was recognised in Brehm (1956) and was later named by Thaler (1980). Such a tendency has been found in many behavioural experiments, with care taken to ensure that transaction costs (effort, money, etc.) are practically nil in these cases.

The tendency to apply greater subjective value to what is already owned/possessed suggests that the person’s preference ordering is not fully determined by the contents of the possible bundles of goods — it is also affected by the present endowment of goods he owns/possesses. This might seem to be *prima facie* incompatible with the causal realist account, since it would be expected that the degree to which the person can satisfy his fundamental wants would be dependent on the properties of the goods in question, not their ownership status.¹ After all, why should a mug I presently own be more effective in satisfying my fundamental wants than an equivalent mug I do not yet own (assuming I can trade the former for the latter without cost)? It is instructive to analyse this endowment effect in detail, consider its possible causes, and see how such a tendency might be reconciled and explained by the causal realist account.

The endowment effect and “ownership premium”

The existence of an endowment effect in exchanges has been established repeatedly through various controlled experiments which induce buying and selling decisions with no transaction costs (see e.g., Knetch and Sinden 1984; 1987; Coursey, Hovis and Schulze 1987; Knetch 1989; Kahneman, Knetch and Thaler 1990; 1991; Beggan 1992; Franciosi et al 1996; Chapman 1998; Strahilevitz and Loewenstein 1998; van Dijk and van Knippenberg 1998; Camon and Ariely 2000; List 2004; Nayakankuppam and Mishra 2005; Tom, Lopez and Demir 2006; Corrigan and Rousu 2006; Knetsch and Wong 2009; Morewedge et al 2009; Marzelli Ericson and Fuster 2011; Svirsky

¹ Of course, one might need to possess a good to use it, and thereby satisfy a want, but this is not an objection to the present point. The comparison here is between an owned good and a physically equivalent good which is not presently owned but can be obtained and used.

2014; Walacek and Stewart 2015). Though the particular experiments differ in some details, the standard experimental setup involves giving each participant a randomly determined good (out of two different goods) and giving them an opportunity to trade for the alternative good. Care is taken to ensure that the trade can be accomplished with no transaction cost, usually by a simple gesture by the participant, with the experimenter then taking the inconvenience of switching the goods. The trades by participants are then analysed using statistical techniques to determine whether the random allocation of initial possession/ownership affects the propensity to trade. The observed data establishes strong evidence of a statistical relationship, and since the experiment uses random allocation of the “treatment” of interest this therefore establishes strong evidence of a causal effect from possession/ownership to higher valuation.²

Experiments like these provide evidence that people have a greater tendency to value items they own/possess over identical items they don’t possess, even when there are no discernible transactions costs. Recent summaries of the literature, with analysis of present theories on the subject, can be found in Marzelli Ericson and Fuster (2014) and Morewedge and Giblin (2015). While the existence of this tendency is clear, the cause of the effect is disputed and is subject to some competing explanations. One prominent theory says that the endowment effect is caused by underlying “loss-aversion” which is the tendency to treat losses as more important than equivalent gains. Another competing theory says that the endowment effect is caused by the tendency to value a good more when it is owned by you than when it is not. We refer to this additional valuation of one’s owned goods as an “ownership premium” — it represents a higher value being placed on the good by virtue of its ownership by the subject.

The theory of an ownership effect says that goods become more valuable to a person once they are owned by that person, and hence, the endowment effect follows as a consequence of the fact that the goods we trade away tend to be the goods we own. This theory was supported by an experiment in Morewedge et al (2009). Psychologically, the ownership of the good causes a link with the self that then causes the person to associate the good with the self and value it more highly —i.e., at a premium. Gawronski et al (2007) have speculated that “...the endowment effect and the mere ownership effect might be driven by the same underlying mechanism. In fact, they might even be regarded as the same phenomenon” (p. 231).

2 The random allocation of the ownership/possession of the good means that it is statistically independent of any would-be confounding factors that might be related to the valuation of the good or the propensity to trade. This allows statistical associations to be interpreted as causal inferences.

Causality, rationality and the ownership premium

An “ownership effect” of the kind postulated here can be represented within the framework of neoclassical economics or Austrian school economics by being incorporated in the preference ranking or as an implicit transaction cost. Of course, it is important to note that once a trade to a new endowment is made the agent will then own a different bundle of goods. As time progresses the new goods will be owned and we would expect the agent to become attached to the newly owned goods in the manner specified in studies of the ownership effect — his preferences will then change to give an ownership premium to this newly owned bundle. The new goods acquired do not have an ownership premium at the time of trade but will be expected to have an ownership premium once they become preferred by the agent. The newly owned bundle of goods starts to be regarded as superior because it is associated by the agent with himself — “it’s good because it’s mine”.

There is an argument for the case that the ownership premium is a form of irrationality. This is because it appears that people consider the loss of presently owned goods in their decision but do not account for the fact that the newly acquired goods will also come to be owned and therefore preferred. One possible argument against this assertion of irrationality would be if the psychological shift behind the ownership effect requires effort/work by the person and therefore represents a “disutility”. It might be possible that people who acquire goods spend psychological effort associating them with the self and thereby “preferring” them to equivalent unowned goods, so as to satisfy themselves with their present ownership. (There is presently nothing in the experimental literature that endorses or precludes this view and so it is an open question. It is obviously an extremely hard thing to observe in an experiment.) If this were the case then the ownership premium would represent a rational response to the fact that no further work is required to prefer a presently owned good, whereas psychological effort is required to prefer an equivalent newly acquired good. If the psychological response is automatic (i.e., cannot be avoided) but comes at a cost then it would indeed be a legitimate form of “transaction cost” incorporated into preferences.

From a praxeological perspective it is not necessary to venture into psychological explanation (though obviously it is nice that there is a plausible explanation). All that is required is to note that people are observed to trade in such a way that suggests that they value their owned goods more than physically equivalent unowned goods they could acquire. However, a causal-realist account is bolstered if there is some plausible account of how this phenomenon could arise from a regression

to fundamental wants. The psychological explanation in the behavioural literature readily provides such an account — if a sense of person's self-worth and self-esteem is a fundamental want then the association of owned goods with the self could plausibly be argued to service this want.

The ownership premium can explain certain behaviours that are common asymmetries in trading behaviour. Consider a person who owns goods which are destroyed, but are paid for by an insurance payout (exactly enough to rebuy equivalent goods to replace them). The recipient of the insurance cheque may not have been planning to sell the goods (at that same amount as the insurance payout) but nevertheless will also not re-buy them with the insurance money after they are destroyed. This asymmetry could occur because the destruction of the owned goods was a loss of something personal and associated with the self whereas the replacements will not (immediately) yield the same attachment. If the goods were to be replaced then psychological effort over time would yield a similar sense of attachment which would bring back the ownership premium, but this would require substantial psychological effort. It is interesting that Prof Richard Thaler—who coined the name of the endowment effect and has studied it extensively—describes this exact asymmetry of behaviour in his own actions when some bottles of wine he owned were stolen and he was compensated with an insurance payment to replace them. According to Thaler, “These are bottles I wasn’t planning to sell and now I’m going to get a cheque from an insurance company and most of these bottles I will not buy. I’m a good enough economist to know there’s a bit of an inconsistency there.” (see Anonymous 2008).³ It is notable here that even a professional economist, having identified the asymmetry in trading, does not seek to change his behaviour. This suggests that he does not regard it as a species of irrationality.

Some consequences of the ownership premium

One consequence of the ownership premium is that the present state of ownership of goods is robust to minor fluctuations in valuation of items and this induces stability in exchange. Accounts of trade with preferences determined purely by item characteristics, and with no transaction costs, may yield an approximation to trading behaviour, but would tend to overestimate willingness to trade. Famous efficiency arguments such as the Coase theorem apply in cases where there transaction costs are sufficiently low to allow efficient trade of goods or externalities, leading to a situation where there is bargaining to an efficient outcome regardless of the starting

³ Of course, one might argue that there is a transaction cost in selling wine, so that this situation might be due to that rather than an ownership effect. Thaler certainly took the view that his own behaviour was a form of endowment effect.

endowments. The ownership premium can be regarded as imposing an implicit transaction cost and so such theorems may not be applicable in cases where the good in question is of sufficiently low order to induce an ownership effect. (It is notable that Coase himself has argued that transaction costs can rarely be ignored, so that the theorem is only narrowly applicable; see e.g., Coase 1960.)

At an overarching level, the ownership premium shows us that there is something deeply embedded in human preference that makes one's owned goods especially important in the preference ranking. Since ownership is the prerogative to control, the psychological theory behind the ownership premium suggests that people link their recognised prerogative to control a good to their sense of self, and in so doing, they establish a personal link which causes them to value these goods more highly than physically equivalent goods for which they do not have a present prerogative to control.⁴ The underlying fundamental want is likely to be some kind of self-esteem or self-worth which is satisfied by the prerogative to control goods. From a causal realist perspective there is a plausible regression of value down to an underlying fundamental want.

Economists and other scholars who have advocated a free market system undergirded by well-defined and well-respected property rights, with minimal or no coercive intrusion, have understood the importance of secure ownership of property. Respect for property rights has been the cornerstone of liberal free market capitalism. This sense that property rights are crucial to human prosperity and happiness is reinforced by the observation that people tend to imbue their owned goods with a sense of self and apply to value premium to these goods.

Conclusion

The causal realist account of preferences requires that this value premium be attributable to some regression to satisfaction of some fundamental wants. Since physically equivalent goods are valued differently based on ownership status, the fundamental wants in question must not be something that can be satisfied by the mere physical properties of the goods in question, and so this implies a psychic want for connection of the good and the self in some way beyond mere use, as is suggested by the psychological literature on the matter.

Although the endowment effect first appears in the academic literature in Brehm (1956) it is predated in fiction by the work of Rand (1943). In that novel the psychology behind the

4 In the normative sense ownership is the legitimate right of control and in the descriptive positive sense it is a socially recognised prerogative of control.

endowment effect is neatly captured in the attitude of one of the characters, who declares: “I am the most offensively possessive man on earth. ... Let me pick up an ash tray from a dime store counter, pay for it and put it in my pocket — and it becomes a special kind of ash tray, unlike any on earth, because it’s mine.”

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The More Things Change...

Irrational Central Banking: Bubbles, Bunds and Beanie Babies

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For those who study financial market manias, it's hard to pick the ultimate bubble. The Witte Croonen, a very common tulip bulb, rose 26 times (2600%) in price just in the month of January 1637, only to crash a month later. More recently, at the end of the last millennium, a few \$5 beanie babies reportedly sold for \$10,000, at the same time dot com stocks soared. After 9/11, I watched an acre of Las Vegas residential land go from \$25,000 to nearly a million during the housing boom.

This spring, investors Doug Kass and Bill Gross thought the bubble bar was set even higher. "Near zero to negative sovereign debt yields in Europe represent the bubble of all investment bubbles, dwarfing even the Nasdaq bubble of 16 years ago," Kass wrote in a note to clients on April 15.

Janus Capital's Gross called German 10 year Bunds "The short of a lifetime. Better than the pound in 1993," in an April 21st tweet. On that day the sovereign paper in question was

yielding .108%, while lending money to the German government for two years and five years produced negative yields of .262% and .139%, respectively. Paying for the privilege of lending to a borrower, sovereign or otherwise, certainly qualifies for bubble status.

A return to sanity is slow. In June investors still had to pay to lend the German government money for two years (-.21% yield) while five year yields had “jumped” to a positive .06% and the ten year yields are at .54% after a week-long selloff.

On Thursday May 7th, the volume for 10- year bund futures was double what the market has averaged over the past five years. On that day the rate “spiked” to .786% before falling back under .58% in market action described as “complete carnage” by Thomas di Galoma of ED&F Man Capital Markets.

At these microscopic yields any sort of move beyond a couple basis points seems catastrophic. Mike Bird, writing in bold letters for Business Insider, called the increase in yield, “the biggest upward climb in a quarter century.” The Wall Street Journal reported on May 8th, “Traders were unable to pinpoint a single factor driving the selloff.” The idea that bonds were irrationally overvalued didn’t occur to them.

In October, the United States government, itself saddled with \$18 trillion of debt, was able, for the first time in its history, to float 3-month bills paying no yield. The Wall Street Journal reported, “On Monday, the yield on the one-month bill traded at negative-0.02% and the three-month yield was zero.” In an extraordinary understatement, Thomas Simons, money-market economist in the Fixed Income Group at Jefferies LLC. told the WSJ, “It is a bizarre outcome, but that is the world we are living in right now” (Zing 2015).

A world where “The Fed’s closely watched ‘dot plot’ revealed that at least one committee member floated the idea that a fed funds rate below zero might be an appropriate target for the remainder of this year and next,” writes Alex Rosenberg for CNBC. (Rosenberg 2015)

In heat of the market, as speculators give chase, bubble values make perfect sense. After all, God ain’t making no more land. Certain plush toys would become rare stores of value like Rembrandts. In the long run, stocks and houses always increase in value.

The bund bubble has had its own apologists. “One should be careful not to mix up the yield-to-maturity concept with total returns which can be positive even if yields are negative,” said Michael Leister, a senior rates strategist at Commerzbank AG in Frankfurt.

This takes the search for a greater fool to new extremes. Instead of receiving payment, bund buyers make a payment, but it will all work out in the end say the bulls because bond prices will increase even further with greater negative yields. The “Elliott Wave Financial Forecast” for May called this “a terrible rationalization for buying these bonds” (Hochberg and Kendall 2015).

EWFF went on to point out the mania was a euro-wide phenomenon. “More than 30% of all government debt in the Eurozone---around €2 trillion---is trading on a negative interest rate, according to the Telegraph (U.K.).” While the Elliott Wave analysts are famously in the deflation camp, they said, “The world’s bond markets are in uncharted waters” (*ibid.*)

David Stockman (2015) called it “flat-out derangement.” People rush into bubbles time after time thinking they can’t lose. Investors have been burned by the crashing of multiple bubbles in the unbacked fiat currency era. Government bonds would seem the ultimate in safety especially with ECB head Mario Draghi ready to unleash a Euro-QE bond buying binge. People forget what kind of shape the borrowing Euro countries are in. Stockman reminds us, “After all, the aging, sclerotic economies of the EU have been making a bee line toward fiscal insolvency for most of the last decade” (*ibid.*).

What’s old is new again as Draghi has promised the European Central Bank will buy €60 billion of bonds every month from March 2015 to September of 2016 to rejuvenate the flagging Eurozone economy. Conditions weren’t altogether different in 1715 France as Louis XIV had left the country deeply in debt and on the verge of bankruptcy.

Enter John Law, the first all-powerful central banker. Law’s prescription for economic depression was way ahead of his time -- create money, and the use of banks was the way to do it. In his book *Money and Trade Considered With A Proposal For Supplying The Nation With Money*, Law wrote of banks, “So far as they lend they add to the money, which brings a Profit to the Country, by employing more People, and extending Trade; They add to the Money to be lent, whereby it is easier borrowed, and at less use, and tho none suffer by it” (Law 1705: 22).

In addition to establishing General Bank, Law wrote in a letter to the Regent, Philip, Duke of Orléans, “I will lighten the burden of the King and the State in lowering the rate of interest on money, not by legal methods, but by an abundance of specie” (quoted in French 2009: 48). The specie Law was referring to was not metallic, but a new type of credit.

Law’s vehicle for Quantitative Easing was the Company of the West. The company’s primary asset was the exclusive trading privilege, granted by the French government, with Louisiana. The privilege was granted in exchange for the company’s conversion of the government’s debt into company stock at a lower interest rate.

Law flooded the market with banknotes and company shares as the price rocketed from 500 livres to 10,000 livres at the height of the Mississippi Bubble.

When investors tried to bail out and convert their shares or banknotes into gold and silver, Law used heavy handed measures to stop the run. Law’s decree of May 21, 1720 making banknotes more valuable than gold cast a cloud of doubt over what was supposed to be an infallible system.

And while this was the beginning of the end for Law, who was forced from the country in disgrace, financial entrepreneurs in Britain were copying his system in order to refinance Britain's debt using South Sea Company stock. The scheme unleashed the South Sea Bubble, leaving many speculators, including Sir Isaac Newton, penniless.

What will be the ultimate financial bubble? Whether it has come and gone, or we are living it now, what we know for sure is central bankers are behind these manias with their money machines. Until central banks are banished, there will be many more bubbles to study, compare, and gasp at.

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Social Choice Theory and Choice Prerogatives: A Review

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Abstract: We examine and critique the representation of “rights” and liberalism within social choice theory. We examine the mathematical definitions purportedly representing rights in a liberal free-market economy and argue that these actually represent any prerogative of control of property in any social or political system. We critique arguments against liberalism that are rooted in assertions of an alleged social choice paradox, and argue that liberalism has a strong claim to coherence and desirability in social choice theory.

Keywords: Social choice; Arrow’s theorem; Gibbard’s theorem; rights; liberalism

An interesting field within economics and broader social theory is the analysis of how to aggregate the preferences of individuals into a single “social preference” scale or choice of outcomes. Given that individual preferences may differ, how can we make judgements as to which outcome should prevail in society when people disagree? If individuals disagree, which outcome is “preferable” in a social sense, and how is this to be rationally interpreted? What desirable properties might a good preference aggregation method have, and what combinations of desirable properties are logically possible, or logically incompatible?

The first of these questions, seeking a resolution to individual conflicts of preferences, is not at all new. It has been the primary subject matter of social and political theory for as long as there have been such subjects, and it is implicit every time a person puts forward one argument or another as to how conflicts between individual preferences should be resolved. Every normative political theory puts forward some proposal about how conflicts over resources and other matters should be resolved, and who should have the prerogative to decide on what issues. Such a problem may implicitly be regarded, at least in part, as a preference-aggregation problem, and each competing political theory makes an attempt to reconcile these competing wants. Sen (1983) argues that preference aggregation can be given various interpretations, one of which corresponds to an attempt to answer normative questions in political philosophy.

Since this fundamental aggregation problem of “social choice theory” is already implicit in every kind of political and moral theory, the innovation in this field is twofold. Firstly, by making the preference-aggregation problem explicit, social choice theory elucidates political and moral philosophy, presenting it, at least in part, as a problem in applied mathematics. Secondly, social choice theory attempts to “solve” this preference-aggregation problem, by undertaking a mathematical analysis of the extent to which well-defined ordinal preferences can actually *be* aggregated, and what combinations of desirable properties are logically possible from such an aggregation. Formally, the subject can be regarded as a branch of mathematical inquiry related to “order theory” (see e.g., Davey and Priestley 2002, pp. 1-32), but concerned specifically with the study of how multiple ordering relations over a set of outcome can be aggregated into a single ordering or choice relation on this same set.

The field of social choice theory has roots which can be traced back to early discussion of voting systems in the senate of the Roman Empire (see McLean and London 1990). Early works put forward proposals for voting systems to try to avoid manipulation of preferences. Better-known examples came later, in the works of de Borda (1781) and Condorcet (1785), which examined the ordinal properties of majority voting. Condorcet noticed, among other things, that individuals with transitive preferences between outcomes could aggregate their preferences using majority voting, but this aggregation could yield a “social preference” (according to the majority count) which is actually intransitive, and hence, not useable as an ordering. In essence, he found that rational individual preferences could lose one of their primary rationality criteria when aggregated in this way. This was an early foray into the field, and later work by Arrow (1951) generalised this analysis to give various desirable properties for an aggregation of preferences, and a broader analysis of the logical limitations on whether these properties could

be simultaneously achieved.

An important aspect of social choice theory is the examination of “rights” which are broadly conceived as prerogatives by agents within the model to choose between outcomes under their own control. This was initially examined by Sen (1970) and later by Gibbard (1974) leading to a large literature on the proper formulation and implications of rights within social choice theory.

In the present paper we examine some of these ideas in social choice theory and look at the interface between this subject matter and issues relating to the free-market economy versus a government-planned economy. The goal of the paper is to present a review of some technical results in this field that are relevant to the social system of liberal free-market capitalism. In particular, we will review technical results pertaining to the logical consistency of some desirable aggregation properties, and we will review results and debate pertaining to whether or not a preference-aggregation respecting the liberal approach can be rationally justified.

Preliminary remarks on the liberal free-market economy and rights

Before we proceed to the technical material in social choice theory some brief remarks about the theory of liberalism (i.e., free-market capitalism) are in order. A free-market economy is one in which private property rights are recognised, and these property rights are applied to allow the resolution of disagreements over the use of resources; coercive intervention (e.g., by a government) is either absent, or at least restricted to some small level. Proponents of a free-market economy have argued that property rights allow a sensible resolution to resource disputes and give morally and economically superior outcomes to coercive intervention (see e.g., Hoppe 1989, Hoppe 2006, Rothbard 2006, Mises 2010). In essence, property rights operate to demarcate which individuals have prerogatives to decide on the use of particular resources, yielding a simple rule for whose preferences should obtain in the case of a conflict over the use of resources —i.e., the owner decides the use of his resources, even if others disagree. This approach allows a simple operational criterion for who should decide on the employment of resources, since the owner’s preference overrides the preferences of others with respect to the employment of his owned resources.

The prerogatives of private property rights have particular properties which encapsulate the free-market system. Private property rights give the owner the prerogative to choose how a particular piece of property is used, but they do not necessitate any particular decision. It is open to the owner to refrain from exercising his property right if he wishes. Unless the right is inalienable it can be permanently extinguished or transferred to another by the owner. Voluntary trade of alienable property rights is regarded as legitimate, but involuntary transfer (through coercion by others) is illegitimate. By allowing property rights in specific goods to be traded freely, these prerogatives (i.e., ownership) can move by trade to where they are most beneficially employed. It also allows free trade of property to yield mutual gains to transacting parties, which is itself a beneficial property.

Social choice theorists have approached this matter by formulating “rights” as prerogatives of individuals in the society to choose between available outcomes (see e.g., Sen 1970) and this has then engendered much debate on the implications of “rights” and “liberalism” in social choice theory (see e.g., Wriglesworth 1985). The formulated prerogatives have been taken as a necessary condition for liberalism and their absence has been taken as indicating non-liberalism (see e.g., Gaertner, Pattanaik and Suzumura 1992, p. 164). We will argue that this represents a complete misconception on the proper distinction between free-market liberalism and its antipodes, which also have their own systems of prerogatives with the same social choice properties. While rights certainly represent a particular example of a prerogative to control some social outcome, they are not the only example of prerogatives of this kind. Indeed, any political system, no matter how interventionist, must involve people with prerogatives to make decisions with respect to some outcome in society. In a market economy this is done by adherence to private property rights. In alternative systems this is done through political power, according to whatever particular system is used. In a socialist system of central planning there would be agents in the economy (the planners) who would have prerogatives to choose between social outcomes.

Some basic concepts and properties in social choice theory

The basic mathematical framework of social choice theory takes the neoclassical approach of fully specifying individual preferences and constraints and considering the possible ways that individual preferences can be aggregated. Though the formal analysis does not assume that individual preferences are known to any other party, the analysis is often accompanied by discussion of what a “planner” should do with this information in order to obtain a result with good social welfare properties. For example, in contrasting social choice theory with game theory, Pattanaik and Salles (eds) (1983) state that “[i]n social choice theory ... the properties of the [social choice function] are the concern of the planner only (individuals are assumed simply to announce their preferences) and the relevant properties of the [function] are those of justice” (p. 95). In an analysis of a utilitarian variant of social choice theory Manski (2005) notes that “[e]conomic theorists studying social choice have long assumed that planners know the response distributions and have sought to characterise the optimal treatment rules” (p. 8).

Such framing of the discussion is common, but it is also contradictory to the formal analysis, since it implicitly assumes the existence of a party which is motivated to eschew his own preference to obtain some desirable social outcome. Such analysis also implicitly assumes that the relevant party has access to the information required to do this, which may include access to the preference orderings of the people in the economy. It is usually implicit in such discussion that the government will act as planner, and will act from outside the model, unaffected by the preferences of its own agents. Since such agents are not included in the preference model, with specified preferences of their own, this is an example of treating these agents as a *deus ex machina* in the model (see O’Neill 2014 for discussion).

The fact that social choice theory is often accompanied by discussion of the “planner”

means that it is presented as a problem of social “engineering” in the sense famously criticised by Hayek (see e.g., Hayek 1945, Hayek 1975, O’Driscoll 1977, and Hulsmann 1997). In the first instance, this engineering problem is implicitly done from outside the society under consideration, by the attempt to determine the solution to a fully specified mathematical problem. Under this approach the analyst takes on the role of an omniscient “planner” or “social engineer” attempting to solve the aggregation problem. This, of course, is only a starting point, and even here we will see that there are results which are of interest. We will show later that there is scope within the aggregation framework to see how the problem can be solved by appeal to individual prerogatives exercised by the members of the society under consideration —i.e., to private property rights— without any outside planner being present. We will also give some preliminary indications as to how these prerogatives could be used to bring a planner or planning agency inside the model, so that the distinction between a free-market economy and a planned economy could be sensibly examined.

The mathematical framework of social choice theory involves multiple individuals with ordinal preferences over a set of outcomes (see e.g., Gaertner 2009, pp. 6-13).¹ Consider a situation with individuals, each of which have some ordinal preference ranking over the set of outcomes. The preference ranking for each individual can be taken to be a non-strict total order (in mathematical parlance) ranking outcomes on an ordinal scale.² There is one of these preference rankings for each individual, and the goal of the analysis is to aggregate these individual preference rankings into a single preference ranking (or in other kinds of analysis, possibly a choice of a subset of outcomes).

Since the particular preference of the individuals may vary, the most general way to approach this problem is to regard the aggregation as a mathematical function which takes the set of all possible combinations of individual preferences as its domain, and maps each of these to a single aggregated preference. To do this, we denote the individual preferences by (collectively called a “preference profile”) and we denote the aggregated preference as (called a “social preference”). The latter relation may be given a normative interpretation as being a desirable outcome in the case of preference conflict.

The social choice problem consists of choosing a function which maps the preference profiles to the aggregated preference (called a “preference aggregation rule”).³ Observe that

1 Actually, some authors within the subject have extended this analysis to look at cases where the preferences are comparable in more strict senses —e.g., when preferences are measurable in a cardinal sense for an individual, or even interpersonally comparable; see e.g., Sen (1970). This kind of analysis usually yields results for ordinal preference relations as a special case.

2 The standard way in which the subject is treated is to begin with a non-strict total order which is a reflexive, complete and transitive binary operator on. This means that for all we have (reflexivity), or (completeness), and whenever and (transitivity). This operator is interpreted in such a way that means that outcome is no-worse-than outcome according to the preference of the relevant individual. From this initial operator it is then trivial to define a corresponding equivalence relation and strict total order which are the symmetric and anti-symmetric parts of the total order. These have corresponding interpretations as indifference and strict preference.

3 The preference aggregation rule is referred to by other names depending on the context of the aggregation problem. For example, in “social welfare analysis” the function is often called the “social welfare function”. We use the more neutral terminology here, both to indicate the generality of application, and also to avoid any dubious refer-

this is an engineering problem, and in the first instance many analysts ignore the fact that there is dispersed knowledge in the economy, regarding the problem simply as being a choice of mathematical solution from “outside the model”. In our analysis we will first consider the problem in this way, but then show that it is possible to obtain a sensible aggregation method by appeal to prerogatives of individuals who are “inside the model”.

The starting point for analysis of preference aggregation rules within this framework is to set out some desirable properties, or purportedly desirable properties, and to see the extent to which these are logically compatible. Arrow (1951) famously approached the problem in this way, setting out various *desiderata* which he believed a preference aggregation rule should obtain. Here we set out the basic properties of interest in our problem.

Ordinal and incomparable preferences (OIP): The mathematical framework we have used involves ordinal preferences which are not interpersonally comparable. This property does not involve any further assumption, but is implicit in the above definitions of the preference rankings and the preference aggregation rule.

Universal domain (UD): In order to ensure that we can aggregate any possible preference profile, the domain of the preference aggregation rule should be the set of all possible n -tuples of individual preferences. Mathematically, if $\mathcal{P}$ is the set of all possible preference orderings we must have $\mathcal{P}^n$.

Non-degenerate aggregation (ND):⁴ In order to be a genuine aggregation, distinct from the individual preferences in the preference profile, the aggregated ranking must be different from each of the individual rankings (i.e., not equivalent to any of the individual rankings). Mathematically, we must have $R \neq R_i$ for all i .

Pareto principle (weak form) (PAR): If each individual regards an outcome x as being better than another outcome y then the aggregated preference order must also rank it in this way. Mathematically, we must have $x \succ y$ whenever $x \succ_i y$ for all i .

Pareto principle (strong form) (SPAR): If each individual regards outcome x as being no-worse than outcome y then the aggregated preference order must also rank it in this way. Mathematically, we must have $x \succsim y$ whenever $x \succsim_i y$ for all i .

⁴ The non-degeneracy condition is referred to in the literature of social choice theory as a “non-dictatorship” condition. The reason for this is that Arrow initially conceived of his theorem in the context of the aggregation of preferences for the purposes of voting. In this context, a degenerate aggregation (which mimics one of the individual preference rankings) would constitute a dictatorship, in which the individual in question dictates the outcome of the vote entirely by his own preferences. This is a very unfortunate terminology in other contexts, and can lead to dubious interpretations of the theorem, since the term is loaded with a political meaning which is different from the narrow technical interpretation in social choice theory. In particular, the very nature of private ownership of a resource is that it grants “dictatorial” power over that resource — i.e., the owner gets to decide the use of the resource regardless of the preferences of others. In cases where the aggregated “social preference” is of this kind, it is more sensible to say that there is not really a genuine aggregation of preference at all — there is merely application of an individual preference. For this reason we have adopted the more general term “non-degenerate” instead, so as to avoid loading our discussion with unintended political meaning. This is intended to convey the fact that an “aggregation” that mimics a single individual’s preferences is not really a genuine aggregation at all.

worse-than outcome x , and at least one regards outcome x as being better than outcome y then the aggregated ranking must rank x as better than y . Mathematically, we must have $x \succ y$ whenever $x \succ_i y$ for all i and $x \succsim_j y$ for some j .

Independence from other alternatives (IOA): The preference between two outcomes x and y in the aggregated ranking should only depend on the preferences between x and y in the individual rankings (i.e., it should not depend on the preferences for other outcomes). Mathematically, this means that for any two preference profiles R and R' and for any two outcomes x and y we have $x \succ y$ whenever $x \succ_i y$ for all i . (The aggregated preferences R and R' in this expression correspond to the two preference profiles.)

The above IOA condition is referred to in the literature of social choice theory as “Independence from *irrelevant* alternatives”, rather than *other* alternatives. The terminology comes from Arrow, who regarded it as desirable that the preference aggregation would not have regard to these other alternatives, at least in the context of voting systems —i.e., he regarded them as irrelevant (see Arrow 1951, pp. 26-28). However, quite a bit of the later work on social choice theory has challenged Arrow’s view here, and in this paper we argue that this condition is not actually desirable, and ought not be satisfied —i.e., these other alternatives are not actually irrelevant.

Arrow’s Impossibility Theorem and its implications

In addition to specifying various *desiderata* for preference aggregation, the main insight of Arrow (1951) was to show that these properties are logically incompatible, leading to an inherent logical constraint on preference aggregation. (Proof of the result is omitted, but can be found in many intermediate or advanced texts on microeconomics or social choice theory; see e.g., Jehle and Reny 2000, pp. 240-250; Gaertner 2009, pp. 19-33).

Arrow’s Impossibility Theorem: If the set of outcomes X has at least three elements then there is no preference aggregation rule which satisfies OIP, UD, ND, PAR and IOA.

Corollary: Suppose we have a set of outcomes X with at least three elements and we want to construct a preference aggregation rule satisfying OIP, UD and PAR. The only way to form a genuine aggregation (i.e., one satisfying ND) is to violate IOA.

Although the mathematical result is unambiguous, Arrow’s theorem has been interpreted in various different ways in the literature. The best interpretation depends very much on which of the conditions are regarded to be indispensable, and which are regarded as unimportant, or even undesirable. Since an aggregated preference ranking is implicit in any attempt to rank social outcomes, which every political theory does to some extent, it should at least be clear that it is necessary to deny one of the above conditions.

Some authors have argued that the ordinal framework is overly restrictive, and have sought

to get out of the impossibility problem by dispensing with this framework. Sen (1982) sets out a system for cardinal utility and interpersonal comparisons of utility where OIP does not hold. Following de Borda, other authors such as Saari (1990) have suggested retaining the formal OIP framework but dispensing with the IOA assumption to allow for quasi-cardinal preferences, where a quasi-cardinal measure of utility is obtained by counting the number of outcomes ranked between two alternatives (this is called the “Borda count”). This method sneaks cardinality in through the back-door of preference ranking counts; in effect it is a form of cardinal utility. While this gets out of the mathematical quagmire, it runs up against strong arguments for ordinality from the theory of revealed preference (see e.g., Gordon 1992, Rothbard 1997, Mises 1998, Barnett 2003, Rothbard 2006).

Another approach to dealing with Arrow’s impossibility theorem has been to dispense with the UD assumption, essentially counting certain preference profiles out of the domain of the problem. Black (1948) shows that if one restricts attention only to profiles that are “single-peaked” then the impossibility result dissolves. These “single-peaked” preferences involve cases where all individuals being aggregated have preferences along a linear scale with all individuals falling in a straight line, and preferring outcomes that are closer to their own point on that line (e.g., all individuals can be classified along a line from left-wing to right-wing, with all preferences for outcomes depending on this). This shows that the impossibility result follows, in part, from the highly heterogeneous preferences allowed by the UD assumption. While interesting, the “single-peaked” profile is far too restrictive to represent preferences in real world problems, where varied and diverse preference patterns obtain.

In the view of the present author, the best interpretation of Arrow’s theorem is the one set out in the above corollary, based on acceptance of the OIP, UD and PAR assumptions. The OIP framework is necessary to treat preferences according to their proper ordinal structure, the UD condition is necessary to ensure that aggregation is possible regardless of the preferences of the individuals under consideration, and the PAR condition is necessary to obtain a rational aggregation with a genuine claim to being desirable in its own right. Under these conditions, Arrow’s theorem tells us that any genuine preference aggregation rule cannot satisfy IOA — in other words, it must, in some instances, require recourse to those “other alternatives” that Arrow had called “irrelevant” in the context of voting problems.

Pareto improvement and the framework of “rights”

Proponents of a market economy have often grounded their arguments in appeals to restrict transactions only to those which are Pareto-improving between the participants, and which involve their own exercise of prerogatives over their own resources —i.e., only to consensual transactions, as opposed to coercive actions. Property rights allow a sensible resolution to individual disagreements over the use of resources by making clear who has the prerogative to use each particular resource. Although there is no explicit treatment of knowledge within the social choice framework, the appeal to private property is well known to allow for a price system which coordinates knowledge about the scarcity of resources.⁵

⁵ We refer here to the fact that there is no reference to knowledge sets for the individuals in the preference

In putting forward this normative theory, proponents of the free-market economy are implicitly putting forward a preference aggregation theory which rules out a large class of “transactions” in which one party gains at the expense of another. Coercive actions that violate rights are not allowed, and so the allowable transactions now consist of the exercise of rights, where an individual uses his property as he wishes, without impinging on the corresponding rights of others.

The preference aggregation in this case appeals directly to the preferences of individuals in their use of their own bodies and property. This appeals to the Pareto principle, insofar as the allowable transactions involve mutual benefit to all voluntary participants. It also appeals to the idea of making the preference aggregation “locally degenerate” in the sense that the use of each resource appeals directly to the wishes of the owner of the resource, so that his own will prevails, regardless of how many others disagree. No single individual determines the entire preference aggregation (i.e., the ND condition holds) but each determines his own part of it, through his prerogatives of ownership. We have already noted that this yields a simple operational criterion for who decides on the employment of resources.

In relating this political/philosophical position to the theory of preference aggregation, it is necessary to introduce the framework of “rights” into the aggregation problem, and to show how a rights-respecting aggregation would work. It is also important that we identify why the rights-based approach would violate the IOA condition in Arrow’s theorem. All of this is well set out in Gibbard (1974) in his work on the mechanics of preference aggregation theory implicit in the libertarian view of society. Later work by other authors expands on this theory in useful ways (see e.g., Basu 1984, Sugden 1985, Gaertner, Pattanaik and Suzumura 1992 and Deb 1994). Gibbard and later authors put forward the mechanics of rights as follows.

Individual right: Given some outcomes a right can be represented as an ordered triple interpreted as meaning that individual has a right to choose outcome over . Roughly speaking, this means that the individual has the prerogative to make this choice, regardless of the number of other people with different preferences. A set of ordered triples of this kind is a “rights system” for the society. (The system must be consistent in the sense that no two people may have the same right. Other conditions on coherence have also been proposed; e.g., Suzumura 1978, p. 331; Sen 1976, p. 243.)

We will later argue that the above formulation captures essentially any prerogative of control regardless of whether this is a “right” in a liberal free-market economy, or say, the prerogative of a central planner in a socialist economy. In any case, it is also notable that the above definition entails only a one-way prerogative —i.e., just because the individual can choose over does not mean that he necessarily has the prerogative to choose over . (A person might have the latter prerogative or might not.) Symmetric prerogatives can easily be allowed into this framework aggregation problem. Recognition of the limited knowledge of individuals may be built into the solution, as is done in the preference aggregation representing the free-market position, where individuals are given prerogatives to make choices with their own property.

as pairs of one-sided prerogatives. If individual i has the right to choose x over y or y over x we can represent this by the pair (x, y) and (y, x) .

Rights-respecting (RR): For every right R we have R whenever individual i decides to exercise this right.

The RR condition captures the view that when a person decides to exercise their right to choose outcome x over y the social preference ranking must regard the chosen outcome as preferable to the unchosen outcome; this respects the person's right to make this choice. There is a large and complicated literature on when a person will decide to exercise a right in social choice theory (see e.g., Gibbard 1974, Basu 1984, Sugden 1985, Gaertner, Pattanaik and Suzumura 1992 and Deb 1994). Initial work by Sen 1970 put forward a simple and unsatisfactory rule equating preference with exercise, but later work put forward strategic game-theoretic arguments on when rights are exercised.⁶ Roughly speaking, the individual will want to exercise this right if this will cause him to be put in a more preferred position (on his own preference ranking) than if he does not exercise the right. This may depend on the rights held by others and their own preferences (see Gibbard 1974 for details).

In the literature on the exercise of rights, Gibbard refers to an individual "waiving" his right when he chooses not to exercise it. Similarly, Basu (1984) speaks of the right to "give up rights". This terminology is somewhat unfortunate, since it is possible for a rights-holder to retain the right but choose not to exercise it in a given situation, or alternatively, to waive or transfer an alienable right on a permanent basis. Within the framework of social choice theory there is no consideration of actions taken over time, and so the distinction evaporates. However, the present author uses the language of exercise and non-exercise of rights here, rather than waiver, to make this distinction clear.

The study of rights in social choice theory first came about in Sen (1970) in which the author argued that respect for rights is incompatible with the Pareto condition in some situations (the so-called 'Sen paradox'; for discussion see Sen 1999, pp. 363-364). However, as already noted, this work put forward an unsatisfactory rule for the exercise of rights. Gibbard (1974) used the framework of a rights-respecting society and his own formulation of the strategic exercise of rights to show that the notion of rights is compatible with the Pareto condition, contra the Sen paradox. He shows mathematically that a right-respecting aggregation can also be Pareto optimal, so long as the number of possible outcomes is not too small (a condition which is always satisfied in actual practice). (Proof of the result is omitted here; see Gibbard 1974, pp. 401-402).

Gibbard's Libertarian Possibility Theorem: If the number of outcomes in X is at least as large as the number of individuals n , then there exists at least one preference aggregation rule satisfying OIP, UD, ND, PAR and RR.⁷ (This is based on the formulation of exercise of rights

6 Gaertner, Pattanaik and Suzumura (1992) discuss and critique Sen's formulation of rights in detail (see pp. 162-169). They note that various intuitive notions of rights are not properly captured by Sen's formulation.

7 Gibbard presents his theorem slightly differently. He does not mention the conditions OIP or UD directly

set out in Gibbard 1974.)

Later work on rights has set out more complicated game-theoretic conditions for when rights are exercised, and this has led to alternative conceptions of the RR condition (insofar as it has involved alternative conceptions of when rights are exercised). In any case, Gibbard's theorem is important in that it shows that a system of prerogatives is not incompatible with the Pareto condition. His theorem shows that this solution does not encounter any logical problem in meeting with other valuable desiderata. Moreover, his exposition of this theorem also shows why the IOA condition desired by Arrow does not obtain. Gibbard shows that there are instances where a rights-holding individual will be made worse off by exercising his right, because this action would induce another person to also exercise their own rights to his detriment.⁸ In such a situation the person will either want to unilaterally refrain from exercising his right, or will wish to contract with the other party for mutual non-exercise of the rights, or some other mutually beneficial outcome. In such a case, the action of the rights-holder is affected by preferences over "other alternatives" so that IOA does not hold.

Gibbard's work was done in response to 'Sen's paradox' and showed that the paradox arises only from the incorrect assumption that rights are exercised without consideration of the preferences of others. Sen argued that his result showed a paradox in liberalism, but his characterisation of "liberalism" did not reflect the way that rights are actually exercised within this framework. This discovery led to a substantial amount of discussion over the proper conception of rights within the social choice framework (see e.g., Farrell, 1976, Sen 1976, Suzumura 1978, Sen 1983, Basu 1984, Sugden 1985, Nagahisa 1989, Gaertner, Pattanaik and Suzumura 1992, Deb 1994, Sen 1994). The result of this subsequent work is a broad theory of the exercise of rights based on strategic considerations.

In view of the various strategic formulations of rights-exercising, and Gibbard's consistency proof, Sen's approach to the formulation of rights and the consequent "paradox" of liberalism is seen to be an unsatisfactory description. Kaplow (2005) notes that Sen's approach to rights "...implicitly prohibits both government regulation and private exchange in which individuals mutually relinquish their posited liberal rights" (p. 3).⁹ Hausman and McPherson (2006) also

in the theorem, since these are implicit in the mathematical framework he is using. Moreover, he does not use the condition ND directly, since his only concern is to show the compatibility of PAR and RR. Nevertheless, the fact that ND is also obtainable is implicit in the fact that many rights-systems involve prerogatives assigned to different people, and this is sufficient to ensure that ND does not hold. Hence, we have presented the theorem here with the additional conditions that we have spoken of in the context of dealing with Arrow's impossibility theorem.

8 This demonstration also shows the problems in the many examples against the liberal framework —e.g., the examples put forward in Sen (1970) and Sen (1983). Though these examples are presented as "paradoxes" of liberalism, they are easily resolved by the parties contracting for mutual non-exercise of their rights.

9 Sen (1983) responds further to this issue and argues that Gibbard's solution does not refute his argument for incompatibility. His argument is strange, in that he says that Gibbard's argument applies where the individuals are deprived of actual choice of outcome due to the actions of others, whereas he is considering the case where the relevant outcomes are actually available. However, a proper reading of Gibbard's argument shows that his whole point was that he denies Sen's assertion that such a situation occurs. Sen seems to misread the argument in Gibbard, leading him to reassert his same position. For further discussion and criticism of Sen's alleged incompatibility result see e.g., Blau (1975), Gaertner, Pattanaik and Suzumura (1992) and Dowding and van Hees (2003).

sum up the situation admirably: “In the view of Sen’s critics, there appears to be a conflict between rights and the Pareto principle only because rights have been mischaracterised in terms of decisiveness. Rights should instead be modelled as sets of strategies in suitable game forms.” (p. 227).

Other objections have been raised against the RR condition, based on certain formulations of the exercise of rights. Basu (1984) shows that a Pareto optimal outcome of these social choices may not be “Nash equilibria”, and this has been taken by some as a criticism of the condition (see e.g., Hausman and McPherson 2006, pp. 227-228). Again, this objection is only forceful if one disregards the ability to cooperate and contract within a rights framework. The absence of Nash equilibrium status merely shows that there are unilateral incentives for changes in decision in such outcomes, so that cooperation and contract is required to form a stable equilibrium (i.e., there must be some mutual waiver of rights or mutual agreement to refrain from exercising certain rights). Since cooperation and contract is clearly allowable within the private property rights framework it is again quite absurd that this is taken as a serious objection to the rights-based framework or the philosophy of liberalism.

The “rights” framework as a necessity for social choice analysis

Discussion of the RR condition in social choice literature has almost always proceeded on the basis that this is a property of the liberal free-market economy. Hence, showing that the condition is reasonable has been regarded as a hurdle for liberalism, and any result that calls the condition into question has been regarded either as a “paradox” of liberalism or as a blow to the case for liberalism.

All of this has been done merely by labelling the prerogatives in question as “rights” and using examples which show the exercise of prerogatives in the context of a liberal market economy. However, analysis of the mathematical content of the rights framework and the RR condition shows that it is nothing more than specification of various prerogatives for agents in the model to choose one outcome over another. There is nothing in the mathematical condition which distinguishes a genuine private property right in a liberal free-market economy from, say, the prerogative of a central planner in a socialist economy, or the royal prerogative of an absolute monarch, or any other exercise of prerogative in any political system. Since ultimately there must be some decision maker, all such prerogatives would be exercised by the prerogative-holder having the decisive say over a pair of outcomes.

This takes us back to our initial discussion of the “planner” in social choice theory and the “social engineering” conception of the problem of social choice. For as Hayek has taken great pains to point out, the choice between socialism and liberalism is not one of planning versus non-planning — it is merely a choice of whether the multitude of plans of individuals are coordinated by the market, or overridden by the plans of a central few (Hayek 1944, pp. 34-35). In the case of liberalism each individual pursues his own plan based on the prerogatives obtained from his property rights. In the case of socialism the agents of the state implement their plans based on

their prerogatives as central planners. Indeed, since all political systems involve a set of people with preferences over outcomes, and prerogatives to control certain resources and make certain decisions, *all* political systems must be represented within the social choice framework by some kind of system of prerogatives (what has been called a “rights system” in the social choice literature).

The real distinction between liberalism and competing political systems is not that there are prerogatives that are exercised, but that there is a specific framework for these prerogatives (i.e., private property rights) based on voluntary acquisition and transfer. We have already noted that a liberal economy involves rights which can be voluntarily transferred to others but which cannot be coercively acquired.

In view of this, the rights framework and RR condition in social choice theory should be seen as a general requirement of evaluating the prerogatives of individuals in any political system. The framework and conditions should be general conditions for any analysis, but would be better served by being labelled in a less misleading manner, not as a “rights system”, but merely as a “prerogative system” with a corresponding “prerogative-respecting” condition. While this is a helpful starting point for describing various political systems, it is not really complete enough to faithfully capture distinctions. The present framework does not allow for joint ownership of property, and the various complications that arise in this.¹⁰ It also does not allow for the transfer of rights to others over time, and therefore does not make any distinction between alienable and inalienable rights, or exchanges of property. (Actually Gibbard does refer repeatedly to “alienable rights” in his paper, but what he means is simply that the holder may choose not to exercise the right. This is not the standard meaning of the term.)

Part of this is because the framework of social choice theory involves a single aggregation problem and does not consider changes over time, meaning that there is no later point in time when prerogatives might have changed. Hence, there is no distinction between voluntary contract and transfer of property rights, as against coercive taking of property. A richer framework of social choice theory would incorporate the possibility of action over time, and a prerogative framework would incorporate the distinction between waiver or transfer of a prerogative, and mere non-exercise of the prerogative at a particular point in time. It would also need to show how prerogatives can be transferred in the system.

A fully developed system of social choice theory would also need to meet the challenge set by Hayek (1945) to describe the diffuse spread of knowledge in society. This might involve the specification of knowledge sets for individuals in the economy, and consideration of how the restriction on knowledge restricts the abilities of agents to cooperate and contract. It would also

¹⁰ The “rights” put forward by Gibbard accrue only to individuals, and hence, this framework would not allow for joint ownership of a resource. Expansion of this framework to allow for joint ownership would need to construct a right accruing to the group of joint owners, and would also require elaboration of how conflicting preferences among the joint owners are aggregated into a single exercise of the ownership right. This could be done by treating the joint ownership as a smaller preference aggregations occurring within the framework of the wider “social choice” aggregation.

need to consider the fact that, ultimately, any “planner” in such a system, must also be an agent in the system, with his own preferences and incentives, and his own knowledge restriction. Such an agent should be represented in the model rather than being a *deus ex machina* coming from outside (see O’Neill 2014 for discussion). Moreover, if any agents have a special status in the model (e.g., as planners) then there would need to be specified mathematical conditions showing how they are chosen for these positions based on the preference of all the people in the society, and how they can be removed from those positions. This is an enormous endeavour, and such considerations tell us that the field of social choice theory is not yet well-developed, and it is not yet able to meet the standard challenges that Hayek and Mises have thrown up against the engineering-based conception of neoclassical economic theory.

The intuition of Pareto optimality in the liberal free-market economy

The fact that the rights framework and RR condition are seen as an aspect of liberalism is evidence of a defect in political understanding in social choice theory. The many papers putting forward purported “paradoxes” and critiques of liberalism on this basis also show a general failure to properly conceive of the distinction between political systems. All of this is evidence, not of any defect in the rights-based framework, or in liberal political philosophy, but of the obtuse way in which this framework is handled in much of social choice theory.

Notwithstanding Sen’s incorrect conclusion of a “paradox” in the liberal market economy, it is of course correct that the presence of ‘meddlesome’ individuals can cause problems in any society involving individual prerogatives, insofar as it makes the exercise of prerogatives more difficult. In the case of liberalism the presence of meddlesome individuals makes it harder to find mutually beneficial exchanges and makes it harder to avoid externalities. The proper conclusion from this is not to believe that liberalism suffers from a “paradox”, but simply that a misalignment between prerogatives and preferences can cause problems. In the context of a liberal free-market economy, things will obviously function best when the political order of property rights is fused with a corresponding liberal social ethic, under which individuals are encouraged to “mind their own business” and therefore restrict their preferences to be ‘non-meddlesome’.

Though we have already shown that the RR condition is compatible with PAR, it is useful to consider the reason why liberalism has a higher intuitive claim to Pareto efficiency than other systems. Recourse to complicated mathematical statements of social choice theory can have the effect of obscuring the basic intuition of why a free-market economy with private property rights *must* be able to lead to a Pareto optimal outcome, but this can be easily understood if one considers the connection between Pareto improvement, rationality and voluntary exchange. Regardless of the apportionment of rights, it is possible for agents in a liberal free-market economy to negotiate coordinated action to exercise their rights in any way that is beneficial, so long as there is agreement by all in the group. Cooperation and contract are allowable in this framework, and any right which exists can be exercised in accordance with a cooperative scheme. Ownership of resources can be transferred on a voluntary basis allowing for mutually

beneficial exchange. Moreover, since liberalism does not allow for coercive transfer of rights (or at least, allows it to a lesser extent than other systems) this means that actions in which a party is made better off by making another party worse off are precluded.

In any particular market economy, at any point in time, there will be some existing state of affairs and some existing set of rights. (It is notable that the social choice framework does not start at any existing state.) If the existing outcome is not already Pareto optimal then, by definition, there exists an achievable state where at least one person is better off and none are worse off. Since none are worse off it must be the case that (rationality prevailing) there will be no obstruction of the attempt to achieve such a desirable state. (Or, to put the matter another way, obstruction of such a state by an individual is a demonstration via revealed preference that transition to the new state is *not* a Pareto improvement, as was presumed.) Since there is no obstruction by any agent in the economy, any rights can be exercised in accordance with a cooperative attempt to achieve the desired Pareto improvement, and since this cooperation extends to the set of all agents, the cooperation is capable of attaining the desired state.

The only time there could possibly be an impediment to this process is if the exercise of rights must occur sequentially in time, and the later exercise of a right cannot validly be restricted by contract with a party that exercises their right earlier.¹¹ This might occur in some cases involving inalienable rights (which cannot be extinguished or transferred), but even in these cases, if the agents in the economy have knowledge of which rights are inalienable then they will tend not to enter into contracts which they cannot enforce and which give rise to a risk of non-compliance by the other parties.¹² In this case, the restraint of cooperation by a party fearing non-compliance constitutes a (risk) preference based on the fact that the Pareto-improved outcome is uncertain.

This conclusion of Pareto optimality is a matter of pure deduction, following directly from the assumption that agents in the economy are able to cooperate, and do not act to obstruct states which make them no worse off. Any purported situation in which a market economy fails to achieve a Pareto efficient outcome must be caused by a failure to cooperate in allowable and desirable ways, which can only be represented as a failure of information or rationality. In such cases the “failure” of the market economy must then be balanced with the corresponding “failure” of coercive interventions by the same kinds of irrational agents.

11 An archetypal example of this case would be the consideration of the right to life (i.e., ownership of one’s own body), which is considered to be an inalienable right within the libertarian framework.

12 Suppose, for example, that three starving men wish to draw straws to determine who will consent to be eaten by the other two. In such a case it may be a Pareto improvement to the parties for one random man to be killed and eaten, rather than all three men facing the prospect of certain death by starvation. (Suppose also that waiting for the first man to die naturally of starvation and then be eaten is undesirable, since he will then have less body mass to eat.) If the right to life is indeed inalienable then this contract involved in drawing straws is non-binding —i.e., a person cannot validly contract away his right to life and so he may lawfully refuse to be eaten even after drawing the short straw.

In such a case it is doubtful that rights-respecting individuals would enter into a contract of this kind unless they had confidence that the drawer of the short straw would decline to exercise his right to life when given the opportunity to do so. If it were known by the parties that one or more of the parties was unlikely to “follow through” then it is unlikely they would contract.

In the literature on social choice theory this intuitive result is often obscured by technical treatments of “liberalism” which effectively disallow cooperation and contract by the parties. It is also obscured by the use of examples which treat decision processes as a single act rather than a series of acts and transactions taken over time. For example, it is common in the social choice literature to see authors construct examples of cyclical preferences and assert that this causes problems for a rights-based system.¹³ These are easily resolved within the liberal free-market economy by noting that this would simply lead to cyclical action, until such time as the parties (acting rationally) recognise the futility of continued action, and seek to resolve things by cooperation (or by one party rationally becoming too exhausted to continue the cyclical action, and therefore changing preferences).

Implications of social choice theory for the market economy

The mathematical framework of social choice theory, as presently developed, expresses the preference aggregation problem in the form of a social engineering problem, with outcomes and preferences that are fully specified. Under such conditions, it would not be surprising to see proposals for an outside “planner” —operating outside the framework of the individuals in the model— to aggregate the preferences of many distinct individuals. Nevertheless, even in this field we see that a framework of prerogatives can be constructed in a way that achieves desirable properties. What is also heartening is that the prerogative-based solution comes with a sensible explanation for why the IOA condition in Arrow’s theorem does not hold, and why this makes sense.

At present the field of social choice theory has not progressed far beyond the stage of sets of “rights” at a single point in time. Because there is no framework for showing how rights are acquired and transferred, it is not possible within this framework to distinguish between a liberal free-market economy and alternative systems such as socialism, feudalism, etc. Still, the results that do exist show that there is nothing in the basic framework of prerogatives that would count against liberalism. Though there has been talk of a “paradox” of liberalism, and other critiques, these are based on a misspecification of the system of property rights that prevails in a free-market economy.

There is good reason to believe that the appeal to a free-market economy, based on private property rights, can obtain a sensible preference aggregation which successfully achieves the desirable properties put forward in the planning problem of social choice theory. It is known that

¹³ There are various standard examples in the literature; e.g., Gibbard (1974), p. 389 (coloured-walls example); Sen (1976), pp. 222-223 (work-choice example); Gaertner, Pattanaik and Suzumura (1992), pp. 164-166 (coloured-shirt example). In the coloured-shirt and coloured-walls example there is a “conformist” who wishes to match the colour of the other person and the other is a “non-conformist” who wishes to avoid matching the colour of the other person. Gaertner, Pattanaik and Suzumura (1992) use an analogous example involving men who choose the colour of their shirts. The rights in this case allow each to continue changing colours to get a match, then no match, then a match, then no match, and so on. This occurs because there is no “Nash equilibrium” in the problem. Nevertheless, a realistic analysis of this situation leads readily to a sensible resolution — one party will eventually get bored of changing colours and will decide that the gain to him in having the desired colour is outweighed by the effort in trying to out-change the other person.

the free-market allows for mutually beneficial exchange, and precludes coercive transfers, such that it is conducive to obtaining Pareto optimal outcomes. Moreover, any alternative political system involving government planners would involve an agent within the social choice model who is able to take on additional prerogatives without the consent of the existing prerogative-holders. Though the field has not expanded to analyse these cases, it is the opinion of the present author that such “interventionist” systems are unlikely to have the desirable properties of liberalism.

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Uses and Misuses of Arbitrage in Financial Theory, and a Suggested Alternative

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Abstract: Despite being a mainstay of modern economic theory, the concept of arbitrage is sorely misused. In this paper we overview such instances, and offer an alternative definition. Most applications of arbitrage use it as a general equilibrating tendency irrespective of whether the outcome is certain. Alternatively, it can be used in a rather “loose” manner to apply to inter-temporal scenarios or situations involving multiple (though similar) goods. Our aim is twofold: first to provide a consistent definition of arbitrage and second, to integrate the activity of arbitrage in the world of uncertainty and entrepreneurship that characterizes the Austrian school of economics.

Keywords: price theory, entrepreneurship, arbitrage, equilibrium

JEL classifications: D5, D8, D9, G

Arbitrage is commonly defined as “the simultaneous purchase and sale of the same, or essentially similar, security in two different markets for advantageously different prices” (Sharpe and Alexander 1990). It is important to highlight that the act of arbitrage is only that of trading the asset and the concept says nothing of the costs to obtain the knowledge of the existence of the mispricing: the knowledge of the relevant prices is assumed. It is also assumed that all relevant costs, e.g., transportation, storage, etc., are included in the arbitrageur’s calculus.

The appeal of arbitrage as a practical matter is apparent: arbitrage allows an individual to obtain scarce means at no cost and with complete certainty. It is also clear that, given their pecuniary attractiveness, all arbitrage opportunities will be quickly acted on until they disappear. “Out of the market” buyers and sellers will be matched until the asset holdings of the marginal buyer and seller cannot be arbitrated further.

While this action implies that one side of the arbitrage will earn profits, it also implies that the other side of the transaction will experience an (at least) implicit loss. By not acting upon a possible arbitrage opportunity he is giving away some useful and scarce economic goods to the arbitrageur for the difference between the price traded and the best one available.

The difference between arbitrage and speculation is that of *certainty*. Both actions are aimed at obtaining a profit but the former secures a current profit with no possibility of loss (i.e., it is certain) while the latter expects to get a profit in the future but can incur a loss (i.e., it is uncertain). It is for this reason that we can predict that any arbitrage opportunity will disappear as soon as it is discovered while we cannot make the same statement about speculative situations.

Despite the certainty of arbitrage, some economists maintain that all exchanges are speculative (e.g., Mises 1949: 113; Huerta de Soto 2010a: 69). These disparate views can be reconciled in two ways.

The first is by acknowledging that arbitrageurs face the risk of losing one of the prices (i.e., incur operational risk) on the sell-side of the transaction. Since every action takes place in time, even if an individual has found a pair of prices that can be arbitrated, he may find one or both have “disappeared” during the process of the trade. (It is in this very context that Mises claims all market exchanges to be speculative.) The trader cannot be certain as to whether the prices will still be available in the very near future (even seconds), so when he embarks in the act of trading he is speculating that the prices will still be valid.¹ On the one hand, this operational risk will not stop the arbitrageur from trying since the arbitrageur does perceive the opportunity to exist, regardless of its actuality or expected duration. On the other hand, if the prices are no longer available at the moment of trade it must be that the arbitrage opportunity has been exploited (even if only accidentally) thus validating the statement that arbitrage situations will disappear

¹ At the limit, one type of high-frequency trade is arbitrage, and it is in this sense that the activity is widely seen as equilibrating (Narang 2013). Alternatively, some forms of high frequency trading not reliant on arbitrage-type trades are thought to create mispricings that in turn require an arbitrageable correction (Jarrow and Protter 2012). Of course, it is questionable whether these mispricings can adequately be attributed to arbitrage-type trades. As Friedman (1953) famously argued, “to say that arbitrage is destabilizing is equivalent to saying that arbitrageurs lose money on average.” Vuillemeys (2015) overviews the dubious claim that high-frequency trading represents arbitrage trades given the delayed nature of settlements.

once discovered.²

Second, we may reconcile the two disparate viewpoints by revisiting the theory of price formation. Since no individuals can know all the prices in an economy, it is possible that by chance an individual will find both a buyer and a seller whose prices can be arbitrated. We cannot expect, however, this to be the situation in all cases. It is more likely that individuals will *purposely* try to find arbitrageable prices, i.e. that they will have to embark in the entrepreneurial action of seeking out arbitrage opportunities. Since this amounts to speculation given that the agent cannot be sure as to whether he will find such situations, the success of the outcome will be uncertain. This realization creates a necessity to distinguish between two different activities, (1) that of arbitrating two or more *known* prices and (2) that of *discovering* arbitrageable prices. The former is an action with a certain success predicated on the successful discovery of misaligned prices, while the latter is shrouded in uncertainty.

One conclusion from this reconciliation is that only in a world where all information pertaining to price formation was fully known would there be no arbitrage opportunities. Since all prices would be known to all in such a world, there would be no asset for which an individual could offer less than the marginal bid or pay more than the marginal offer. As a practical matter, information is dispersed throughout the economy and created continuously through the entrepreneurial process of price discovery and formation (Huerta de Soto 2010a). Arbitrage opportunities may still appear, though if discovered they will be exploited by alert individuals. Just as entrepreneurs embark in different enterprises to satisfy the needs of consumers and will be later followed by others if they prove successful, some entrepreneurs will try to profit by finding arbitrage opportunities with competition among them playing the same role as in any other market. The continuous and unpredictable creation of information and the uncertainty that naturally follows is the source of arbitrage opportunities.

It is not only arbitrageurs who will act in a way that reduces the amount and magnitude of arbitrageable opportunities, but regular market participants (those agents who enact trades not motivated by arbitrage) will also use their entrepreneurial faculties in order to find the best available. In both cases, arbitrageurs and regular market participants thus pursue their role in the same manner. By exercising their entrepreneurial foresight they are able to secure risky profits due to market “mispricings”.³

Since the concept of arbitrage is important for financial analysis, we propose to rectify our misgivings of the current definition with an alternative: “*An arbitrage is when one or more assets are bought or sold simultaneously, resulting in a monetary profit at the trade’s completion, even*

2 Note that enacting an unrelated trade may correct an arbitrageable mispricing. By way of example, consider that U.S. dollars may be cheaper than Australian dollars in the United States than they are in Australia. A European who starts demanding more U.S. dollars to shift a trade from Australia to the United States, and who in turn reduces his demand for Australian dollars, will re-equilibrate the Australian dollar-U.S. dollar exchange rate, though not through any arbitrage activity.

3 Mises (1949: 338) refers to these mispricings as “false prices” which exist at any given time because they don’t reflect the information that some other agents are, at the same time, willing to offer less than the bid prices or above the offer. Uncertainty is the reason these situations may exist, and the market process the reason why they won’t last.

if the magnitude of such profit is unknown in advance.” Important in this definition is that it is constrained exclusively to monetary profits after a trade is settled with no reference to psychic profits.⁴

Our more narrow definition serves a three-fold purpose. First, it places the activity back into its proper domain and excludes many similar or analogous exchanges (e.g., convergence trades) from its implications. Second, our modified definition includes all types of transactions not only those referring to a single asset as stated in the law of one price, which becomes only one, although probably the most relevant, case of arbitrage. Third, it provides a more comprehensive view of the price formation process, and gives a heightened emphasis on entrepreneurial foresight to align prices, both intra-temporally in the case of traditional arbitrage opportunities and inter-temporally in the case of purely speculative endeavors.

Arbitrage in Modern Financial Economics

The main literature of arbitrage in financial economics can be divided between: (1) pricing theories such as the capital asset pricing model (CAPM) and arbitrage pricing theory (APT), and (2) studies about convergence trades or limited arbitrage, such as Shleifer and Vishny (1997) and Kondor (2006).

Pricing Theories

Although standard economic theory has a well-grounded definition of arbitrage, the absence of uncertainty in its asset pricing creates some inconsistent statements related to arbitrage. For example, Varian (1987: 59) expresses the no arbitrage condition in equilibrium as:

$$\text{If } R_x \geq 0 \text{ then we must have } p_x \geq 0,$$

where R_x is the portfolio's pattern of returns and p_x the cost of the same portfolio. If a portfolio has a positive return it must also have a positive price. Varian's no arbitrage condition matches the arbitrage definition proposed here to the extent that any combination of arbitrageable assets can be considered as forming a portfolio. The problem with this concept of arbitrage appears, as it does in other applied models, when the model cannot capture uncertainty.

The main representative of standard pricing models is the Arbitrage Pricing Theory developed by Ross (1976).⁵ As in the CAPM pioneered by Sharpe (1964), the objective is to find a causal relationship between risk and return for different assets and portfolios. Specifically, the expected return of an asset within the CAPM framework hinges on (1) the rate of return of some risk-free asset, (2) the rate of return of the general market portfolio, and (3) the degree of correlation between the asset in question's return and that of the general market index, as measured by beta.

⁴ What the CAPM states is that if two or more different assets have the same risk relative

⁴ More to the point, once the trade is settled this implies that its monetary profit is certain. The extent of this profit is still unknown and *non-monetary* losses due to, e.g., declines in purchasing power could still occur.

⁵ A very readable summary of this literature can be found in Roll and Ross (1995).

to the “market” (i.e., beta) they will have the same expected return. There are no arbitrage opportunities available as the relevant prices will adjust until expected risk-adjusted returns equalize. Stated differently, in equilibrium there are no strict arbitrages to exploit, at least not according to any traditional use of the term, as the CAPM deals with distinct assets whose prices differ only due to their risk profiles. By purchasing and selling different assets simultaneously an equilibrium is reached but the investor is taking on risk according to the profiles of the assets traded (or, at least, the risk as defined by beta with respect to the general market return).

Instead of using the “market” as benchmark, the APT takes various systematic factors, including (as in Roll and Ross 1995), (1) unanticipated inflation, (2) changes in the expected level of industrial production, (3) unanticipated shifts in risk premiums, or (4) unanticipated movements in the shape of the term structure of interest rates. The return of an asset is determined by its sensitivity to any number of factors, defined by factor specific betas.

As in the CAPM, in a well-diversified portfolio the idiosyncratic factors affecting return cancel out so “returns on large portfolios are influenced mainly by the systematic factors alone” (Roll and Ross 1995: 122). While seemingly similar to the CAPM with only the addition of further factors affecting return, the APT also makes the claim that if two different portfolios have the same sensitivity to each factor they can be arbitrated. Indeed, it will be the very act of arbitrage which keeps asset prices in equilibrium according to APT, while in CAPM equilibrium obtains through a trial and error process which standardizes risk-adjusted returns.

Since the concept of beta is integral to both analyses, it is instructive to point out two details before questioning whether they are useful tools to signal arbitrage opportunities (at least according to APT).

First, betas are not *exhaustive*. The return on any asset at every point of time cannot be explained completely by the combination of betas and the change of systematic factors; the idiosyncratic and other unidentified factors also play a role. Even in the context of a well diversified portfolio neither the CAPM nor the APT can affirm that the different idiosyncratic factors must necessarily cancel out. In other words, the determining factors of an asset’s return, as well as its associated betas, can never be completely defined. This insight is one key in understanding why empirical tests of the CAPM point to its inability to explain actual returns fully, and also why theorists have constructed ever more complex pricing models to include more factors to correct these misgivings. Fama and French (1992, 1995) argue that the CAPM is misspecified as a result of stocks with high (low) book-to-market values earning a high (low) return because the former have different risk factors than that offered by the general market. Although they do not identify such a factor, they argue that a different “general market” return – that of the high book-to-value stocks – will proxy for such a factor, which they coin the “distress factor”.⁶ The continued poor performance of the CAPM to accurately predict risk-adjusted security returns provides at least *prima facie* evidence that the relevant factors are yet to be fully elaborated on, or that they cannot be fully enumerated, or most commonly, that such betas are

6 In a similar vein APT follows this logic by extending the potential factors to any number, depending on the specific model’s specifications. What these attempts, and others like them, overlook is that relevant factors can never be fully elaborated and thus a sizable error variable will remain a feature of all pricing models dependent on them.

subject to change.

Second, a beta itself is a *simplification* of very complex phenomena (perhaps it is even better described as a metaphor of finance, as in Phillips (2010)). Beta describes in a *single number* the causal relationship in a very simple way (typically linear) between the change in a systematic factor and the return on a particular asset. As a practical matter the process is much more complex. Consider the following example: assume there is a change in inflation expectations. How will this affect the price of given stock, *ceteris paribus*? First, the very term “inflation expectations” does not refer to a simple or even unique phenomenon. Inflation expectations differ depending on the specific asset, or its location in the productive structure of the economy (e.g., due to “Cantillon effects” of changes to the money supply, as in Bagus and Howden (2012: 272-73)). On an epistemic level the expectation about inflation will either be skewed by the individual’s specific knowledge of the inflationary process or by his location with respect to the source of the inflationary shock (Howden 2010). There is also the issue of the inflation expectation being unique to the individual due to the assets that he considers relevant in his inflation-estimating calculus. Given these difficulties we can only know, and in an imprecise way, *historical* reactions to similar situations as we cannot completely isolate the impact of one factor, even one as seemingly simple as inflation expectations. It is also clear that even in the unlikely case that the same change of expectations were to take place in the future its impact does not have to be the same as a result of either a change in the sensitivity of the asset to the factor in question, or because the factor itself is a less (or more) important determinant of the final return (i.e., its weighting has changed).

These criticisms are not especially new. As early as Roll (1977) the applicability of the very concept of the “general market return” which beta will express sensitivity to, was demonstrated to be an unobservable variable. Still, a beta may be a useful device mindful of several caveats. It is not *predictive*, nor can it foretell the future behavior of prices. This simple insight is instrumental for the task at hand because it implies that, at least according to our definition of arbitrage and its more traditional variants, betas cannot be arbitrated (as in Ross (1976) and Roll and Ross (1995)).

At this juncture we can see the difference between the “soft” statement by the CAPM, in which there is room for speculation as asset prices will adjust to their specific risk as perceived by market participants, and the “hard” version of the APT, in which different portfolios with the same betas will be arbitrated as their respective future returns are already *implied* by them. If betas cannot be arbitrated it follows that neither can portfolios based on them.

Limited Arbitrage or Convergence Trades

Convergence trades are situations where two or more assets are known or thought to converge at some point in the future, notwithstanding the fact that the prices may diverge in the present. Assume that two assets with very similar cash flows currently trade at different prices for exogenous reasons. Arbitrageurs should enter both markets simultaneously to take advantage of the pricing differential. They are exposed to potential losses as there is no reason why prices

should converge immediately or even within the time deemed profitable by the cost of capital. As arbitrageurs are capital constrained any further divergence of prices, be they exogenous, e.g., Shleifer and Vishny (1997), or endogenous, e.g., Kondor (2009), may lead to an even wider divergence as arbitrageurs unwind their positions to cover capital losses.⁷

Although these trades are commonly viewed as cases ripe for arbitrage the literature acknowledges the risk element apparent in them (Shleifer and Vishny 1997). Kondor (2009:1) readily admits that when he uses the term “arbitrageur” in these cases he does so somewhat “loosely”. Under our own definition these could only be considered as arbitrage trades if the action of the trade resulted in a profit at the moment the trade is enacted, and at every point until the convergence was complete.

First let us look at the example of limited arbitrage proposed by Shleifer and Vishny (1997): the arbitrageur buys in London and sells in Frankfurt the same Bund future at different prices.⁸ Why should we not consider this arbitrage? Should not the two equivalent assets trade at the same price *always*? One reason they are not equivalent assets is because neither of them can necessarily be delivered on the other market. (If this was possible we can easily see that the arbitrageur would not need capital, he would buy in London and sell in Frankfurt and settle the transaction by delivering the London contract to his counterparty in Frankfurt, thus profiting the difference.) On the contrary, if he cannot deliver his London contract to cover his short we must say that he has two different assets even though they represent the same type of claim to equivalent cash flows. Since he will need capital in order to face the margin requirements in both exchanges the prices of the two otherwise identical assets can diverge owing to liquidity conditions on their specific market. The risk that a mispricing becomes even more pronounced and causes short-term losses jeopardizing the liquidity of the arbitrageur is a common element in risky arbitrage models (Grossman and Miller 1988; De Long *et al.* 1990; Campbell and Kyle 1993).⁹ Because of the threat of losses from a market-specific loss of liquidity, we can see the importance of our proposed redefinition of arbitrage as it rules out any possibility of future losses. Therefore in this case there is no arbitrage as traditionally stated, or even limited arbitrage in the sense of Shleifer and Vishny (1997), but rather pure speculation.¹⁰

It is important to highlight here that speculation not only refers to actions in which we cannot be certain as to the future value of an asset. Using leverage to buy a bond assumed to have no

7 Alternatively, if these divergences are caused by uninformed “noise traders” informed arbitrageurs may be bid out of the market as divergences grow too wide or persist for longer than their liquidity allows for (De Long *et al.* 1990).

8 A similar example in the context of the equity market can be found on Froot and Dabora (1999).

9 These “risky arbitrage” models show that not all “arbitrage”-type opportunities will be exploited owing to liquidity constraints. Alternatively, in Dias de Sousa and Howden (2013), arbitrage trades may not occur because divergent prices for equivalent assets in different markets do not actually represent a misalignment in need of arbitrage. If the assets trade on separate markets, differences in, e.g., discount rates, will create unique present values giving the appearance of a pricing discrepancy when none exists.

10 This example raises a deeper question as to what assets can the law of one price apply to, specifically what attributes constitute the “same” good. Multiple physically identical goods with the same end (as is the case with financial assets trading in separate markets) cannot be considered candidates for the law of one price (and by extension, arbitrage) since ancillary conditions concerning their tradability (such as liquidity or settlement constraints) can and do differ.

default risk is hardly considered limited arbitrage even though it does present the same situation: even if the value at some point in the future is known it will vary in the meantime, e.g., due to collateral requirements and liquidity constraints, thus creating the possibility temporary losses until the maturity of both contracts.

The problem lays in the modifier in the term “limited arbitrage”. While it does represent a convergence trade, differing liquidity positions in different exchanges (or wherever the asset in question is traded) give rise to a degree of risk on the otherwise riskless trade. In sum, there can be only speculation or arbitrage, and never the twain shall meet.

Salvaging Arbitrage

The existence of derivatives and assets with very similar cash flows (e.g. bonds of the same issuer with slightly different maturities) has given rise to a business model centered on “arbitraging” the mispricing.¹¹ In light of our previous discussion questioning the applicability of the concept of arbitrage to most exchanges, this raises the question of the practical matter of arbitrage profits across different securities, instead of the more traditional form of arbitrage which is confined to a unique asset. While such an application is similar, it is a distinct analysis in need of a different standard to uphold it to. Such a standard is to be found in a modified definition of arbitrage, though one which must also contain several key characteristics: (1) an immediate profit coupled with (2) certainty.

Any transaction that does not meet those two cannot be considered arbitrage. The reason arises from the lack of knowledge, or uncertainty that exists regarding the future. If an exchange results in even a temporary loss we cannot state we are locking in a profit with *certainty* at the time of contract. Since we cannot be sure of the future value there remains the possibility that the trade will not result in a profit at its time of completion. Alternatively, even if the trader is assured that at some future date a profit will be available, he will be uncertain as to whether he will be able to complete the exchange at that date. Perhaps his personal liquidity position will dictate that he needs to end the transaction early, or his own untimely end may dictate that the deal is terminated. In all cases, it is not only the risk apparent in the future value of the asset but also in the trader’s future personal experiences that remove the possibility of a successful arbitrage opportunity.

Our clarified definition of arbitrage allows for only those transactions that immediately allow for a profit, even if the magnitude is not known in advance. Many convergence type trades have this property of a temporary profit, albeit one that can turn into a loss. This is especially apparent in the pricing of derivative products as well as with well-known theories such as put-call parity (Stoll 1969) and the Black-Scholes option pricing model (Hull 2009: 285-286). For example, purchasing an option with a negative premium locks in a minimum profit, the extent of which will depend on if and to what extent the option is in-the-money. The existence of these trades are important to the extent that they illustrate why the concept of “certainty” is important

¹¹ Long-Term Capital Management remains one of the most famous, and ultimately least successful, investment companies making use of this convergence strategy.

in arbitrage, as it excludes many transactions that are approximately like arbitrage save for this feature.

Note that this definition does not concern the number of assets involved or the maturity matching of cash flows or asset maturities. The only concern is the realization of a profit. Alternatively, one can think of this definition as being any trade for which the net present value is positive at all times. This definition subsumes the more standard definition, and thus we can also use the term “arbitrage” to describe any event where one security is mispriced (e.g. an option offered with a negative premium: the NPV of that trade would always be positive although variable so anyone buying it would be arbitraging the price spread).

While this definition of arbitrage may appear too similar to the traditional one to add anything additional of substance to the analysis, we maintain that it provides a clear guideline with which to distinguish arbitrage transactions from more common speculative endeavors. Furthermore, it allows us to make the claim *a priori* that mispricings that can be arbitrated according to our definition will disappear once discovered, while the same cannot be stated about speculative situations. This does not imply that the concept of the costless arbitrage cannot exist outside of a theoretical construct owing to the uncertainty created by actions occurring over time. Alertness to unexploited profit opportunities (as in Kirzner 1973) necessarily implies an uncertain environment, as prices would already be at their equilibrium levels otherwise. In our proposed definition we can make the certain claim that entrepreneurs will exploit certain trades, while other speculative endeavors will rely on the standard expected cost-benefit calculus. Other prevailing definitions and uses of arbitrage do not make the same distinction, and thus indiscriminately claim that a variety of transactions will be undertaken due to arbitrage when in fact no such clear rationale exists.

In most of the literature on financial asset pricing, “arbitrage” does not refer to a specific activity but is rather a necessary assumption needed to solve a system of equations. While such uses of arbitrage pricing include transactions that cannot be arbitrated in some instances, a more egregious violation in the use of the term is the arbitrage-free condition. This situation arises when all assets are priced appropriately such that no individual’s gain can outpace the market return (in either absolute or, more commonly, risk-adjusted terms). This literature is not concerned with concrete examples of arbitrage, but rather the condition is used to rule out certain solutions to a system of differential equations. The literature that emerged after Schleifer and Vishny (1997) has been motivated by the inability of “no-arbitrage pricing” models to match empirical data.

We redefine arbitrage as “when one or more assets are bought or sold at the same time locking in a monetary profit with certainty at the time of trading, even if it cannot be certain as to the amount of such profit.” This allows us to return to the root of the problem of price formation and provides a standard to judge the concrete action of arbitrage. This is in contrast to the theoretical and empirical literature, which faces difficulties establishing what actually *should* be included as an arbitrage opportunity (i.e., can the trade occur across markets, time, are resource constraints binding, etc.). There are six key advantages to using our modified definition of arbitrage rather than its more standard usage.

- 1) The importance of arbitrage is that we can derive economic laws from it: we *know* arbitrage opportunities will be exploited once discovered. The reason is that arbitrage means *certain* profits. In distinction, many modern uses of the term try to use economic theory to derive additional cases where arbitrage may exist. These types of applications amount to putting the cart before the horse as they use arbitrage as an equilibrating mechanism when the proper conditions for its use do not exist.
- 2) Arbitrage and speculation differ from each other only to the extent that we move from a certain realm to an uncertain one. We know what will happen when an arbitrated situation is discovered; on the other hand we cannot state the outcome of speculative situations.
- 3) Trades outside the proposed definition are speculative (including so called convergence trades) because we do not know their outcomes a priori.
- 4) Arbitrage can only take place in a dynamic and uncertain environment. This insight rectifies the anecdote popular amongst some economists that two people could never see a ten dollar bill on the street in front of them, as if the profit opportunity actually existed it would already be exploited (as popularized in Malkiel 1973). This very situation does in fact exist, and the associated arbitrage profits result because of the very existence of true uncertainty. The market that functions within this fundamentally uncertain environment will make such opportunities short-lived, but still allows for their existence.
- 5) In a dynamic environment, arbitrage is the culmination of previous entrepreneurial actions that alter an existing price array.
- 6) Those actions aimed at obtaining arbitrage profits will lead to the same effects as any other entrepreneurial act: the creation and transmission of information and social coordination.

Our proposed use of arbitrage sets a specific domain for arbitrageable transactions, and places all others into the category of speculation. This approach finds affinity with Huerta de Soto's (2010a) dynamic concept of the entrepreneurial function, whereby he explicitly includes both ideas of time and uncertainty to the pricing process:

From a temporal standpoint, entrepreneurship can be practiced in two different ways: synchronically or diachronically. The first is called arbitrage and is entrepreneurship exercised in the present (understood as the temporal present from the actor's point of view) between two distinct places or situations in society. The second is called speculation and consists of the exercise of entrepreneurship between two different points in time. One might think that entrepreneurship, in the case of arbitrage, amounts to discovering and transmitting information which already exists but which is dispersed, while in the case of speculation, "new" information is created and transmitted. Nevertheless, this distinction is purely artificial, because discovering what "already existed," though no one knew it existed, is synonymous with creating. Thus, qualitatively and theoretically speaking, there is no difference between arbitrage and

speculation. (Huerta de Soto 2010a: 69)

Both acts of arbitrage and speculation are essential for social coordination according to Huerta de Soto. His use of arbitrage does not correspond to what we define as arbitrage but to the act of purposely looking *for* arbitrage opportunities. If we do not assume the entrepreneur knows what prices can be arbitrated *ab initio*, he must first obtain that information, and, as we have already explained this is better considered as an act of entrepreneurship which is speculative in nature and takes place in time. The result of this activity will be the other facets of entrepreneurial actions: the creation and transmission of information leading to social coordination (Huerta de Soto 2010a: 64-67).

Entrepreneurs will embark in those actions in order to obtain profits through both intratemporal and intertemporal trades, but they can never be certain of success, giving further justification to Huerta de Soto's (2010a:69) claim that "there is no difference between arbitrage and speculation." Even though this idea is more in line with our view of arbitrage and speculation and, in our opinion, is one step forward from Kirzner's concept as it also includes the Misesian insights of uncertainty and time, the difference between arbitrage and speculation can still be highlighted further. In a dynamic environment, arbitrage is the culmination of previous entrepreneurial actions. As such, any activity involving arbitrage is akin to an action embedded within another action. In the uncertain world the most we can say is that it is an action that is part of a broader action whose beginning is speculative in nature, i.e., the act of finding the arbitrageable prices. This is not to say that the market is necessarily inefficient to the extent that the very act of arbitrage must be predicated on an uncertain outcome, but rather a truthful depiction of the reality of the pricing process. This emphasis is apparent in much of Kirzner's theoretical work, whereby disequilibrium prices allow for arbitrage opportunities and it is the entrepreneurial action of *finding* (or being alert to) these prices that can be arbitrated that is a speculative action with uncertain success.¹²

In fact, while some authors, e.g., Fama (1991), view arbitrage opportunities as indicative of inefficient markets, the role of efficient markets is to coordinate the uncertain and disparate valuations of individuals that are the ultimate cause of arbitrage opportunities.-

Conclusion

This paper has overviewed the primary definition of arbitrage currently in use in mainstream financial economics literature and some of its applications. Despite being a seemingly simple and straightforward concept, it is used in a quite fluid manner which compromises its usefulness. We have provided an alternative definition to shed light on these prevailing uses and applications.

12 This is a variation on the argument given by Huerta de Soto (2010b) against Grossman and Stiglitz' concept of "informationally efficient markets", the result of which will be an "equilibrium degree of disequilibrium" (1980: 393, see also 1976). As the costs of gathering information are unknown in advance of the search, and the expected benefits are also shrouded in uncertainty until realized, there can be no conscious decision to search for a profit opportunity but leave it unexploited once a certain cost is surpassed. Compare with Rizzo (1979: 9; 1995:12), Hülsmann (1997:48), and Sautet (2000: 45).

In particular, by defining arbitrage as only those transactions which result in a positive net present value at all times during the duration of an exchange, we have added rigor to the use of the term. Specifically we have been able to exclude a large body of “quasi-arbitrage” activities, such as those found in Shleifer and Vishny (1997), and thus limit the use of the concept to its proper domain.

One final conclusion of this work is that many prior uses of arbitrage are now exposed for the speculative endeavors they are. The more stringent definition made use of herein may have the drawback of making pricing theory reliant on arbitrageable mispricings more limited (and perhaps more difficult) to apply, but at least it is more honest.

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Why Governments Make Bad Pricing Decisions: The Case of Turkish Paid Military Service¹

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Abstract Turkey is among the few countries that mandates compulsory military service. What makes the Turkish case unique is that five times within the past 28 years military service in Turkey has emerged in the market with a price tag, exempting one from the requirement if paid in full. In 2011, the exemption for compulsory military service was 30,000 TL (15,947 USD), yielding a revenue of 2 billion TL (1.06 billion USD). Whereas in 2014, the price for the same exemption was marked at 18,000 TL (7,738 USD), generating 3.6 billion TL (1.55 billion USD). Why is the government unsuccessful in determining prices? This study will not attribute a monopolized market as being the sole reason, but will also take the economic calculation debate, pre and post constitutional and institutional analysis into consideration. Furthermore, this study suggests that per capita annual income is a reliable indicator in determining the price for the exemption of military service.

Keywords economic calculation debate · constitutional economics · monopoly market · institutions

JEL classification E31; E32; O40

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“Where there is no free market, there is no pricing mechanism; without a pricing mechanism, there is no economic calculation” — Mises (1920)

1. Introduction

Turkey is one of the few countries mandating compulsory military service. The military service in Turkey is a mandatory duty for all male citizens between 20 - 41 years of age and is to be completed within 6 to 15 months, depending on one's level of education. The Turkish case is unique since military service has been offered as a paid military service exemption in 1987, 1992, 1999, 2011 and 2014. In other words, the government has determined prices for military service five times in the last 28 years.

The two most recent implementations of the paid military service exemptions in 2011 and 2014 are different from the other instances in regards to having a short time between them; and despite the increasing of per capita income, the price for exemption in 2014 was lower than it was in 2011. The Turkish government assigned 30,000 Turkish Liras (TL) (15,947 USD)² as the price for this monopolized service in 2011, generating a revenue of 2 billion TL (1.06 billion USD). When the number of applicants was low in 2011, the Turkish government lowered the price to 18,000 TL (7,738 USD)³, yielding 3.6 billion TL⁴ (1.55 billion USD) in 2014.

Why did the government determine the price at a comparatively higher rate in 2011, and at a 40% lower rate three years later despite the increasing of per capita income? In other words, why was the government unsuccessful in its pricing decisions? This study seeks to provide the answer to this question by analyzing the paid military service exemption case in Turkey. The second section provides information on paid exemption and argues that it is insufficient to attribute mispricing in paid military service solely to the monopoly market approach. The third section demonstrates why a paid military is a centralized decision problem through the “economic calculation debate”, a concept in Austrian economics arguing that the rational economic calculation is unable to be used in centrally planned economies. The fourth section argues that paid military service is a constitutional issue and that the only way to address this issue would involve amending the Constitution, as underscored in Buchanan's pre and post constitutional analysis.

2. Turkish Paid Military Service and the Monopolistic Market

Turkey is one of the few countries that mandates compulsory military service. At the end of 2011, only six countries from the European Union's 27 members⁵ and five out

2 The exchange rate on 15 December 2011 was 1 USD = 1.8812 TL.

3 The exchange rate on 15 December 2014 was 1 USD = 2.3261.

4 The 2011 and 2014 ratios of paid military service to total tax revenue for 2011 and 2014 are respectively 0.89% and 1.03% (Source: Central Bank of the Republic of Turkey).

5 Austria, Cyprus, Denmark, Estonia, Finland and Greece.

NATO's 28 members⁶ mandated military service. 17 countries⁷ of the European Union ended compulsory military service in the 1990s and founded a military system completely comprised of professional soldiers. Kasim (2011) evaluated the constitutions of 28 countries⁸ and indicated that 25 have described military service and defending one's country "as a citizen's right and duty"; 14 constitutions⁹ granted exemption or an alternative civil service option to citizens who identified themselves as conscientious objectors to military service.

In the Turkish Constitution, compulsory military service is listed under article 72 titled "National Service," and asserts that "National service is the right and duty of every Turk." Those who hold a 4-year university degree and are chosen to serve as reserve officers complete their military service in 12 months whereas those who are not chosen as reserve officers fulfill their term in six months as non-commissioned officers or privates. All other healthy Turkish men who do not meet this criterion must serve as non-commissioned or private officers for 15 months.

On April 16, 1987, various transitory clauses were added to the Law on Military Service (Law No. 1111), marking the first implementation of the paid military service exemption. 18,433 people benefitted from this implementation, yielding a revenue of 100 million German Marks (55 million USD). In its second implementation on May 21, 1992, 35,111 individuals benefitted with a generation of 168 million German Marks (103 million USD). On November 2, 1999, 72,290 people benefitted from the third implementation, yielding 1.1 billion German Marks (582 million USD) (see Kasim 2011.)

The implementations in 1987, 1992, and 1999 emerged from economic structures differing from one another. In 1989, the capital account was fully liberalized with a fully convertible currency, and until 2001 the central bank mainly determined the foreign exchange rates. Furthermore, in 1987, 1992, and 1999 the paid exemption involved the fee as well as short-term military service, such as 21 days; whereas in 2011 and 2014 the paid exemption fully covered one's obligatory military service, lifting the previous requirement of serving for a shortened period. The implementations in 1987, 1992 and 1999 were all passed under different governments. This study primarily focuses on the 2011 and 2014 implementations since these two cases share striking commonalities: they occurred within a short period in comparison to the intervals between the previous implementations of the exemption; were passed under the same governing party; shared the same economic foundation; and eliminated the required fulfillment of a shortened term (i.e. 21 days).

6 Denmark, Estonia, Norway, Turkey and Greece.

7 Belgium (1995), Bulgaria (2008), Czech Republic (2004), France (2001), Germany (2011), Hungary (2004), Italy (2000/2005), Latvia (2006), Lithuania (2006), Netherlands (1992/1997), Poland (2010), Portugal (1999/2003), Romania (2005/2007), Slovakia (2006), Slovenia (2003), Spain (2001), Sweden (2010), Croatia (2008), Macedonia (2006) and Iceland (Iceland does not have continuous military service).

8 Germany, Austria, Belgium, Bulgaria, Czech Republic, Denmark, Estonia, Finland, France, Croatia, Holland, Ireland, Italy, Spain, Switzerland, Latvia, Lithuania, Macedonia, Norway, Poland, Romania, Portugal, Russian Federation, Slovakia, Slovenia, Turkey, Ukraine and Greece.

9 Germany, Austria, Estonia, Finland, Croatia, Netherlands, Spain, Lithuania, Poland, Portugal, Russian Federation, Slovenia, Slovakia, Ukraine.

Table 1. Comparison of the 2011 and 2014 Implementations of the Paid Military Service Exemption

Date	Price (TL)	Number of Beneficiaries	Total revenue (million TL)	Per capita annual income (TL)
2011	30,000	69,073	2,072	17,367
2014	18,000	200,308	3,606	22,521

Source: Central Bank of the Republic of Turkey, Electronic Data Delivery System and Turkish Statistical Institute (TurkStat)

Table 1 compares the 2011 and 2014 implementations of the paid military service exemption. What is most striking is that despite the decrease in prices (in 2011, the paid exemption was 30,000 TL whereas in 2014 was 18,000 TL), the total revenue increased from 2 billion TL to 3.6 billion TL. The main reason why the price per individual decreased in 2014 despite the increasing of per capita income¹⁰ was due to the initial expected revenue not having been met. In 2011, despite the number of individuals qualifying for paid exemption (who were 30 years old and older) being 460,000 (see Hurriyet, 2011), the number of applicants was just 69,073. In 2014, the price was decreased by 40% and the minimum age requirement was set to 28, allowing 700,000 candidates to apply; in turn, a revenue of 3.6 billion TL was generated by 200,308 applicants.

How did the government make wrong decisions when pricing military service in the market in these two cases of implementation? In that case, can the monopoly market better assist us in understanding the causes of such mispricing? A monopoly indicates an enterprise in which there is only one seller on the market with no competitors. A monopoly faces a downward-sloping market demand curve and determines its own profit-maximizing output. Once it determines the quantity, the price at which it can sell that output is found from the demand curve. The monopoly firm can sell additional units only by lowering price.

Military service has no substitutes, competition and is protected by law, all of which denote a complete government monopoly.¹¹ However, the implementations of paid exemption are isolated events within dispersed intervals of time. In other words, there is no continuous market for this service. The government cannot obtain sufficient information on the demand-curve since it cannot observe the price-quantity relationship within a particular time-frame, i.e. notice the varied intervals of time between the dates in which paid military service was implemented-1987, 1992, 1999, 2011 and 2014. As a result, a government is unable to forecast the demand for paid military service, which is implemented as an isolated event; thus a price for profit-maximization cannot be determined.

If a continuous market has not been established for paid military service, are there any explanations that can bring light to this situation? The answers to this question lay in the

10 Per capita annual income = Nominal GDP / Population

11 Railroad transportation is still monopolized in Turkey. In the past, airline transportation, tobacco production, and the postal service were public monopolies. After the 2001 economic crisis, the government opened these sectors to competition or privatization after facing unprofitability and financial losses.

“economic calculation debate” and “institutional and constitutional analysis.” The economic calculation debate, which will be covered in the next section, provides us with knowledge on instances when there is no-market. Section 4 will explain the reasons for the absence of a market through the pre and post constitutional analysis.

3. Economic Calculation Debate and Paid Military Service

Boettke (1998) stated that the economic calculation is the most important contribution of Austrian economics to the discipline of political economy. The economic calculation was first proposed by Mises (1920) and later expanded upon by Hayek (1935a, 1935b). In response to these propositions, a series of counter studies ensued (see Lange, 1936; Hoff, 1949.) The compilation of all these views is known as “economic calculation debate” or the “socialist calculation debate”.

Boettke (1998:134) states that Mises’ (1949) economic calculation approach can be summarized under three main points:

1. Without private property in the means of production, there will be no market for the means of production;
2. Without a market for a means of production, there will be no monetary prices established for the means of production;
3. Without monetary prices, reflecting the relative scarcity of capital goods, economic decision makers will be unable to rationally calculate the alternative use of capital goods.

The three points above state that a central planning economy without a free market cannot determine prices. When consumer preferences are unknown, the price for the means of production cannot be determined. This signifies that the central planners do not have the knowledge needed for determining prices accordingly, in other words, they have no knowledge on relative scarcity. Since the relative scarcity of capital goods is unknown, a rational economic calculation cannot be made. The central planners (or decision makers) must measure relative scarcity in order to determine the prices. Any system substituted in place of the market mechanism, cannot reflect the relative scarcity of capital goods. Furthermore, even if it is assumed that all information at time t is in hand and the exact prices are known by the decision makers, this information will inevitably distort at time $t+1$. *In other words, only markets can determine the prices which is contingent upon time.*

Paid military service seems to possess the characteristics of a monopoly such as it has no substitutes, competition and is protected by law. But it is a topic of debate that falls under economic calculation since it has no –continuous- market. If there is no continuous market for paid military service, the level of demand, in other words consumer preferences, could not

be known by the government (decision maker) when determining the price. For example the government only had information on market conditions in 1999 as well as costs related to paid military service and some statistical information on how many people met the age criteria for the 2011 implementation when determining the price for the 2011 paid military service. We need to note that information on the paid military service market in regards to the 1999 implementation did not reflect the free market price and knowing how many people benefitted from the paid military exemption is not an important indicator for the price as we saw in 2011 and 2014 cases. At the end, since the relative scarcity of military service is unknown, a rational economic calculation cannot be made. But even if we have no market for military service, can we get some valuable price information for determining relative scarcity of military service by using other free markets traded some means of production for the military service?

The means of production for the military service can entail but is not limited to military vehicles, appliances, buildings or other physical structures, commanding and training personnel, etc. The prices for the military service's means of production are known since these means are on the free market, in other words, they have relative scarcity unlike they would have had they been under a central planning economy. Regardless of the prices having been disturbed by the government's presence in some sectors and the military sector as well as the government's interference in the free-market via monetary, fiscal policies and regulations, these prices still provide more information on relative scarcity regarding the military service's means of production in comparison to what a central planning economy would be able to provide.

The prices of goods, services and some means of production used within the military such as food, vehicles, appliances, buildings, etc., are most reflective of the market-price as they can be exchanged directly within the free-market. The prices for military service's means of production that have not been bought directly from the free-market are based on similar price information gathered from the free-market and political decisions. For example, a commander's salary reflects the average weighed salary among professions of equal social status and the making of political decisions as well. In that case the only way to determine the most accurate prices for the means of production related to military service is to include military service in the free market.

With the greater degree of perspective acquired through the economic calculation debate, we can now discuss the most appropriate way of determining a price in the absence of a market. As mentioned before, even if a government is unaware of doing so, it benefits from comparing prices on the free-market to the services it provides, such as when determining a commander's salary. A similar approach can be taken when determining prices for paid military service exemption. If a government attempts to find the most suitable price for paid exemption it should look to the free-market to determine accordingly.

Since "national service is the right and duty of every Turk" according to the Turkish constitution, the average earnings throughout a citizen's military service term might be the best indicator when determining the price for paid exemption. In that case, a male citizen is faced with two options: To serve a 12-month military-service term¹² or to pay the exemption-fee. The

12 As mentioned before, a military service term is contingent upon one's level of education. In this paper, the

price of the exemption relates to opportunity cost. Opportunity cost can change according to each individual. Moreover, calculating the 12-month average earnings of 400,000 and 700,000 potential beneficiaries (as was the case in 2011 and 2014 respectively) does not seem feasible.

In that case, the annual per capita nominal Gross Domestic Product (GDP) could also be the best indicator of a Turkish citizen's 12 month opportunity cost. By looking at Table 1, it can be suggested that rather than having the paid exemption be 30,000 TL in 2011 and 18,000 TL in 2014, the price should have been 17,367 TL and 22,521 TL¹³ respectively. These suggested prices consider the relative scarcities in the market and intentionally disregard the effects of political exchange.

The decision maker can also take other variables into account, such the higher than average salary of a university graduate serving a 6-month term and the lower than average salary of non-graduate who serves for 15-months. These variables can be taken into account for a more detailed analysis; however, a more practical approach would involve looking at the annual per capita income as it is a more reliable variable in determining the price of the paid exemption since it reflects market preferences and opportunity cost.

4. Pre and Post Constitutional Analysis and Paid Military Service

In the previous section, the reasons for why a government is unable to determine an appropriate price for military service were provided through the economic calculation debate. This section will underscore how a government hinders the emergence of military service on the free-market by referencing constitutional analysis.

Buchanan (1987, 2008) argued that one of the most important distinctions in political and economic analysis is the distinction between games over the rules, and games within the rules (see Leeson and Boettke, 2003). Pre-constitutional analysis involves the rules of the game; however post-constitutional examines the strategies players use while abiding by constitutional rules and principles. During the post-constitutional stage players treat the rules of the game as constraints and devise strategies to manage them. Buchanan argues that fundamental constitutional change is needed to address minimizing interest legislation, factional rent-seeking and transfer-seeking activity.

In the American Declaration of Independence, Thomas Jefferson stated (Hoppe, 2003:1) that "...all men are created equal; that they are endowed by their creator with inalienable rights; that among these are life, liberty, and the pursuit of happiness: that to secure these rights, governments are instituted among men, deriving their just powers from the consent of the governed; that whenever any form of government becomes destructive of these ends, it is the right of the people to alter or abolish it, and to institute new government...". The military institution has been founded upon constitutional law and it directly or indirectly

average term is considered to be 12 months.

¹³ Data for the last quarter's GDP is generally published at the end of the first quarter the following year; thus this delay could engender objections. However, it is possible to calculate the per capita GDP using growth expectations. Moreover, the previous year's per capita GDP or the GDP from the last four quarters could also be used.

affects inalienable rights. Especially if there is no exit from compulsory military service such as an alternative civil service option, the situation gets worse. According to Buchanan, the most effective way to get rid of this problem is to amend the constitution and rules (for more discussion on military service see Hoppe 2003 and Tucker 2003).

As section 2 of this paper states, Turkey is among the few countries mandating military service¹⁴ in NATO. Furthermore, with the exception of Turkey, countries in NATO still mandating military service grant an alternative civil service option that is either longer than or the same length as a typical military service term to citizens who identify themselves as conscientious objectors. Many developed countries have lifted compulsory military service, allowing their citizens to serve of their own free will in exchange for financial compensation, such is the case in the United Kingdom, France, Australia and Canada. The age requirements and positions for females in the army could vary across countries and some countries have service obligations, as is the case in for Australia for 1 year, Canada for 3-9 years and the US for 8 years. The United States Constitution does not address military conscription. Military service is voluntary for males and females over the age of 18. However, compulsory military service is addressed in the Military Selective Service Act, which requires all males between the ages of 18 and 26 to register for compulsory military service. The US Congress has the right to introduce compulsory military if it deems national security requiring greater support than what regular armed forces can provide (see for more information CIA, 2015).

In the Turkish case, military service is completely under the government's control. The mandated military service details were mentioned in the second section of this paper, alluding to Article 72 titled "National Service" in the Turkish Constitution, and stating that "National service is the right and duty of every Turk." Furthermore, the details for mandated military service are also identified under the Military Service Law (No. 1111) passed in 1927. According to the law, the length of military service is contingent upon one's level of education; university graduates who are chosen as reserve officers must serve a term of 12 months, otherwise they are able to serve 6 months. Those who do not hold a university degree are obligated to serve 15 months. The only way to forgo compulsory military service is to pay the military-service exemption fee.

As can be seen, the existence of the constitutional law is the primary reason for there not being a military service market. Politicians allow paid exemption for mandated military service in pursuit of maximizing votes. Furthermore, in accordance to the rules of the game, those in favor of paid exemption have established pressure groups;¹⁵ similarly, groups opposed to paid exemption have also been formed, arguing that paid exemption engenders inequality and injustice.

Moreover, mandated military service formed by constitutional law grants the military de jure and de facto political power (see Acemoglu and Robinson, 2006). De jure political power is granted explicitly to political institutions whereas de facto political power involves the power of collective action, or use of brute force, bribery, and lobbying. On the other hand, Acemoglu

14 Five out NATO's 28 members: Denmark, Estonia , Norway, Greece and Turkey.

15 Examples include: www.bedelliaskerlikdernegi.org, www.bedelliaskerlik.biz, https://twitter.com/bedelli_ask, www.facebook.com/bedelliaskerlik

and Robinson (2006) argue that since de facto political power favors the elites'¹⁶ maintenance of power, there are few incentives for them to modify the institutional setup.

The military sector in Turkey has significant power. According to the Turkish General Staff figures (see FPA, 2011), the Turkish military had a total of 720,000 personnel, including total specialized military personnel 201,379, total compulsory personnel 465,197 and civil servants/workers 53,424 in November 2011. In this case, 1% of the Turkish population is currently in the military or partakes in military-related civil service. Moreover, Turkey has one general/admiral for every 370 officers (commissioned and non-commissioned), while the U.S. has one for every 5,800 officers. The military has also intervened directly in Turkish politics three times with the 1960, 1971 and 1980 coups, and in 1997 carried out a "postmodern coup." As can be seen, the Turkish military is a colossal economic, political and social institution. In recent times, various constitutional amendments have been made to reduce military interference in politics. However, it can be argued that the presence of mandated military service further strengthens the military's economic, political and social power, thus engendering institutional persistence.

As Buchanan (1999:50) has underscored, "political exchange" is more complex than economic exchange. There are two quite separate reasons for that: "In the first place, basic "political exchange," the conceptual contract under which the constitutional order is itself established, must precede any meaningful economic interaction. Orderly trade in private goods and services can take place only within a defined legal structure that established individuals' rights of ownership and control of resources, that enforces private contracts, and that places limits on the exercise of governmental powers. In the second place, even within a well-defined and functioning legal order, "political exchange" necessarily involves all members of the relevant community rather than the two trading partners that characterize economic exchange.

In the pre-constitutional analysis, all players in the public sector have some "public choice" roles as voters, elected representatives, leaders or members of political parties, bureaucrats and attempt to maximize gains for themselves according to the rules of the game. In the paid military service case, even if the government were to possess full-knowledge on the conditions of the free market when implementing a paid exemption and foresee the price it would attain through profit maximization, Buchanan's approach demonstrates that behavior of the players in the game will inevitably affect the outcome of the price.

For example, if the government sees that there is a greater number of potential voters against paid exemption than those in favor, it would mean the possibility of losing is higher than gaining votes; thus, the government will either increase the age or price so that a fewer number of people can benefit from the exemption or forgo implementing the exemption altogether. Furthermore, the connections that lobbying groups have with bureaucrats/politicians are also influential. Lobbying groups will take advantage of media, social media, and survey results to influence opinions.

Even if the government can determine the most appropriate price for paid military

16 Who "own" the power because of the de jure political power.

service exemption in light of this paper's proposition; in practice, the price is still subject to the effects of political exchange. As can be seen on the post constitutional level, all players will try to maximize their own interests based on the game's rules. Different rules have different distributional consequences, therefore in order to minimize special interest legislation and factional rent-seeking or transfer-seeking activity, getting closer to the free market through constitutional change is the best solution.

Conclusion

Why is the government unsuccessful in its pricing of paid military service exemption? The economic calculation debate brings light to this issue by providing knowledge on how prices are determined during the absence of a market. Paid military service is a type of monopoly that does not have a continuous market; it is implemented as isolated cases with great time intervals in between the various times of its implementation. Since paid military service exemption is implemented at time t , the monopolistic government has no knowledge of the level of demand. For that reason, the government is unable to determine an appropriate price for profit maximization.

The government's ownership of the military service's means of production affects the relative scarcity of these means and prevents its prices from being determined accurately. A portion of the military service's means of production, which includes but is not limited to vehicles, equipment, buildings, etc., are better indicators of accurate relative scarcity as they have been acquired directly from the free market; however, this does not apply in every instance, e.g., when determining the salary of personnel. Military salaries reflect the average weighed salary among professions of equal social status and effects of political exchange. In that case, the only way to accurately determine these prices entails the emergence of the military service on the free market.

Therefore, the best way to determine the price for paid military service exemption is to look at the free-market. An individual has either the choice of fulfilling a 12-month military service term or paying the cost of exemption. Determining the price of this exemption is related to opportunity cost. This study suggests that the best indicator of a 12 month opportunity cost for the average Turkish citizen is the annual per capita nominal GDP. Military-service exemption fee in 2011 was 30,000 TL (15,947 USD) and in 2014 was 18,000 (7,738 USD); instead, the prices should have been 17,367 TL (9,232 USD) and 22,521 TL (9,682 USD) respectively since they consider the relative scarcities in the market and intentionally disregard the effects of political exchange.

Buchanan's pre and post constitutional analysis provides insight into how a government creates a paid military market. While constitutional law forbids the creation of such a market, the government still holds the legal power to amend this rule. Determining the price of paid military service and its emergence on the market would involve a political exchange among all players holding some sort of incentive in this matter, such as politicians, pressure groups, bureaucrats, politicians etc. As a result, even if the government can theoretically know the most appropriate

price for paid military service exemption in light of this paper's proposition; the price is still open to political exchange effects in practice. Furthermore, constitutionally mandated military service grants the military institution *de jure* and *de facto* power. The granting of *de facto* political power by institutions to elites further engenders institutional persistence.

The only way to eradicate problems caused by a political and military institution that brings paid military service into existence, determines its prices and makes it a topic of political exchange is to amend the constitution, allowing military service to enter the free-market. This solution also addresses the issues of institutional persistence and the unnecessary power the military holds over political decisions that are far-reaching and involve excessive costs.

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The Effects of Social Assistance Programs on the Duration of Unemployment Spells: Evidence from Saskatchewan

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Abstract: This paper analyzes the how the design of Canadian welfare policies impacts individuals' decisions to rely on government assistance. More specifically, it explores the features, such as deduction rates and the total amount of benefits, which often lead recipients to make a short-run rational choice of relying on welfare in lieu of taking low-paying jobs. Using employment data from the Canadian Longitudinal Survey of Labour and Income Dynamics for 1993 and 1994, the author analyzes the impact of previously received social assistance on the length of unemployment spells in the Province of Saskatchewan. The results point to a statistically and economically significant impact of social assistance on unemployment: the social assistance elasticity of unemployment spells is found to be 0.4, indicating that an increase of 1% in social assistance benefits increases unemployment spells by 0.4%.

1. INTRODUCTION

One of the most important long-term steps an individual can take to avoid poverty is to obtain employment. In 2011, 6.4% of Canadians who worked lived in poverty¹, in comparison to 8.8% of the total population (Human Resources and Skills Development Canada, 2013a). In Saskatchewan, the percentage of the total population living in poverty was considerably lower, standing at 5.3%. This was the second lowest rate in Canada, after Prince Edward Island (4.4%), and tied with Newfoundland and Labrador (5.3%) (Human Resources and Skills Development Canada, 2013a). For those living in poverty, the government guarantees a minimum standard of living through the provision of social assistance. While poverty reduction may be a strong argument in favour of such programs, their design often creates disincentives to work.

The design of welfare policies is a key component in determining the degree to which individuals might become dependent on government assistance. Some features, such as deduction rates and the total amount of benefits, often lead recipients to make a short-run rational choice of relying on welfare in lieu of taking low-paying jobs (Tanner & Hughes, 2013). Laffont and Martimort (2002) point out that redistributive policies distort leisure-consumption choices and decrease incentives to work. These are further aggravated by welfare program structures that rely on high deduction rates of labour earned income against social assistance. This is a common feature of Canadian and American welfare programs (Skoufias & Di Maro, 2008). Among the many impacts of these programs, existing literature indicates that individuals tend to have longer terms of unemployment when government assistance is provided. Moffitt (2003) finds that concern about the effects of social assistance on incentives to work was the main driver behind the changes in welfare program structures that have occurred in the United States since the 1960s. The Aid to Families with Dependent Children (AFDC), which was scrapped in 1996, was found by various studies to reduce labour supply in the U.S. by 10 to 50% of non-AFDC levels (Danziger, Haveman, & Plotnick, 1981; Hoynes, 1997; Moffitt R., 1992).

In Canada, research on the work disincentives of social assistance has been fairly limited. Dooley et al. (2000) describe the demographic trends among social assistance recipients and find that wages and education were important in predicting enrollment in welfare programs. As one might expect, wealthier, more educated individuals are less likely to rely on such programs. Studies also found that the Canadian Self-Sufficiency Project (SSP), which was designed in the 1990s to assess the effectiveness of income supplements for single parents who agreed to take full-time jobs in lieu of staying on social assistance, had a positive impact on long-term employment (Statistics Canada, 2013; Ford, Gyarmati, Foley, Tattrie, & Jimenez, 2003). The authors found that SSP required \$0.10 in government expenditures for every \$1.00 of financial gain for families, whilst traditional programs have a cost of \$1.50 for every \$1.00 of financial aid disbursed.

There is, thus, a consensus in the existing literature that welfare programs exert a negative

¹ Such an individual is considered to be a “working poor,” meaning that he or she lives in a household where the main income recipient worked for at least 910 hours in a given year (Human Resources and Skills Development Canada, 2013a). According to the Market Basket Measure, an individual is considered poor if he lacks the disposable income to purchase the goods in the market basket (Human Resources and Skills Development Canada, 2013a).

impact on labour supply by creating work disincentives. While the level of benefits plays an important role in individuals' decisions to enroll in welfare or take a job, there are mixed results as to the effect of deduction rates on such decisions. Literature on programs such as the Negative Income Tax and the Canadian Self-Sufficiency Project points to increased efficiency and reduced disincentives to work under these programs in comparison to standard social assistance efforts. While Saskatchewan has been successful in reducing poverty rates over the past decade and preserving one of the lowest unemployment rates in the country, it uses a deduction rate of 75% for its social assistance programs (Saskatchewan Ministry of Social Services, 2013; Government of Newfoundland and Labrador, 2013). Saskatchewan's approach leads to two significant questions: What effect has social assistance had on work incentives? And more specifically, what was the effect of social assistance on the duration of unemployment spells in the province?

The goal of this paper is to address these questions and offer policy suggestions to minimize possible disincentives to work. This is done by analyzing data from the Canadian Longitudinal Survey of Labour and Income Dynamics. Data are only available for 1993 and 1994. More specifically, I analyzed the impact of previously received social assistance on the length of unemployment spells by running an OLS regression on the number of weeks individuals were unemployed in Saskatchewan in 1994 as a function of the amount of social assistance received in 1993.

The paper is organized as follows. Section 2 provides the details of the Canadian social assistance scheme as well as policies that are specific to Saskatchewan. Section 3 outlines the empirical approach used in this paper, while section 4 presents the regression results. Finally, section 5 concludes and discusses policy alternatives.

2. CANADIAN WELFARE POLICIES

Social assistance in Canada is means-tested. Consequently, welfare payments are conditional on an individual's income; however, because Canada is a federation, many programs are run provincially and regulations vary across jurisdictions. As the longitudinal data used in this paper is from 1993 and 1994, this section presents a brief review of Canadian welfare policy in the 1990s. Most of the emphasis, however, is put on the current system, Canada Social Transfer (CST), and on Saskatchewan-specific regulations.

2.1 Canadian Social Assistance Programs in the 1990s

Under the *British North America Act* (BNA) of 1867, Canadian provinces were made responsible for the provision of social assistance (Hunter & Miazdyck, 2004). The introduction of the *Canadian Constitution Act* in 1982, which replaced the BNA, did not change this (Hunter & Miazdyck, 2004). As such, provincial and territorial governments have jurisdictions over education, social assistance and social services. Each province has its own student assistance programs, income taxes, and employment development programs. This split of social security policy between federal and provincial governments is distinctively Canadian. While it increases complexity, it also allows for greater flexibility in implementing policies – one province can take the lead in implementing a specific policy while the others observe the impact of such policy

before deciding to adopt it.

Canadian social assistance programs in the 1990s had their foundation in the government initiatives that occurred between 1964 and 1971. In this period, Canada introduced a range of programs to expand access to public education, health care and income assistance. In 1966, the Canadian Assistance Plan (CAP) was introduced, under which the federal government subsidized 50% of the cost of provincial social assistance programs but program specific rules were left to the provinces to decide (Office of the Auditor General of Canada, 1989). As an open-ended program, there was no limit on the amount of support that the government provided to the provinces. By 1989 CAP expenditures accounted for 0.1% of total expenditures (Office of the Auditor General of Canada, 1989). Approximately one million Canadians, or 4.6% of the population over the age of 15, received social assistance through CAP (Office of the Auditor General of Canada, 1989). This plan was in effect until 1995, when the federal government opted for less open-ended block grants (August, n.d.).

In the early 1990s, while still ranking first on the United Nations Human Development Index (Government of Canada, 1994), Canada experienced an increase in unemployment, reaching 12% for males in 1992 and remaining above 10% until 1995 (Human Resources and Skills Development Canada, 2013b). Female unemployment peaked as well but remained at lower levels than that of males, a trend that has been continual since 1992. In response to growing unemployment, former Prime Minister Kim Campbell created the Department of Human Resources Development Canada (HRDC) – which was replaced by the Department of Human Resources and Skills Development Canada (HRSDC) in 2003 – to group several social services in an attempt to increase program delivery efficiency (Hicks, 2008). Although income assistance eligibility requirements and allowances were in the domain of provincial governments, the HRDC contributed to the financing of most programs taking place. This ranged from unemployment insurance to student loans and financing of postsecondary education (Hicks, 2008). In the following year, the liberal government of Prime Minister Jean Chrétien announced a job and growth promoting agenda in *Agenda: Jobs and Growth – A New Framework for Economic Policy* (Government of Canada, 1994). The government identified four major causes of increased unemployment: growing skills mismatch, disincentives created by social assistance programs, increasing payroll taxes and the two previous recessions (Government of Canada, 1994).

The recessions that occurred in 1981 and 1990 were more severe on the Canadian economy than previous recessions had been, both in terms of duration and unemployment rates (Government of Canada, 1994). Extended unemployment eroded skills and diminished the likelihood of re-employment. Canada, along with other industrialized countries, also experienced a skills mismatch as it transitioned into a more knowledge-based economy (Government of Canada, 1994). However, the government also identified the existing social assistance programs and payroll taxation as factors that aggravated the unemployment rate. Social assistance programs, such as Unemployment Insurance (UI) and Worker's Compensation, among others, were found to create disincentives to work, especially when the deduction rates in the programs were close to dollar for dollar against outside earnings. Payroll taxes were also identified as a driving force behind the surge in unemployment, as they create a wedge between the effective

wage cost to the employer and the take home wage of the employee.

In 1994, UI was linked to an increase of one to two percentage points in the unemployment rate (Government of Canada, 1994). In 1993-1994, total expenditure with UI was \$19.4 billion, and 40% of individuals receiving UI in 1993 had claimed benefits at least three times in the previous five years (Government of Canada, 1994). The rules of UI, such as the qualifying period and the duration of benefits, created disincentives to work that resulted in repeat use and increased the duration of enrollment in the program. Consequently, UI premiums deducted from paychecks increased from 2.1% in 1976 to 4.5% in 1992 (Government of Canada, 1994). To address these issues, the 1994 federal budget created more stringent rules for UI while at the same time reducing payroll taxes. The main steps taken by the government were to decrease the generosity of social assistance programs and reduce payroll taxation, thus nudging individuals to work. In 1996, the government introduced the Employment Insurance (EI) system, which replaced UI. It contained stricter eligibility requirements than the previous scheme. Table 1 shows the effect of such changes on the percentage of unemployed individuals receiving UI or EI.

Table 1. Main legislative changes in Employment Insurance between 1990 and 2012²

Year	1990	1993	1994	1996	2012
Bill	Bill C-21	Bill C-113	Bill C-17	Bill C-12	Bill C-38
Main Change	Increased the minimum amount of weeks of insurable employment for individuals to qualify for UI.	Reduced the replacement rate of insurable earnings for individuals with dependents.	Reduced the replacement rate of insurable earnings for individuals without dependents.	Changed the base used to calculate average earnings to those received in 20 weeks prior to the claim.	Broadened the definition of “suitable” ² jobs in the Unemployment Insurance Act.
% of Unemployed Receiving UI or EI	74%	57%	51%	42%	35%

Sources: Government of Canada (2012), Canadian Labour Congress (2013), Zhengxi Lin (1998).

A new funding scheme was introduced, along with the EI reform of 1996, to provide temporary income support and direct assistance to unemployed individuals through the Employment and Benefit Support Measures (EBSMs) (Government of Canada, 2010). Two years later, in 1998, the National Child Benefit (NCB) was introduced. Effectively, it converted the working income supplement (previously known as the Child Tax Benefit) into an income-tested NCB supplement. The most significant feature of this program was its portability. It allowed parents to retain benefits when moving from welfare to paying jobs. While other changes have occurred since, the most significant reforms to federally administered social assistance programs

2 If an EI recipient refuses a “suitable” job he or she will no longer qualify for government benefits.

in recent times have taken place under the Conservative government of Prime Minister Stephen Harper.

2.2 Current Canadian Employment Insurance Program

With the introduction of Canada's Economic Action Plan, Harper's government has implemented several changes to federally administered social assistance programs, ranging from the retirement age to the calculation of EI benefits. The main initiatives that impact labour decisions are listed below. All data come from the Government of Canada's Economic Action Plan website (2013).

Table 2. Working While on Claim, new and old structures

Previous WWC project (60% deduction rate)		New WWC project (50% deduction rate)	
Weekly insurable earnings used to calculate benefits for EI	\$600	Weekly insurable earnings used to calculate benefits for EI	\$600
Weekly EI benefit rate (55%)	\$330	Weekly EI benefit rate (55%)	\$330
Gross earnings per week with EI	\$450	Gross earnings per week with EI	\$450
Allowable earnings (deduction rate of 60%)	\$132	Allowable earnings (deduction rate of 50% if weekly earnings are lower than 90% of EI weekly benefits; 100% for exceeding amount)	\$225
Amount of deduction	\$318	Amount of deduction	\$225
EI payment after deduction	\$12	EI payment after deduction	\$105
Total income under old WWC structure	\$462	Total income under new WWC structure	\$555

Source: Government of Canada (2013b).

One of the main actions taken by Harper's government was to nudge individuals to remain in the workforce longer. The government amended the *Canadian Human Rights Act* and the *Canada Labour Code* to prohibit federally regulated employers from setting a mandatory retirement age. Concurrently, a law has been passed to gradually increase the age at which individuals qualify for Old Age Security (OAS) and Guaranteed Income Supplement (GIS) from 65 to 67 years old, starting in 2023. These changes have the effect of incentivizing older individuals to remain in the labour force. Increasing the retirement age has three main benefits: employees get more years' worth of wages, governments receive more in taxes and pay less in

pensions, and the economy grows faster as more people work for longer (The Economist, 2011).

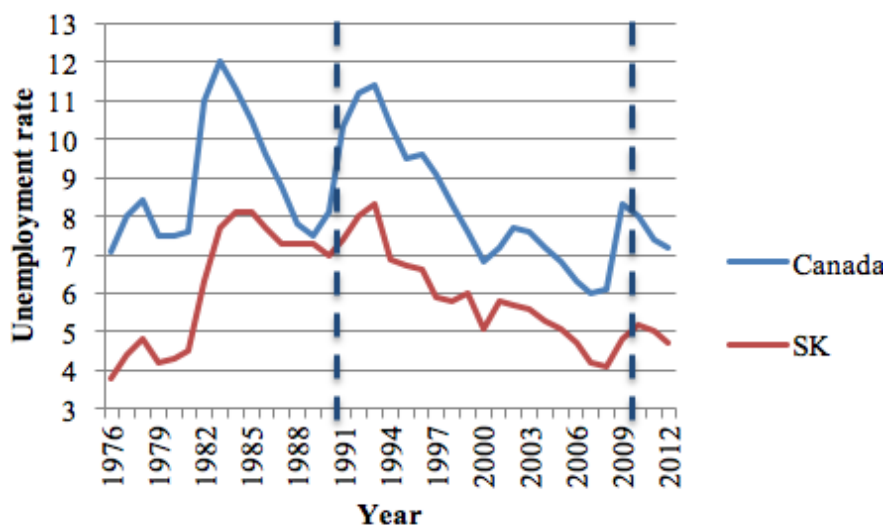
As for unemployment benefits, the government has recalculated EI benefit amounts using the highest 14 to 22 (out of 52) weeks of insurable earnings, depending on the regional rate of unemployment. This means that EI benefit rates are calculated based on the weeks in which the individual received wages. Insofar as eliminating low-earning weeks from the calculation increases the benefits received, this change creates incentives for individuals to enroll in EI. However, the government has at the same time increased incentives to work with the implementation of the pilot project Working While on Claim (WWC), which uses a deduction rate of 50% for EI against income earned through labour. This has the effect of making it more beneficial for individuals to work while on EI, as individuals are allowed to retain half of their employment earnings while still receiving EI benefits. Table 2 shows the differences between the old and the new structures of WWC.

Currently, individuals claiming sickness or maternity benefits face a deduction rate of 100%. Essentially, every dollar of work income received is deducted from benefits (Government of Canada, 2013c). For individuals claiming parental or compassionate care or for parents of critically ill children, there is an exemption of 25%. This means that an individual can earn an amount equivalent to 25% of his weekly benefits without triggering any deductions in EI benefits. (For earnings above that threshold, the deduction rate is 100%.) In both cases, within a certain threshold the marginal wage is \$0, as every dollar earned through labour is deducted from the EI benefits the individual receives (Government of Canada, 2013b).

2.3 Saskatchewan Social Assistance Programs in the 1990s

In the early 1990s, while Canada faced a recession, Saskatchewan's situation was grimmer than that of other provinces (Gingrich, 2009). The New Democratic Party (NDP) government of Premier Roy Romanow used a mix of tax increases and spending cuts to decrease the province's debt, which stood at 28% of GDP in 1991-92 (Ontario Ministry of Finance, 2012). As government was downsized, welfare was reformed to encourage people to work by means of training initiatives and earned income supplements (Ontario Ministry of Finance, 2012). Under the stewardship of varying political parties, Saskatchewan has for decades experienced an unemployment rate lower than the Canadian average. Nevertheless, the recession of the 1990s is apparent in the increases in the provincial unemployment rate experienced in the years between 1991 and 1994, as can be seen in Figure 1 (Newfoundland and Labrador Statistics Agency, 2013). The same effect can be observed for the mid 1980s. According to Gingrich (2009), two of the reasons Saskatchewan has experienced lower unemployment rates are that fewer adults, especially rural women, took part in the labour force, and that many individuals emigrated from Saskatchewan during the 1990s.

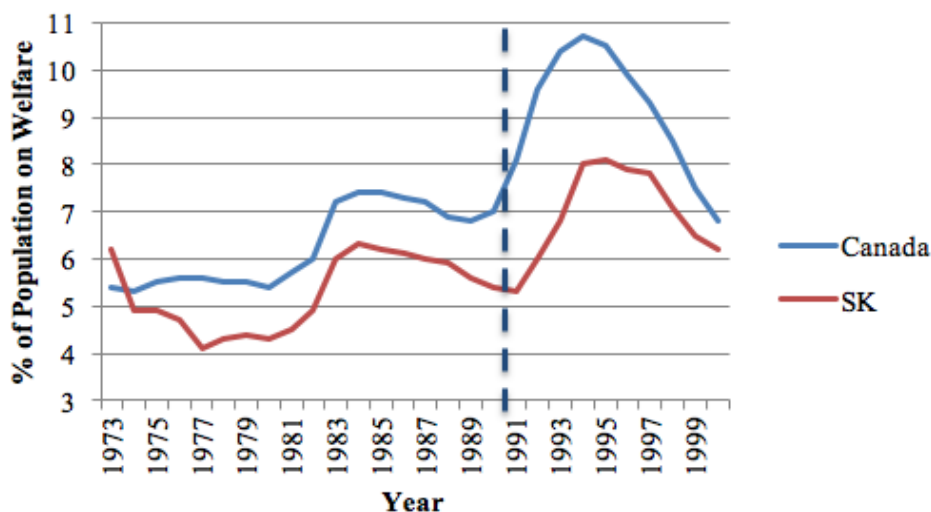
Figure 1. Unemployment rate for Canada and Saskatchewan, 1976-2012



Source: Created by the author based on Newfoundland and Labrador Statistics Agency (2012).

Individuals with the lowest earnings, unlike families in the middle deciles, resorted to putting in more weeks and hours of employment to prevent their earnings from declining during the recession (Gingrich, 2009). For such individuals, social assistance policy played an important role. In Saskatchewan, real per capita spending on such programs stood at \$941 in 1993/1994 – the second lowest in Canada, behind only New Brunswick (Schafer & Clemens, 2002). Figure 2 shows the percentage of the population relying on social assistance between 1973 and 2000. The spike in the percentage of recipients matches the spike in unemployment observed in Figure 1.

Figure 2. Percentage of the population receiving social assistance, 1973-2000



Source: Created by the author based on Schafer and Clemens (2002).

As the proportion of individuals receiving welfare benefits peaked in Saskatchewan in 1995, the government took action to encourage individuals to work and companies to hire more workers. Between 1995 and 1997 it implemented changes resulting from its public consultation, “Preparing for the New Century: Making Choices for Today and Tomorrow” (Schafer & Clemens, 2002). The government increased aid, from \$105 to \$120 a month, to low-income families under the Saskatchewan Family Income Plan (FIP). This provided cash assistance to families with dependents under the age of 18 whose combined yearly income was below \$9,000 (Schafer & Clemens, 2002). Prior to the consultation, FIP had a deduction rate of 50% for monthly incomes in excess of \$725; the new rules extended the exemption to \$850 and decreased the deduction rate to 40% (Schafer & Clemens, 2002).

In 1997, the Provincial Training Allowance (PTA), which still exists, was introduced (Government of Saskatchewan, 2013d; Schafer & Clemens, 2002). The PTA provides a monthly allowance based on family size, in order to allow low-income individuals to access basic education and training for which student loan funding is not available (Government of Saskatchewan, 2013a). The goal of the program was not to move people immediately into employment, but rather to equip them with the skills needed to meet the demands of employers. The PTA did not introduce new assistance to low-income individuals. Instead, it allowed the government to be consistent in its provision of aid to individuals and families by combining the different welfare programs upon which these individuals relied (Schafer & Clemens, 2002). As Schafer and Clemens (2002) point out, an important feature of the PTA was that it was not considered to be a social assistance program. Thus it allowed for the “cycling” of welfare recipients off social assistance provided by the Department of Social Services and into the PTA, which was run by the Department of Post-Secondary Education and Skills Training. The authors highlight that, not only did these recipients often receive more aid than traditional welfare recipients, this cycling allowed politicians to claim a decrease in the percentage of individuals receiving social assistance.

Another initiative taken by the provincial government in the 1990s was the creation of the Job Start/Future Skills program (Government of Saskatchewan, 1996). The goal of the program was to decrease unemployment by training individuals in fields in which skilled labour was lacking. The program sponsored as much as 50% of the training costs companies incurred with new employees, up to a maximum of \$5,000 per individual (Government of Saskatchewan, 1996). This sponsorship was extended to wages, materials and instruction (Government of Saskatchewan, 1996). A “quick skills” option provided training programs of up to 20 weeks through public institutions, so long as the training met industry requirements for skilled labour (Government of Saskatchewan, 1996). According to Schafer and Clemens (2002), this program had more positive results than the other initiatives taken by the government, as employers were encouraged to hire the participants upon completion of the program.

In 1997 and 1998, the government launched the first phase of a strategy called “Building Independence – Investing in Families,” some components of which, such as the Saskatchewan Assistance Plan (SAP), are still in place (Government of Saskatchewan, 2013b, 1998). The goals of the programs were to further extend assistance to low-income families with children and to encourage training and employment opportunities (Government of Saskatchewan, 1998).

In 1998, the government introduced the Saskatchewan Employment Supplement (SES), the Family Health Benefits (FHB) and the Saskatchewan Child Benefit (SCB) (Schafer & Clemens, 2002). While SCB no longer exists, SES and FHB are still in place. SES provides monthly payments to supplement the income of low-income parents; the amount of which depends on the number of children and the amount of income earned by the family, and most importantly increases as income increases (Schafer & Clemens, 2002; Government of Saskatchewan, 2013c). Low-income families are also provided with supplementary health benefits through FHB. The purpose of the program is to prevent families from relying on welfare because of health related expenditures with their children (Government of Saskatchewan, 2013d; Schafer & Clemens, 2002).

The second phase of the Building Independence – Investing in Families strategy began in 2000, with the goal of building an income security redesign. As for the profile of recipients, between 53.3% and 60.9% of individuals relying on welfare throughout the 1990s were single (Schafer & Clemens, 2002). Marital status remained a significant factor in predicting enrollment in social assistance programs throughout the decade, however, the age groups most reliant on welfare changed through the years. In 1994, the year for which this paper analyzes unemployment data, individuals aged 25 to 34 made up the biggest group of welfare recipients (29.9% of the total). By the end of the decade, the highest proportion were individuals over the age of 45 (27.5%) (Schafer & Clemens, 2002). These changes in the age of recipients reflect changes in the economy and the demands of the labour market. It is reasonable to expect that technological changes would benefit younger individuals who are more technologically inclined. In regards to employment status, individuals were classified as one of the following: seeking work, job-ready, in training, sheltered workshop³, employed, partially employable, and unemployable (Schafer & Clemens, 2002). The percentage of recipients classified as seeking work declined from 40.1% in 1994 to 34.8% by the end of the decade. The percentage of partially employable and unemployable individuals increased from 17.3% and 23.4%, to 23.2% and 24.9%, respectively (Schafer & Clemens, 2002).

2.4 Current Saskatchewan Social Assistance Programs

Employment Insurance, pension plans and some tax credit programs are coordinated by the federal government, whereas Social Assistance in Canada is under the control of provincial governments. Although eligibility rules can vary greatly, all provinces have some social assistance or “income support” program to supplement the earnings of low-income individuals and families. Since 2000, the Saskatchewan government has engaged in implementing strategies from the second phase of the Building Independence – Investing in Families strategy discussed in the previous section. The reforms introduced in Phase II regarded the Saskatchewan Assistance Plan (SAP), which is the main form of welfare in the province.

The main changes concerned allowances for food, clothing and household and personal needs that were existent in SAP prior to the introduction of the Canada Child Benefit (Schafer & Clemens, 2002). These were replaced with funding available through the federal National Child Benefit Supplement (NCBS), for which eligibility is determined through the tax system rather

3 Sheltered workshop is a work place for individuals with mental disabilities (Auser, 1998).

than an application for welfare (Schafer & Clemens, 2002). SAP is available to low-income families and individuals who without government assistance cannot meet their basic living costs (Government of Saskatchewan, 2013b). Applicants are classified as fully employable, partially employable, unemployable, or disabled. Financial assistance differs between these categories. Fully employable individuals are those who are capable of working 36 hours or more per week. Those who are only capable of working part time or not at all are classified as partially employable or unemployable (Government of Saskatchewan, 2013e). Individuals who are disabled receive supplementary assistance (Government of Saskatchewan, 2013e). Table 3 contains the adult and board and room allowances available under SAP in 2013.

Table 3. Adult and board and room allowances in Saskatchewan in 2013

Type	Adult allowance (includes food, clothing, travel, personal and household items)	Room and board allowance (includes clothing and comfort needs)	
		With Parents	Other
Adult	\$255	\$330	\$330
Each disabled adult add	\$50	\$20	\$20
Single Parent – one child	\$255	\$330	\$440
Each additional child add	\$0	\$0	\$85

Source: Created by the author based on Government of Saskatchewan (2013f).

Aside from adult and room and board allowances, SAP provides a shelter allowance, which varies according to marital status, number of children and area of residence. Other benefits available to low income individuals and families are the Saskatchewan Employment Supplement (SES) and the Saskatchewan Rental Housing Supplement (SRHS). SES provides assistance to parents with the child related costs of going to work. A requirement of SES is that parents receive at least \$125 of monthly income from labour and child or spousal maintenance (Government of Saskatchewan, 2013f). SRHS provides monthly assistance with household rental costs to low and moderate-income families as well as individuals with disabilities (Government of Saskatchewan, 2013f). Eligibility requirements vary according to family size and expenses. Maximum allowance rates are presented in Table 4.

When receiving social assistance, an individual's income in the current month is used to calculate the amount of benefits he will receive in the following month. For non-disabled earners, Saskatchewan provides an exemption of \$50 + 25% of the next \$600 earned up to \$200 for single individuals (Government of Saskatchewan, 2013f). For a childless couple, the exemption is of \$75 + 25% over the next \$800 up to \$275, and for a family, there is an exemption over the first \$125 earned (Government of Saskatchewan, 2013f). This translates into a marginal tax rate of 75% for income earned above the exemption threshold. A single non-disabled individual making \$1,000 would only retain \$237, which has a similar effect as applying a tax rate of 76% to an individual's income – he or she is unlikely to work under such circumstances. In spite of attempts to reduce reliance on social assistance programs, Saskatchewan has seen one of the smallest drops in the number of welfare recipients in Canada, lagging behind all Canadian

Table 4. Shelter allowance – maximum rate of assistance in 2013

Type	Tier A*	Tier B	Tier C	Tier D
Room only - Single	\$200	\$200	\$200	\$200
Room only - Childless Couple	\$400	\$400	\$400	\$400
Single - Employable	\$328	\$289	\$259	\$233
Single - Unemployable	\$459	\$404	\$363	\$326
Childless Couple	\$587	\$501	\$450	\$355
Families - 1-2 children	\$711	\$589	\$563	\$429
Families - 3-4 children	\$773	\$650	\$627	\$480
Families - 5+ children	\$849	\$724	\$690	\$557
Tier A: Lloydminster, Regina, Saskatoon, Estevan and the bedroom communities of: Allan, Asquith, Balgonie, Belle Plaine, Bradwell, Buena Vista, Clavet, Colonsay, Dalmeny, Delisle, Disley, Dundum, Edenwold, Elstow, Grand Coulee, Langham, Lumsden, Lumsden Beach, Martensville, Meacham, Osler, Pense, Pilot Butte, Regina Beach, Shields, Thode, Vanscoy, Warman, White City. Tier B: Creighton, Kindersley, La Loche, La Ronge, Macklin, Melville, Prince Albert, Rosetown, Weyburn and Yorkton. Tier C: Battleford, Fort Qu'Appelle, Humboldt, Meadow Lake, Melfort, Nipawin, Moose Jaw, North Battleford, Swift Current, Watrous. Tier D: Other towns and rural areas.				

Source: Government of Saskatchewan (2013f).

provinces with the exception of Newfoundland and Labrador (Schafer & Clemens, 2002). The fact that the reforms introduced in the province were not as influential as those implemented elsewhere in Canada make the results estimated in this paper using data from the 1990s more relevant to the current situation in Saskatchewan.

3. METHODS

The data used to estimate the impact of social assistance on the number of weeks worked comes from the Longitudinal Survey of Labour and Income Dynamics (SLID) for 1993 and 1994, the latest years for which data were available. It contains observations for 1,272 individuals in Saskatchewan. SLID is a Canadian household survey that measures government transfers, employment status, income levels, and other characteristics for individuals and families over time. The data for SLID was obtained through the Equinox database.

3.1 Empirical Specification

I run an Ordinary Least Squares (OLS) regression to estimate the impact of social assistance on the number of weeks an individual is unemployed. The model used is as follows:

$$\begin{aligned}
 \ln(\text{weeks of unemployment}_{i1994}) = & \beta_0 + \beta_1 \text{age}_{i1994} + \beta_2 \text{age}_{i1994}^2 \\
 & + \beta_3 \text{marriage}_{i1994} + \beta_4 \text{male}_i + \beta_5 \text{bachelor's}_{i1994} \\
 & + \beta_6 \text{years of schooling}_{i1994} + \beta_7 \text{years of schooling}_{i1994}^2 \\
 & + \beta_8 \text{work experience}_{i1994} + \beta_9 \text{work experience}_{i1994}^2 \\
 & + \beta_{10} \ln(\text{social assistance}_{i1993}) + u_i
 \end{aligned} \quad (1)$$

where the dependent variable represents the natural log of the number of weeks an individual was unemployed in 1994. The value 0 is transformed into 0.001, as it is not possible to take the logarithm of zero. (This does not bias the results, but rather prevents individuals from being dropped from the sample if they present a value of 0 for the dependent variable.) The choice of independent variables is partially based on the models for social assistance receipt developed by Saarela (2004). These variables are presented either in their original or their natural log form, according to model specifications. Their interpretations are as follows. age_{i1994} is a variable for the individual's age in 1994, it also appears a second time as age_{i1994}^2 . $married_{i1994}$ is a dummy with the value of 1 if the individual is married or in a common-law union and 0 if not. $male_{i1994}$ is a dummy with the value of 1 if the individual is a male and 0 if female. $bachelor_{i1994}$ is a dummy that takes the value of 1 if the individual has a bachelor's degree or higher as of 1994. $years_{i1994}$ and $work_{i1994}$ measure the number of years of schooling and work experience, respectively, that an individual had in 1994; both variables are added again in their squared form. Finally, $social_{i1993}$ represents the total amount of social assistance, in thousands of dollars, which an individual received in 1993.

The number of weeks of unemployment in 1994 is a log-log function, and as such β_{10} is the elasticity of *weeks of unemployment*_{*i1994*} with respect to *social assistance*_{*i1993*}.

The expected sign for the dependent variable, social assistance, is unknown as it depends on both substitution and income effects. For the independent variables, age is expected to have a negative impact, as the unemployment rate tends to be lower among older people. Work experience is expected to have a negative impact on unemployment, as experienced individuals are more likely to find jobs. The total years of schooling an individual has is expected to have a negative impact on unemployment; the same is expected for the dummy that indicates if an individual has a bachelor's degree or higher. The dummy for males is expected to have a positive relationship with the number of weeks of unemployment, as data has shown that unemployment rates tend to be higher for men. Finally, the dummy for marriage is expected to have a negative impact on unemployment.

4. RESULTS

The results obtained from the regression detailed in the previous section are shown in Table 5. Robust standard errors are used to correct for the heteroskedasticity present in the data. With an F-value of 27.2, the Ramsey RESET test indicates a possible model misspecification; however, given the data available and in comparison to other models (log-level, level-log, and level-level), this model proved to have the lowest F-value.

Although the model's R^2 indicates that only 16% of the variance in unemployment is explained by the independent variables, it is still noteworthy considering the coefficients found. In spite of the existence of other variables that influence unemployment – some of which cannot be measured, such as individual utility functions – the goal of this model is to identify whether there is a relationship, even if small, between social assistance benefits and unemployment spells. As can be seen in Table 5, the estimate for social assistance is positive and significant at 1%. The coefficient of 0.4 means that an increase of 1% in the amount of social assistance

Table 5. OLS coefficients

Dependent variable: $\ln(\text{weeks of unemployment}_{i1994})$ Sample size: 1,272		Method: OLS Observations included: 1272	
Variable	Coefficient	Robust Std. Error	t-value
$\text{social assistance}_{i1993}$	0.4020***	0.104	3.86
age_{i1994}	-0.1625***	0.035	-4.59
age_{i1994}^2	0.0022***	0.000	5.25
$\text{bachelor's}_{i1994}$	-0.2780	0.200	-1.39
$\text{years of schooling}_{i1994}$	-0.2239**	0.099	2.27
$\text{years of schooling}_{i1994}^2$	-0.0082**	0.004	-2.06
marriage_{i1994}	-0.3640***	0.134	-2.72
male_i	0.4047***	0.112	3.61
$\text{work experience}_{i1994}$	-0.0298	0.019	-1.55
$\text{work experience}_{i1994}^2$	0.0002	0.000	0.47
constant	-0.8897	0.897	0.99
$R^2 = 0.16$			
Notes: * significant at 10%, ** significant at 5%, *** significant at 1%			

Source: created by the author.

received increases weeks of unemployment by 0.4%. The average weeks of unemployment for unemployed individuals in the sample is 35 weeks. Thus, an increase of 10% in benefits received increases an individual's unemployment spell by 1.4 weeks (or roughly 10 days out of a year). In a tier A city such as Regina, a cut of \$700 in the annual benefits that a single individual qualifies for (see tables 3 and 4) would decrease the average length of unemployment spells by 4%. This positive relationship between unemployment and social assistance is similar to that found in other studies.

The estimates of years of schooling and years of schooling squared are statistically significant at 5%. The coefficient for years of schooling has the expected relationship with unemployment, as the duration of unemployment spells is reduced with increased years of education. The combination of this variable with its squared form indicates that this relationship does not diminish over time. Although not statistically significant at 10%, the coefficient for the dummy related to bachelor's degree indicates that individuals with a bachelor's degree or more advanced degrees have shorter spells of unemployment. It is important to remember that this data set was collected in the 1990s, and over the past two decades education has become a much more important asset. As such, it is reasonable to expect that higher education would be statistically significant if research were carried out with a more current set of data.

The interaction between work experience, work experience squared and unemployment is as expected, although it is not significant at 10%. The negative link between work experience and unemployment is in agreement with the expectations set out in the methodology section. The combination between work experience and its squared form indicates that unemployment spells are shorter for more experienced individuals; however, this relationship wears off over time. This is likely related to an individual's age, as more experienced individuals are also older.

As a matter of fact, the coefficients for age follow the same pattern. The combination between age and age squared, significant at 1%, indicates that age has a negative relationship with unemployment that also wears out over time.

Marriage and gender (male) prove to be statistically significant at 1%, consistent with existing literature. The coefficient for marriage can be explained by the fact that more married individuals choose to stay out of the workforce, and are thus not counted as unemployed (Choi & Valladares-Esteban, 2013). The coefficient for male is also in accordance with the unemployment trends for men and women observed in section 2. The coefficient for the constant is not statistically significant and does not have any relevant economic interpretation.

5. CONCLUSION AND POLICY IMPLICATIONS

Microeconomic theory suggests the decision to work is a rational choice based on the labour-leisure trade-off. This trade-off, which varies according to each individual's utility function, determines the time spent on labour and the time spent on leisure. The allocation of hours to work is a function of the substitution and income effects. Through these effects, social assistance benefits distort individual behaviour and rational choices. The income effect from receiving social assistance tends to overwhelm the substitution effect, leading people to increase hours devoted to leisure in lieu of labour.

There is a consensus in the existing literature that welfare programs exert a negative impact on labour supply. Canadian as well as American examples point to a reduced labour supply and, consequently, to an increased unemployment rate resulting from welfare benefits. At the same time, the literature on programs such as the Negative Income Tax and the Canadian Self-Sufficiency Project point to increased efficiency and reduced disincentives to work under these programs in comparison to standard social assistance efforts.

To expand the existing research on the effects of social assistance on decisions to work, I estimated the impacts of social assistance benefits on individuals' length of unemployment spells by analyzing longitudinal data from 1993 and 1994 for individuals in Saskatchewan. The results point to a statistically and economically significant impact of social assistance on unemployment: the social assistance elasticity of unemployment spells is 0.4. This indicates that an increase of 1% in social assistance benefits increases unemployment spells by 0.4%. It is important to note, however, that given the data limitations, further research would be beneficial to better assess the current impacts of welfare policies on unemployment. Nevertheless, although there are other unaccounted factors, it is clear from microeconomic theory and the related literature, as well as the regression results found in this paper, that welfare benefits create incentives for individuals to pursue leisure rather than labour. As such, more stringent welfare eligibility requirements are needed to decrease the disincentives to work inherent in such programs.

It should be noted that not every social assistance recipient fits the profile used in this research and that even those who do are not necessarily receiving every benefit mentioned. Many individuals on welfare actively seek employment. However, it is evident that social assistance programs contain a behavior-distorting component. Whenever welfare pays more than work,

individuals will likely end up in a cycle of government dependence. Public policy should thus clearly emphasize a preference for work over welfare.

Tanner and Hughes (2013) point to a reduction in benefit levels and a tightening of eligibility requirements as important tools to reduce welfare dependence. These authors also emphasize the importance of increasing welfare work requirements. On this issue, the Australian welfare system is worth noting. Australia has had a work-based welfare program called “Work for the Dole” since 1998. Under this program, individuals aged 18 to 49 who have been receiving social assistance for 12 months or longer are required to work for NGOs and government agencies (Australian Government, 2013). This program increases work experience among the unemployed, which has a positive effect on employability, and reduces the disincentives to work created by traditional welfare programs. Since 2005, the Australian government further reduced disincentives to work by introducing a requirement that parents on welfare with children over the age of six and disabled individuals who are capable of working must seek part-time employment (Australian Government, 2005).

A similar work requirement could be introduced in Saskatchewan. Such a policy would directly impact the substitution and income effects that nudge individuals on welfare away from work and in favour of leisure. Thus, if individuals are required to work, social assistance would no longer allow for increased leisure time. This would contribute positively to the economy by expanding the supply of labour, decreasing the tax-payer burden, and increasing the work experience of welfare recipients.

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Randall G. Holcombe, *Advanced Introduction to The Austrian School of Economics*

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Randall G. Holcombe, *Advanced Introduction to The Austrian School of Economics*
(Cheltenham, UK, and Northampton, MA: Edward Elgar, 2014)

Before reading Randall Holcombe's *Advanced Introduction to the Austrian School of Economics*, I was wondering what it could offer beyond other similar "Introductions to the Austrian School", such as Huerta de Soto (2008) or Boettke (2010).¹ Holcombe goes beyond the mostly microeconomic oriented focus of Huerta de Soto's offering (though he does not give as much attention to the pre-history of Austrian economic thought as the Spanish economist does). Holcombe does not carve out the Austrian paradigm as being as distinct from the mainstream as Boettke does, but the niche he does outline reads more fluidly. Holcombe's real contribution, then, is in writing a brief (barely 125 pages) text that brings the reader up to speed on both the micro and macro facets that comprise one man's vision of what Austrian economics "is". Holcombe's definition of Austrian economics ultimately proves to be a contentious issue.

1 Both of which I reviewed previously. See Howden (2010; 2012).

It is difficult to say that Holcombe's pithy little book is canonical of Austrian economics because he has a hard time pinpointing exactly what makes the Austrians unique. Notwithstanding the book's title, in the preface Holcombe struggles to define the subject at hand, noting that "there is not a clear line that identifies its borders.... [A]ll of the ideas I have included in this volume are good economics, in my view" (p. ix-x). This Friedmanite view is troubling, not just for a book proclaiming to be an "advanced introduction" of Austrian economics (why not an advanced introduction of "good" economics?) but more because Holcombe has used some method to include authors and ideas he considers to be distinctly "Austrian" (though some Public Choice ideas creep in, as I'll discuss below). Holcombe evidently has some criteria in his head of what defines an "Austrian" idea, though he doesn't share it and the reader is left scratching his head wondering what one must do to be considered an Austrian economist.

In this way, Holcombe's contribution to the introductory literature is similar to Boettke (2010), who also does not venture into methodological concerns. This is unfortunate, because all the contributions of Austrian economics have stemmed from its methodological uniqueness: an adherence to methodological individualism and praxeology, in lieu of logical positivism and empiricism. Holcombe reserves his comments of the "methodology of the Austrian school" to less than four pages at the end of the book (pp. 109-112). This overview gives a brief criticism of the use of mathematics and statistics in economic theorizing, but doesn't offer an alternate. This reviewer fears that the "advanced" introductory reader will agree with the conclusions, but finish the book without any idea as to how further advanced contributions are to be derived. There is little hope for Austrian economics to develop further without its adherents understanding *how* such contributions are made, and an understanding of praxeology is a uniquely Austrian element that separates the school's theories from those of the mainstream.

So much for the methodological moralizing. A large part of this book is devoted to Austrian business cycle theory (ABCT) (pp. 69-94), which this reviewer would normally consider a positive aspect of the book. It makes use of, after all, all of the major components of Austrian theory (e.g., entrepreneurship, monetary economics, growth theory, time preference, etc.) and is also an undeniably unique way to look at the basic problem of economic booms and busts. Unfortunately the way that Holcombe phrases ABCT does more to muddy the theory than clarify why it is unique. For example, though there are discussions about malinvestment, Holcombe describes it in various ways that rather confuse than illuminate. Should one consider malinvestment to be longer-dated projects becoming unprofitable when interest rates rise (p. 79), any investment made that is *ex post facto* unprofitable (p. 73), or, perhaps most troublingly, the result of "overinvestments in one type of capital relative to another" (p.79). It might not be that any of these definitions is wrong or inconsistent, but there is enough difficulty in accurately defining what ABCT "is", especially during its recent revival, that Holcombe's treatment is not terribly clarifying for the advanced learner. Furthermore, using a term like "overinvestment" the way that he does is not exactly incorrect, but since the mainstream interprets ABCT as an overinvestment boom, using the term it is not doing anyone any favors. One might think that Holcombe is just trying to phrase ABCT in a way that the mainstream will understand, but when

he concludes that “[w]hen interest rates are pushed down during monetary expansions, *not only is there the temptation to overinvest*, the distorted signal also creates incentives for the wrong types of investments” (pp. 91-92, emphasis added), one cannot help but think he actually does think that overinvestment has a starring role in ABCT.

Most troubling is that Holcombe’s discussion of ABCT glosses over the necessary occurrence of overconsumption. Whether one defines it as 1) an undue decrease in savings caused by artificially low interest rates (as in Garrison 2004: 327-28) , or 2) as an increase in consumption caused by an overestimation of wealth during an Austrian-type boom (as in Mises 1949: 546-47; Salerno 2012: 16-20), there is no doubt that overconsumption is an essential feature of ABCT.

Despite inciting fractional-reserve banking as a cause of the Austrian business cycle (p. 70-74), Holcombe later (pp. 90-91) praises the fractional-reserve free-banking school as a research area making use of Austrian insights. It’s difficult to reconcile such opposed views on the desirability of fractional-reserve banking systems. The book also may be an introduction, but it gives no hint to the reader that a 100-percent banking school exists (Huerta de Soto 2006) that offers a consistent explanation for the link between money supply growth, banking and the business cycle.

I begin reading this book wondering if the world needed another introductory text on Austrian economics. I finished reading it by realizing this was a moot question, as Holcombe gives his reader a smattering of Austrian insights within a book that is more devoted to free-market economics, Austrian or not. Consider, for example, that Holcombe think that “[p]erhaps the most significant idea that defines the Austrian school of economics is that market prices are necessary for rational economic calculation” (p. 46). I doubt that too many but the most devout Marxist economists would think differently. One point of departure might be in the difference in opinion over allocating public goods, but Holcombe leaves this mostly unexplored, and when he does give attention to the topic it sounds more like a Public Choice perspective than a strictly Austrian one. Maybe this reviewer is nitpicking, but if you’re looking for an advance introduction to Austrian economics, look elsewhere. If you want a primer on good economics, Holcombe’s book is better than most.

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Zac Bissonnette, Extraordinary Cuddly Delusions and the Madness of Crowds

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Zac Bissonnette. *The Great Beanie Baby Bubble: Mass Delusion and the Dark Side of Cute*
(Portfolio, 2015)

Ask most anyone interested in finance what they remember about the late 1990's and they will say the Dot-com bubble. Fed Chair and Maestro, Alan Greenspan, in one of his few comprehensible utterings, made "irrational exuberance" part of the bull market lexicon. Low interest rates provided the fuel for the tech laden NASDAQ index to shoot from under 1,000 in 1995 to over 5,000 in March 2000. Thousands gave up honest work to be full-time day-traders.

From 1995 to 1998 the Fed lowered its Fed Funds rate from 6% to 4.75%. The M2 Money Supply grew 22 percent in the same time frame. The prices of worthless stocks soared upward only to crash in spectacular fashion. Pets.com shares went public at \$11 only to enter liquidation 268 days later with its stock trading for 19 cents.

However, stock trading was just part of the late 90's mania. Entire college and retirement funds were funneled into the can't miss speculation of Beanie Babies. The small beanbag animals that creator Ty Warner wanted every kid to have, sold at retail for \$5.00 but were hunted and hoarded by obsessed adults who sent the prices for these fuzzy plush animals into the hundreds and thousands of dollars.

Zac Bissonnette writes in *The Great Beanie Baby Bubble: Mass Delusion and the Dark Side of Cute*, "frenzied speculators had turned [Beanie Babies] into a craze that was the twentieth-century American version of the tulip bubble in 1630s Holland." While the Beanie Baby bubble lacked the credit component most all bubbles have, the zeal for certain profits and belief in the toys being sound long-term investments was the same as for tulips, houses, and stocks.

The craze, in addition to its occurrence during the easy money 90's, was also spurred by the embrace of a new technology, a common element to many bubbles. In this case it was Ebay and online auctions. In an interview on MSNBC, Bissonnette said some Ebay insiders told him there would have been no Ebay without Beanie Baby business.

The author writes the craze, "is probably best understood as late-1990's speculative capitalism merged with a massive collective flashback to the comfort stuffed animals provided in our early years."

The Great Beanie Baby Bubble is anything but academic, with much of the book devoted to chronicling the life of the quirky, eccentric, and downright disturbed toy entrepreneur, Ty Warner. He had a troubled childhood. His salesman father distant, his pianist mother a paranoid schizophrenic, who spent most days in bed with a washcloth on her face, and demanded her husband beat their children with a belt. His father gave Ty (named for baseball legend Ty Cobb) his start in the toy selling business and the young Warner would become a member of the Forbes 500 with a net worth exceeding \$2 billion.

As obsessed about his appearance as he was with his toys, Warner constantly had plastic surgery. "He looks like he should be in a wax museum," someone whispered about the 69-year old in a Chicago courtroom in 2014. Probation and community service was his only sentence for evading millions in taxes.

Warner first created Beanies in 1993 but they initially went nowhere. He personally designed each and every one and oversaw the manufacturing in Asia. At least that's what he claimed. When investment bankers came calling, Warner ignored them. He would only sell to mom-and-pop stores, shunning big box retailers, not wanting his toys thrown into and sold from big bins.

When the craze caught fire and retailers clamoured for more product Warner would not change his production schedule. The company did everything wrong, phone calls went

unanswered, orders unfilled, yet at the height of the craze, 1998, retail sales were \$3 billion, making Warner's company number one in gifts, collectables and cash register area sales. Ten percent of all sales on Ebay were Beanie Babies, selling for an average of \$30, six times what they had retailed for. "Within a few weeks," writes Bissonnette about the company's 1998 Christmas party, "#1 Bears would be selling for \$5,000 or more apiece."

The turning point began during the 1995 Christmas season. "I had a few in October[1995]," a retailer recounted. "They weren't selling. Then in mid-January [1996] they took off like crazy." At the epicenter of the Beanie Baby liftoff were a couple Chicago-area housewives, Becky Phillips and her friend Becky Estenssoro. The two Beckys began collecting and nearby collectables dealer Richard Gernady began placing large orders.

Bissonnette calls Gernady's contribution "significant," writing "In the week before Valentine's Day 1996, Gernady sold five thousand of them," and he told a reporter, Beanie Babies "might become 'the biggest thing ever in retailing--Elvis, Sinatra and the Beatles combined.'"

Warner was offered \$2 million for the Beanie Baby line in February 1996. He said he might consider \$100 million. However even that amount "would soon represent less than one month's sales," writes Bissonnette. The biggest toy craze of all time had begun."

Dr. Paula Benchik-Abrinko soon became hooked after spying the toys in a hospital's gift shop. The doctor's sister Peggy Gallagher began collecting as well and soon they had to look outside Chicago to find rarer pieces. While Benchik-Abrinko was doing research that involved calling hospitals around the country, she would speak with gift shops in those hospitals to see what Beanies they had in inventory.

The sisters' monthly phone bills were \$1,000 as they looked for Beanies around the world. Gallagher bought some Humphrey the Camels for \$5 each in 1996 and a year later Humphrey was selling for more than \$2,000.

Gallagher bought 198 Beanies for retail prices from a seller in Nuremberg, Germany. A year and a half later she sold 30 Chilly the Polar Bears for more than \$1,800 each after paying \$7. She had purchased 36 Peking the Pandas that became worth more than \$2,000 each. The total order that cost her \$2,000 was worth more than \$300,000.

These Chicago collectors became the market and all sought to have complete sets. What came next were magazines reporting on the craze, providing the price lists that fueled the fire. *Mary Beth's Beanie World* reached one million in paid monthly subscribers. Les and Sue Fox had no success in the publishing business until they gambled their daughter's \$100,000 college fund and self-published *The Beanie Baby Handbook*. They sold three million copies making predictions that Beanie Babies would be every bit the investment that Picasso's paintings turned out to be. It was the fastest-selling collectables book ever and while Warner sued the Foxes for

copyright infringement, even after the settlement the authors kept millions.

The Foxes came out much better than ex-soap opera star Chris Robinson who invested \$100,000 of his kids' college fund buying 15,000 to 20,000 Beanie Babies. He began buying in 1998 at the height of the craze and still has all the Beanies as evidenced by a YouTube video made by his son entitled "Bankrupt by Beanies" which has nearly 300,000 views at this writing.

Warner's tactic of retiring some Beanies had always served to increase the secondary market prices until, it didn't in 1998 and 1999. The Beanie craze was over as suddenly as it began.

The author said he expected Beanie collectors "to be obviously insane," but found them "reasonable, intelligent, highly functioning people." The smartest can be caught up in a financial craze, as Sir Issac Newton demonstrated by going broke speculating in the South Sea bubble mania.

Easy money and the allure of certain riches have trapped speculators for centuries. A bubble that is easy to see in hindsight seduces the imagination while in progress, whether the trading is in tulips or teddy bears.

Philipp Bagus, *In Defense of Deflation*

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Philipp Bagus, *In Defense of Deflation* (London: Springer. 2015)

While Keynesians attribute deflation to an aggregate demand deficiency, and monetarists are wont to see contractions to the money supply or drops in the velocity of money as the culprit, Bagus takes the reader through a more nuanced view of falling prices. In particular, in chapter 3 he outlines six ways that prices in general may fall, two stemming from a change to the goods' side of the economy, and four from the money side. Individuals building their cash balances, losses by the fractional-reserve banking system or governmentally decreed deflation all originate from the economy's money side. Growth deflation and price control deflation all stem from the goods' side.

In discussing bank credit deflation, Bagus points out the very important yet widely overlooked truism that this particular form of deflation can only occur after a period of credit inflation (p. 77). Those who fear deflation should take note, as this particular form of falling prices is caused directly by inflationary policies, both by accommodative central bank monetary policy and lax lending standards by the fractional-reserve banking sector. Today this possibility

may be more acute than at any other time in history given that the U.S. banking sector has built up roughly \$12 trillion of M2 money stock from only \$1.4 trillion in currency. (Implying that a complete default of the banking sector would necessitate a monetary deflation of nearly 90 percent.)

A particularly interesting section comes in chapter 4, where Bagus outlines five prominent myths of deflation. The discussion on the fallacies of the liquidity trap argument are especially compelling, and Bagus demonstrates that deflation need not lead to any more of an arbitrary or unfair wealth redistribution than inflation.

In the penultimate fifth chapter, Bagus overviews two deflationary episodes – the American growth deflation from 1865 to 1896, and the German bank credit deflation of the 1930s. This reviewer had misgivings as he delved into this lengthy chapter, mostly owing to doubts as to the worth of case studies in an otherwise theory-laden book. My doubts were soon assuaged, however, as Bagus uses the examples to add the reader's understanding of not only the earlier theoretical aspects of the book, but also these two commonly cited deflationary episodes.

Many economists now view America's postbellum deflation as due to strong economic growth. This is a particularly important period as it is one of the few data points that illustrate price deflation coexisting with a strong economy. (Elsewhere, Bagus (p. 139-40) explains that the bulk of data points showing deflation as coexisting alongside economic contractions should properly define the causality as going from the latter to the former, and not blame price deflation for the economic malaise.) In addition, Bagus discusses the role of what he defines "qualitative cash building" (p. 130-31). This furthers his previous work on the quality of money (Bagus 2009; 2015), and explains the general cash building that caused price deflation as stemming from the increase in the quality of money as gold convertibility was reinstated after the Civil War. As a result, the growing American population was more willing to hold cash balances as a store of value, meaning less currency circulating as a medium of exchange. As a result the value of money increased to satisfy the needs of the robustly growing economy, or, what is the other side of the coin, the prices of goods in general fell.

The near visceral hatred towards deflation owes its origin back to several politically connected and well-organized groups who were harmed by it during America's bout of growth deflation. In particular, bankers and farmers – two heavily indebted groups who were strained as they tried to repay their debts as prices, and wages, fell – were able to band together to lobby for a political solution to their economic woes (p. 140-47). While this collective action problem will not strike the reader as overly original, Bagus later revisits the question of why farmers in particular became such a vocal anti-deflation group (as opposed to many other lines of businesses that were mostly silent on the issue). The root issue, at least in Bagus' mind, is the peculiar way America's West was won. Land grants given to the railroads (amounting to 242,000 square miles, and area larger than Germany *and* France (p. 150)) were later sold to farmers. As farmers indebted themselves with mortgages they were placed into a debtor-creditor relation that made them welcoming of price inflation that would diminish their debt burden and increase their

receipts from their produce (p. 150-53). This reviewer would have liked to see mention of those farmers who homesteaded their farms and how welcoming of inflation they were. These farmers were typically located at least several miles from the railways and would have faced an entirely different set of financial incentives than those farmers buying land from the railways.

The book is easy to read, and would be a good text for economic students and those trying to navigate the rhetoric concerning the evils of deflation. This brings up, unfortunately, my one real quibble with the book. Since *In Defense of Deflation* is published by an academic press, few lay readers will have the opportunity to benefit from it. This is a shame, as this reader thinks that, despite his efforts, Bagus will not be overly successful in convincing economists that deflation can be benign. This is not for lack of effort, clarity or facts on the part of the author. The reason, as Bagus also agree based on his introduction, lies in the profession's wedded position to deflation not only being economically harmful, but morally evil. Most economic discussions never even get the opportunity to discuss the positive or neutral economic impact of deflation since by assumption it is a bad to be avoided at all costs. In this regard, a more ethical based book on money such as Guido Hülsmann's *The Ethics of Money Production* (2008) would make a wonderful companion reading to give the reader both sides – ethical and economic – of this funny business of money and prices.

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**Lawrence H. White, Viktor J. Vanberg, and Ekkehard
Köhler, Eds.**
Renewing the Search for a Monetary Constitution

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Lawrence H. White, Viktor J. Vanberg, and Ekkehard Köhler, Eds. *Renewing the Search for a Monetary Constitution* (Washington: Cato Institute, 2015)

Anyone familiar with the old gems of monetary theory will have their memories jogged by the title of this book. Yes, *Renewing the Search for a Monetary Constitution* reminds one of *The Search for a Monetary Constitution*. Edited by Leland Yeager, that 1962 book featured essays by the likes of Murray Rothbard, James Buchanan, and Milton Friedman criticizing the monetary status quo of the day and expounding alternative visions. Though all was seemingly calm on the monetary front at the time, the book proved to be prophetic. Soon to begin was the money printing to pay for the combination of the Vietnam War and the Great Society, a policy that would eventually force U.S. President Richard Nixon to break the American dollar's remaining link to gold in 1971. Then came the inflation of the 1970's and early 1980's. After

Paul Volcker painfully brought inflation down in the early 1980's, the next several decades were punctuated by a recurring series of financial markets booms, each of which were invariably followed by busts. The list is not short: the 1987 stock market crash, Mexico's 1994 Tequila crisis, the 1998 Asian flu, and the 2000-2002 Dotcom collapse. Of course, the latest, and thus far the most damaging, episode was the 2007-2009 sub-prime mortgage crisis.

Hence, it has become more necessary than it was in 1962 to rethink our monetary institutions. *Renewing the Search for a Monetary Constitution* admirably meets this pressing need. Though Yeager is still present here, the editors of this reincarnated anthology are Lawrence White, Viktor J. Vanberg, and Ekkehard A. Köhler. They have assembled eleven articles based on presentations given at a 2012 symposium commemorating the 50th anniversary of Yeager's original volume. Contributors were assigned the same question that Yeager gave. That is, they were to conceive themselves as, "engaged in shaping the basic character of a monetary system, in shaping a 'monetary constitution'. They were encouraged to do so, moreover, "without worry about political practicality or about possible accusations of extremism" (Yeager cited by White, 2015, 1). This book is brimming with ideas about the various options that exist beyond the current fiat money regime run by central banks – some decidedly more promising than others.

Yeager has the opening essay, in which he reiterates his longstanding case to establish a basket of goods as the economy's unit of account. One could, say, define that basket as an apple, a loaf of bread, and a five ounce glass of milk. A dollar would then be equivalent to that set. Such a basket does have the advantage of providing a more stable foundation for money than a single commodity. Inasmuch as the prices for each of the goods in the basket do not move in perfect lockstep, with an increase in the value of one item offset by a decrease in another, the volatility of the monetary standard is reduced. It is the same kind of benefit that one obtains from having a diversified portfolio of investments. In this way, the basket yardstick escapes an oft-made criticism of the gold standard, namely that the value of the yellow metal is subject to wild gyrations.

But this tendency is exaggerated. Gold only looks unstable now that it is traded against U.S. dollars on the futures market, where it is prey to speculative forces. Back when the exchange rate between currencies and gold was fixed, volatility was practically non-existent. Except during the Napoleonic wars, Britain managed to keep gold between £4.24 and £4.31 per ounce for nearly two centuries up until 1914.

The bigger flaw in Yeager's proposal is this: no basket of goods is likely to secure the public trust needed to sustain a currency. People look at gold with a certain awe and mystique. Enough of them, evidently, look at central banks in the same way. But will the public venerate a basket containing apples, bread, and milk?

Another suggested reform that receives numerous mentions is Friedrich Hayek's proposal to denationalize money. Hayek argued that states ought to get out of the money issuing business and leave it to private firms. Competition would then lead to more solid currencies with predictable purchasing power. Bitcoin represents an attempt to establish a private money along these lines, though in the face of government suspicion. Kevin Dowd gives a highly illuminating

account of that digital currency, acutely noting how Bitcoin offers the prospect of restoring the financial privacy that has been lost with the current monetary system. Since bitcoin is encrypted, the state cannot readily uncover what people are up to with their funds. Though Dowd concedes that Bitcoin will likely not survive, he is too hopeful that something like it will endure. Granted, Dowd is right that the decentralized nature of digital currencies makes it harder for governments to target specific parties in shutting them down. But the state can always impose a blanket prohibition on transactions using digital currency. There is simply too much power to be had in controlling the money supply for states to resist. Not only that, whatever happens to money affects everyone. As such, the public can usually be counted upon to demand that the government assume some kind of oversight over money.

No doubt, the most thought-provoking scheme dealt with in this book involves the use of index futures. Discussed by W. William Woolsey, the premise behind this scheme is Scott Sumner's much-discussed idea to have the Fed target a certain growth rate in nominal GDP. What, then, do futures have to do with this? Well, they are meant to ensure that the nominal GDP target is met. First, a futures contract is set up whose settlement at expiry is based on the percentage difference between actual nominal GDP and the target value. Suppose, then, that the contract is set at \$1,000 and that the central bank is committed to maintain that price by buying and selling from future traders. If nominal GDP actually turns out to be 2% above the target when the contract expires, the contract will settle at \$1,020. Traders who bought the futures (i.e., those who are long) earn a \$20 profit for every contract they hold. Conversely, if nominal GDP actually comes in 2% below the target, the contract will settle at \$980. In this scenario, traders who sold the futures (i.e., those who were short) are the ones who profit by \$20 for every contract they hold. For traders, therefore, the object is to correctly forecast whether the central bank will miss its target and, if so, in what direction. Whenever traders are net sellers, they are predicting that nominal GDP will finish below the target. However, the central bank will then be buying futures. And for every contract it buys, it is required to add to the supply of money by purchasing bonds. By contrast, whenever futures traders are net buyers, they are forecasting that nominal GDP will wind up above the target. But then the central bank will be selling futures, in which case it is called upon to reduce the supply of money by selling bonds.

What all this amounts to is a system in which the futures market tells the central bank how it should adjust the monetary base. No doubt, relying on all the local knowledge that markets aggregate is a better way of conducting monetary policy than depending on a committee of credentialed experts wielding a raft of statistics. Still, the point bears repeating that a monetary order requires public confidence for it to be viable. People cannot be expected to trust what they do not understand. And only a few of them understand futures.

A more comprehensible framework is put forward by James Buchanan. The Nobel Prize winning economist holds that the commitment to a stable monetary unit ought to be entrenched in the constitution. By "stable", he means a monetary unit that maintains the same purchasing power over time. To realize this end, Buchanan proposes the constitutional recognition of a general price index to guide the government agency charged with the task of ensuring monetary stability. This agency, Buchanan adds, should also be specified in the constitution and its independence from the day-to-day political process made explicit. To the counter that no index

could ever be constructed that captures everything about prices, Buchanan concedes the point. But so long as the nature and meaning of the index is clear, Buchanan insists it will do. Even if we grant Buchanan this, a larger problem remains. He is far too optimistic that turning stable money into a constitutional right will render monetary policy immune to political exigencies. Constitutions have to be interpreted and, if the last eighty years of U.S. Supreme Court decisions diluting the right to private property is any guide, it is that judges also follow the political winds, even if only the more constant and prevailing winds.

That leaves us with gold. Making the best case for the precious metal in this collection is Lawrence White. Quite often, whenever the prospect of restoring the gold standard is brought up, what people typically have in mind is a system like that which operated in the past, one that is overseen by a government finance department or a central bank. This department or bank maintains the gold reserves and is responsible for ensuring that the money supply remains proportionate to those reserves. In the U.S., especially, such a regime did not stop the banking system from seizing up in one crisis after another prior to World War I. Nor did it prevent the more massive wave of bank failures that the country suffered during the Great Depression. Many pin this disaster on the gold standard, but White suggests that it was the banking system that was more at fault. Get the banking system right and gold will optimally function as a solid ground for money.

To this end, White favors a system of private banks. These would be truly private, in that they would have to meet their obligations just like any other business or otherwise face bankruptcy. Unlike today's commercial banks, they could not be assured that the Fed or the ECB would come to the rescue whenever they were threatened by a run from their creditors and depositors. Nor could private banks rely on government deposit insurance to keep such panics at bay. To stay in business, and compete against other banks, they would have to be cautious about the quantity of money supplied through their loans. They would have to be focused like a laser on building a reputation for safety. White figures that private banks would probably go about this by offering their customers the right to redeem their money into gold. What really firms up White's strong case for private banking is all the evidence he cites of its past success. It worked in Scotland, Canada, Sweden, and Ireland.

There are other worthy essays in this book that I have not been able to cover. Peter Bernholz, for instance, provides an enlightening historical overview of how governments have repeatedly abused their control of money. Gunther Schnabl makes a compelling argument that the current policy of zero interest rates has landed us in a low-growth swamp from which we are not likely to escape anytime soon. So too, Ekkehard A. Köhler and Viktor J. Vanberg helpfully point out that any monetary constitution we contemplate must be something to which everyone could conceivably consent.

All this being noted, gold still comes out here as the best support for a monetary constitution.

Jonathan V. Last, *What to Expect When No One's Expecting: America's Coming Demographic Disaster*

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Jonathan V. Last, *What to Expect When No One's Expecting: America's Coming Demographic Disaster* (New York and London: Encounter Books, 2013)

Most of us are tuned in to some of the broad sweeping demographic challenges facing the world. Sub-replacement birthrates imperiling European economic growth; Latin American immigrants out-reproducing their American counterparts in the United States and altering voting patterns; a graying Japanese workforce compounding the country's public debt problem; Sub-Saharan African demographic booms endangering many countries' ability to feed themselves.

Jonathan Last takes these messy truths and explains 1) why populations around the developed world (though mostly the United States) are declining so rapidly, or are already below replacement level, and 2) why policies aimed at changing these trends are so tricky. In many ways the book reads like the Titanic. A threat is seen in the not-so-distant future but the S. S.

Demographics is too slow turning to avert disaster.

“What to Expect When No One’s Expecting” is a narrative of several countries where the demographic shortfall is most acute. In explaining why the developed world is having fewer babies, Last doles out the usual culprits. Higher levels of education mean that both men and women put off children until later in life. This problem is most serious for women, who are left with fewer total years available to bear children. Improved access to birth control has offset the decrease in age of first sexual encounter, and has also increased the numbers of cohabilitating couples in lieu of married ones. Many marriages don’t last, and the chances of having children inside of marriage decreases with the expected duration of the union (or the honeymoon period of it, at least). Last focuses heavily on the birth control pill as a large driver of declines in the total fertility rate (TFR).

No book on declining birthrates would be complete without some heavy reading on abortion. Abortion has always existed, but *Roe v. Wade* in 1973 increased its prevalence in the United States. However one wants to slice the data there is one clear message: the total abortion rate moves roughly inversely to the TFR, implying that at least some of America’s population slowdown can be attributed to *Wade*. (Last estimates that nearly 50 million abortions have been performed in America since 1973 (p. 61), and at least some of these would not have happened without the landmark legislation.) Causation and correlation is an ever-present problem in these types of studies, and Last recognizes the issue but does not do much to address it head on, at least as regards abortion.

He does give a good dose of causation elsewhere, however, to address some reasons why Americans want to have fewer children. Like so many other things in life, it’s the little things. Consider something as insignificant as car seat regulations (pp. 74-79). Laws mandating car and booster seats (until the age of eight in Maine) contribute to the cost of child rearing. The days of piling the family of four into the station wagon for the Thanksgiving trek to the grandparents is long past. Modern parents much either buy a larger car or take more than one vehicle, both at higher cost.

All these costs add up, but perhaps the biggest one is lost wages from child care. The rise of the double-income family means that (typically) Mom will forgo some years worth of earnings because of child birth and possibly child rearing. The price tag to raise a child for the typical middle-class couple? Around *\$1.1 million*. (Although not mentioned, the marginal cost of children is very low by comparison to this upfront, or even average, cost.) Perhaps Last (p. 43) sums it up best: “It is commonly said that buying a house is the biggest purchase Americans will ever make. Well, having a baby is like buying six houses, all at once.” Expensive indeed.

Last saves the best for, well, last. The final chapter (nine) is aptly titled “How to Make Babies.” It’s actually surprisingly difficult, though he outlines some policies that might entice a higher TFR. Eliminating or reducing social security would make having children a greater necessity. Reducing the need for college would put fertile women into a position to start having

children at a younger age. (Alternatively one could look at making colleges more child-friendly, as is the case at Brigham Young University where one in 12 undergraduates has a child and resources are plentiful.) The rise of telecommuting will allow couples to live in lower-cost areas, and thus be better able to afford a larger progeny. Increased religiosity would help, and removing birth control options would also increase the number of children being born. Not all of these “solutions” will appeal to all people, and many readers may well think that fewer kids is a good tradeoff against the benefits that some of these aforementioned solutions have brought forth.

In conclusion, Last notes that 1) demographic shifts take time, 2) efforts to stoke the TFR higher much be sustained over several generational cohorts, and finally 3) “people cannot be bribed into having babies” (p. 160). Why not? Succinctly, because “people aren’t stupid.”

Having children is not only costly in terms of money; it also takes away some pleasurable experiences from the parents and reduces their welfare. No matter how one slices the data, having children reduces happiness, at least according to Last (and others, e.g., Caplan 2011: 15). This may be so, but this reviewer finds his greatest reservations about the book here.

Having a partner to raise your child matters for a parent’s happiness (Kohler *et al.* 2005), as do institutions like schools (Gibbons and Silva 2005). It might not be that having children reduces one’s happiness in life, but it changes the very outlook and definition of happiness in a way that makes the distinct pleasure children provide difficult to measure. As a thought experiment, consider that the average child will cost his parents \$1.1 million, about the same price as a nice apartment in Manhattan for a well-to-do “double income, no kids” couple. Take away the child and the apartment from the couples and see who is in more distress. Kids may not cause happiness in the same way material goods do, but there has to be some reason for having them. Evidence suggests that children increase total life satisfaction, even if you don’t realize it until later on (Angeles 2010). Like any long-term investment, the benefits are not apparent until long after the expense is incurred.

“A powerful argument that the only thing worse than having children is not having them” is how P. J. O’Rourke summarizes the book in his cover endorsement. This reviewer has his doubts that this is the message Last is trying to hit home. Economic growth is a product of two factors – labor and capital. If labor is in decline, as is the case when the TFR falls, capital investments better make up the shortfall lest you suffer a hit to your standard of living. Last has written a wonderfully easy to read book that succinctly shares some success and horror demographic stories from around the globe. Whether these demographic disasters bring with them economic ones is fodder for another book.

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