

University of St Andrews

School of Economics & Finance Discussion Papers

Consumption Decisions When People Value Conformity

Alistair Ulph and David Ulph

School of Economics and Finance Discussion Paper No. 1414
1 Oct 2014
JEL Classification: D11, D69
Keywords: strength of adherence to norms, desire for conformity, norm-consistent consumption interval, participation-consistent consumption interval, Nash equilibrium of three-stage game

School of Economics & Finance
Online Discussion Paper Series
issn 2055-303X
http://ideas.repec.org/s/san/wpecon.html
info: econ@st-andrews.ac.uk

Consumption Decisions When People Value Conformity[1]

Alistair Ulph[2]

and

David Ulph[3]

Abstract

In this paper we assume that for some commodities individuals may wish to adjust their levels of consumption from their normal Marshallian levels so as to match the consumption levels of a group of other individuals, in order to signal that they conform to the consumption norms of that group. Unlike Veblen's concept of conspicuous consumption this can mean that some individuals may *reduce* their consumption of the relevant commodities. We model this as a three-stage game in which individuals first decide whether or not they wish to adhere to a norm, then decide which norm they wish to adhere to, and finally decide their actual consumption. We present a number of examples of the resulting equilibria, and then discuss the potential policy implications of this model.

October 2014

JEL Classification: D11, D69

Keywords: strength of adherence to norms, desire for conformity, norm-consistent consumption interval, participation-consistent consumption interval, Nash equilibrium of three-stage game.

PRELIMINARY DRAFT – do not quote without the agreement of one of the authors.

[1] We are grateful to Partha Dasgupta for discussions that led to the initial motivation to pursue the research in this paper, and to Dale Southerton for helpful advice on the connections to the sociological literature in this area. Earlier versions of this work were presented at the University of Bologna, the University of Manchester and University of St Andrews. We are grateful to participants at these presentations for helpful comments, particularly to Luca Savorelli and Kemal Ozbek.

[2] Professor of Economics, Sustainable Consumption Institute, University of Manchester. Contact: Alistair.Ulph@manchester.ac.uk

[3] Professor of Economics, School of Economics & Finance, University of St Andrews and Director, Scottish Institute for Research in Economics (SIRE). Contact: du1@standrews.ac.uk

Introduction

In this paper we examine the implications for understanding consumer behaviour and the design of public policy of assuming that individual consumption behaviour is influenced by the consumption decisions of other individuals through the existence of consumption norms. We distinguish such consumption norms from the interaction between individual consumption decisions through the Veblen effect (Veblen (1924)), whereby individuals' consumption decisions are influenced by those of others in a competitive manner as individuals seek to match their consumption to that of an aspirational group (and differentiate it from that of a distinction group)[4]. The Veblen effect is an externality which can sustain overconsumption and a market distortion that needs to be corrected by a policy such as a tax on goods prone to conspicuous consumption.

We consider a different route by which individuals' consumption decisions may be influenced by those of others, namely through a desire to be seen to belong to a group of similar-minded individuals, thereby establishing consumption norms[5]. We refer to this form of consumption behaviour as cooperative. A key difference between cooperative and competitive interactions in consumption behaviour is that the proclivity to conform to a consumption norm can lead some individuals to *reduce* their consumption of a good relative to what they would have consumed in the standard economists' model where consumers take no account of the consumption of others.

There are a number of potential direct benefits that consumers might derive from adhering to a consumption norm (see for example Hargreaves-Heap (2013), Hargreaves-Heap and Zizzo (2009)). These include: (a) observing members of a norm group consuming a product an individual has not experienced can give implicit information about the quality of that product; (b) in a related manner, giving people information about what similar people achieve in saving energy, or retirement savings can significantly increase levels of savings (Allcott (2011))[6]; (c) by developing trust between members of a norm group, consumption norms can reduce transactions costs[7]; (d) for a number of consumption activities, such as

[4]For recent analyses of the Veblen effect see Arrow and Dasgupta (2010), Dasgupta, Southerton, Ulph and Ulph (2014) and Ulph (2014). The Veblen effect is invoked to explain the Easterlin Paradox (Easterlin (1974, 2001)) whereby, after a certain level of per capita income, further growth in income per capita seems to have no effect on measures of well-being as captured by surveys of happiness (see for example Oswald (2014)).

[5] The most influential sociological theories of consumption – especially Bourdieu's (1984) account of taste and distinction and Bauman's (1990) account of neo-tribal lifestyles – both present social norms and belonging as the fundamental mechanisms underpinning its contemporary social patterning (see Southerton (2002) for a full discussion). In our use of the term consumption norms should be interpreted as a subset of the much broader category of social norms which can affect behaviour.

[6] See Bennett et al (2009) for a comprehensive analysis of the clustering of consumption activities based on overlapping cultural interests in the UK.

[7]This is linked to notions of social capital. It is important to distinguish between group membership developing greater trust between insiders – a positive social benefit – and developing a greater distrust of outsiders – a reduction in social benefit (see Putnam (2000) and Dasgupta (2000) for a recognition that social capital may

reading a book or attending a concert, the benefits are not just the private experience but the subsequent opportunity to share thoughts about such experiences (the 'water cooler' effect) and this requires individuals to have overlapping sets of cultural interests; (e) for activities like provision of public goods, voting, or charitable giving evidence suggests that individuals are more willing to contribute if they know members of their norm group have contributed or think others might match their contributions (referred to as *conditional cooperation*) – see for example Ledyard (1995), Azar (2004), Frey and Meier (2004), Tan and Bolle (2007), Gerber and Rogers (2009), Chaudhuri (2011), Bucholz, Falkinger and Rubbelke (2012), Abbott, Nandeibam and O'Shea (2013).

Over and above such direct benefits, however, Akerlof and Kranton (2000) have argued that an ability to identify with a group of people is a key part of self-identity and yields an important psychological benefit of belonging to a group, what Adam Smith referred to as the 'special pleasure of mutual sympathy'[8]. It is this pure psychological benefit of belonging to a group that we have in mind in this paper. An important implication is that it is the potential internal loss of such a benefit that provides the incentive to adhere to the consumption norm, rather than the design of punishment strategies by other players which has been an important focus of some of the analysis of social norms (e.g. Axelrod (1986))[9]

Much of the literature on consumption norms does not provide a formal model of how consumption norms might influence consumers' behaviour. The paper that is closest to the model reported here is the study by Bernheim (1994) of conformity. In his model people differ in terms of their types (measured by a single index distributed over some interval). Society has a pre-specified notion of an ideal type and people suffer a loss of self-esteem the further their type is from the ideal. Individual's well-being depends on the utility they get from their actions, and the esteem in which they are held by others. If an individual's type was public information, all an individual could do is to act to maximise utility. But an individual's type is private information, and has to be inferred from one's actions, so individuals have an incentive to bias their actions towards that which an ideal person would perform; this leads some individuals to do more than they would do to maximise utility and others to do less. There are two possible equilibria: a fully-revealing equilibrium and a pooling equilibrium in which a group of individuals whose types are closer to the ideal type carry out the same level of action – so the equilibrium specifies a common action norm and the group of people who adhere to this common norm.

---

have negative as well as positive effects) . Hargreaves-Heap and Zizzo (2009) construct a measure to test this distinction, and in their experiments they find it is the negative effect which predominates.

[8] Hargreaves-Heap and Zizzo (2009) also develop a test to measure this psychological benefit of belonging to a group; they find that it balances out the negative effect of group membership noted in the previous footnote.

[9] Axelrod's analysis also differs from ours in that he uses an evolutionary game approach, while we assume that individuals are conventional utility-maximisers, albeit with non-standard utility functions.

In this paper we focus directly on consumption behaviour and consumption norms, and we examine how behaviour influenced by such norms relates to traditional analysis of consumer demand captured by Marshallian demand curves. Like Bernheim we want to explain endogenously how consumption norms change individual consumer behaviour, which consumption norms can emerge as equilibrium norms, and how many norms there might be. All behaviour is assumed to be individual – there is no process for communication or coordination. Unlike Bernheim all information is public. In particular, to rule out other channels of interactions, we assume consumers are perfectly informed about the quality of the commodities being consumed and consumption is a private good. The crucial difference is that there is no concept of an ideal type of consumption, and the motivation to belong to a group is the pure psychological benefit discussed above.

In the next section we set out a model of consumption norms[10], and in section 3 we illustrate the analysis by considering a couple of special cases. In section 4 we analyse the public policy implications, and conclude in section 5. The key results are that there can be multiple possible equilibria for consumption norms, and that for some parameter values conventional economic policy recommendations may be ineffective or even counter-productive.

1. A Model of Consumption Norms

There are 2 goods: good 1 which is the potential norm good and good 2 which is expenditure on all other consumption. For good 1 the unit cost of production is γ ; we assume that in the absence of any policy the market for good 1 is competitive and so market price *p* will equal unit cost of production, γ . For good 2 the unit cost of production is 1 and its market price is 1.

Individuals can choose whether or not to adhere to a norm. If an individual chooses not to adhere to a norm, a typical consumer with income *M* has utility function: $u(c, M - pc)$ with corresponding Marshallian demand for good 1: $c^0(p, M)$ which is the solution of

$$u_1 - pu_2 = 0 \qquad (1)$$

and indirect utility

$$v^0(p, M) = u[c^0(p, M), M - pc^0(p, M)] \qquad (2)$$

If instead the consumer has chosen to adhere to some consumption norm $\tilde{c}$ then the utility of the typical consumer is now:

[10] In Dasgupta, Southerton, Ulph and Ulph (2014) we presented a brief summary of the model presented in the next section and illustrated its implication for environmental policy in a simple special case. In this paper we set out the model in greater detail and seek to draw more general public policy implications.

$$u(c, M - p, \tilde{c}; \alpha, \varphi) = u(c, M - pc) - \alpha|c - \tilde{c}| + \varphi \qquad (3)$$

where α measure the individual's *strength of adherence* to the norm[11], or the utility cost per unit of consumption that differs from the norm, and φ measures the *strength of the desire for conformity i.e.* the pure psychological benefit the individual experiences from adhering to a norm, as discussed above. In general individuals may differ in their income, *M*, their strength of adherence to a norm α or their strength of desire for conformity, φ.

We emphasise that any norm $\tilde{c}$ is not chosen by any individual or group of individuals – it has emerged from past custom and practice.

There is a three-stage game. In stage 1 each consumer decides whether to adhere to the prevailing norm or go it alone and choose her Marshallian demand. In stage 2 we determine which norms could serve as equilibrium norms. Finally in stage 3 the consumer chooses what to consume. We work backwards, and in Stages 2 and 3 we ignore the fixed benefit φ which the consumer derives from adhering to a norm.

1.1 Stage 3 – Optimal Choice of Consumption

In this stage the consumer chooses her optimal level of consumption of good 1 given her desire to adhere to a norm $\tilde{c}$. To deal with the absolute value of any difference between actual consumption and the norm, we analyse the maximisation of (3) in two stages:

(a) The consumer chooses consumption of good 1 which is at least as great as the social norm; i.e. the consumer chooses *c* to maximise:

$$u(c, M - pc) - \alpha(c - \tilde{c}) \qquad \text{s.t. } c \geq \tilde{c} \qquad (4)$$

To understand the solution to this problem define:

$$\underline{c}(p, M, \alpha) = \arg\max_{c} u(c, M - pc) - \alpha c \qquad (5)$$

and

$$\underline{v}(p, M; \alpha) = \max_{c} u(c, M - pc) - \alpha c \qquad (6)$$

as the associated indirect utility function, where $\underline{c}$ measures the point at which the marginal loss of utility from cutting consumption to adhere to the consumption norm $\tilde{c}$ just equals the marginal loss of utility from not complying with the norm. Note that $\underline{c}(p, M, \alpha) < c^0(p, M)$. Then the solution to (4) is:

$$c = \tilde{c} \Leftrightarrow \tilde{c} \geq \underline{c}; \quad c = \underline{c} \Leftrightarrow \tilde{c} < \underline{c} \qquad (7)$$

[11] Note that if we had expressed the cost of deviating from the norm as $0.5(c - \tilde{c})^2$ then the first-order condition for optimal consumption would be $u_1 - pu_2 - (c - \tilde{c}) = 0$, so if $c = \tilde{c}$ then $\tilde{c} = c^0(p, M)$ so the norm has to be Marshallian demand,

(b) In a similar way consider the solution of choosing consumption of good 1 which is no greater than the social norm; i.e. the consumer chooses *c* to maximise:

$$u(c, M - pc) - \alpha(\tilde{c} - c) \qquad \text{s.t. } c \le \tilde{c} \tag{8}$$

Define:

$$\bar{c}(p, M, \alpha) = \arg\max_{c} u(c, M - pc) + \alpha c \tag{9}$$

and

$$\bar{v}(p, M; \alpha) = \max_{c} u(c, M - pc) + \alpha c \tag{10}$$

as the associated indirect utility function, where $\bar{c}$ measures the point at which the marginal loss of utility from increasing consumption to adhere to the consumption norm $\tilde{c}$ just equals the marginal loss of utility from not complying with the norm. Note that $\bar{c}(p, M, \alpha) > c^0(p, M)$. Then the solution to (8) is:

$$c = \tilde{c} \Leftrightarrow \tilde{c} \le \bar{c}; \quad c = \bar{c} \Leftrightarrow \tilde{c} > \bar{c} \tag{11}$$

Putting together the solutions of (a) and (b) we have that the optimal choice of consumption $\hat{c}(p, M; \alpha, \tilde{c})$ by the individual wishing to adhere to norm $\tilde{c}$ and associated indirect utility $\hat{v}(p, M; \alpha, \tilde{c})$ are:

$$\tilde{c} < \underline{c}(p, M; \alpha) \Rightarrow \hat{c}(p, M; \alpha, \tilde{c}) = \underline{c}(p, M; \alpha); \quad \hat{v}(p, M; \alpha, \tilde{c}) = \underline{v}(p, M; \alpha) + \alpha\hat{c} \tag{12a}$$

$$\underline{c}(p, M; \alpha) \le \tilde{c} \le \bar{c}(p, M; \alpha) \Rightarrow \hat{c}(p, M; \alpha, \tilde{c}) = \tilde{c}; \quad \hat{v}(p, M; \alpha, \tilde{c}) = u(\tilde{c}, M - p\tilde{c}) \tag{12b}$$

$$\tilde{c} > \bar{c}(p, M; \alpha) \Rightarrow \hat{c}(p, M; \alpha, \tilde{c}) = \bar{c}(p, M; \alpha); \quad \hat{v}(p, M; \alpha, \tilde{c}) = \bar{v}(p, M; \alpha) - \alpha\hat{c} \tag{12c}$$

In what follows we define:

Definition 1: $[\underline{c}(p, M; \alpha), \bar{c}(p, M; \alpha)]$ is the *norm-consistent interval of consumption* for an individual with income *M a*nd strength of adherence to a norm *α*.

Note that the interval contains the Marshallian demand. (12a)-(12c) illustrate the *gravitational pull* of the consumption norm. If the norm lies within the norm-consistent interval of consumption the individual consumes at the level given by the norm, rather than at the Marshallian demand level, and derives the corresponding level of utility, which must be less than the utility derived from consuming at the Marshallian level (recall that at this stage we are ignoring the fixed benefit *φ* from adhering to the norm). If the norm lies below (above) the norm-consistent interval the individual gets as close as possible to the norm, consuming at the lower (upper) limit of the interval, and indirect utility falls linearly at the rate *α* the further is the consumption norm from the lower (upper) limit of the norm-consistent interval of consumption. This is illustrated in Figure 1.

Note that, as we stressed in the introduction, the fact that consumers adhere to a consumption norm is consistent with consumers consuming more *or less* than at their Marshallian demand levels. There need be no general tendency to over-consumption.

Finally, in terms of comparative statics, changes in prices or income shift the Marshallian demand, and hence the norm-consistent interval, in standard ways. As the norm $\tilde{c}$ varies, consumption and indirect utility vary as given by (12) and Fig 1. As α increases the norm-consistent interval widens, and utility outside the norm-consistent interval falls.

1.2 Stage 2 – Equilibrium Norms.

In this section we analyse what consumption norms might emerge as equilibrium norms for any given distribution of consumer types, i.e. any given distribution of M and α amongst consumers who have decided at Stage 1 to adhere to a consumption norm. We stress again that consumption norms are exogenous – they have emerged from past custom and practice. The issue we explore in this section is which of such norms might be equilibrium norms. Consistent with the analysis in Stage 3 we do not require that everyone who adheres to some equilibrium norm must consume exactly that level of consumption – the norm could lie outside the norm- consistent intervals of some consumers.

We now define:

Definition 2: A norm, $\tilde{c}^e$, is an *equilibrium* norm if it satisfies two properties:

2 (i) It is the average of the consumption decisions of all the individuals who adhere to that norm, as determined in Stage 3.

2 (ii) If there is more than one norm in existence then the norm to which any individual adheres is that which generates the highest level of indirect utility for that individual as given by (12).

To understand the implications of this definition of an equilibrium norm we illustrate with the following results for a number of special cases (formal proofs of results which are not provided in the text are contained in the appendix).

Case 1: Identical Individuals

Result 1 *Suppose all the individuals who have chosen to adhere to a norm are identical, then, almost surely, there is a single equilibrium norm which can take any value in the norm-consistent interval of consumption of a typical individual.*

The intuition is that if the individuals adhered to a norm which lay outside the norm-consistent interval which is common to all individuals then they would consume at the boundary of the norm-consistent interval, so average consumption would not equal the norm. So any norm must lie within the norm-consistent interval, and if there

was more than one such norm they would choose to consume at the norm which yields highest utility[12].

Case 2: Same Income, Different Strengths of Adherence to a Norm

Now suppose all individuals who have chosen to adhere to a norm have the same level of income but differ in their strength of adherence to a norm; let the lowest value of the strength of adherence to a norm amongst these individuals be α_L.

Result 2 *Suppose all the individuals who have chosen to adhere to a norm have the same income, but differ in the strength of their attachment to a norm, with α_L the lowest value of the strength of attachment. Then, almost surely, there is a single equilibrium norm which can take any value in the norm-consistent interval of individuals with strength of attachment to a norm α_L.*

The intuition is that if there is a norm which lies strictly outside the norm-consistent interval of individuals with strength of adherence α_L to which a number of individuals adhere, then individuals with strength of attachment α_L for sure will consume on the boundary of their norm-consistent interval, which will be different from the norm to which others adhere, so average consumption will not equal the norm. So any norm must lie in the norm-consistent interval of individuals with strength of adherence α_L, and hence in the norm-consistent interval of all other individuals. If there is more than one such norm, all individuals will choose the one which gives the highest level of utility, common to all individuals[13].

Case 3: Different Income, Same Strength of Adherence to Norm

We consider the simplest case (we consider a richer case in Section 3) where a proportion θ of the individuals adhering to a norm have low income, M_L and a proportion 1- θ have high income M_H, $M_H > M_L > 0$ but they all have the same strength of adherence to a norm α. There are two possibilities – there is a single norm to which all adhere or there are two norms.

Case 3.1 Single Norm.

There are two sub-cases depending on whether the two groups do or do not have overlapping norm-consistent intervals.

Overlapping Norm-Consistent Intervals

Result 3 *If* $\bar{c}(p, M_L; \alpha) > \underline{c}(p, M_H; \alpha)$ *and* $\tilde{c}^e$ *is an equilibrium norm to which everyone adheres, then* $\tilde{c}^e \in [\underline{c}(p, M_H; \alpha), \bar{c}(p, M_L; \alpha)]$.

[12] With negligible probability there could be more than one norm which yield the same level of utility, but we exclude such a possibility.

[13] With the same caveat as in footnote 8.

The intuition is that if this not true and, say, the norm $\tilde{c}$ lay below the lower bound of high income consumers' norm-consistent interval, then low income consumers would consume $\tilde{c}$ and high income consumers would consume $\underline{c}(p, M_H; \alpha)$ so the norm would not be the average of their consumption levels.

Non-overlapping Norm-Consistent Intervals

Result 4 *If* $\bar{c}(p, M_L; \alpha) < \underline{c}(p, M_H; \alpha)$ *and* $\tilde{c}^e$ *is an equilibrium norm to which everyone adheres, then* $\tilde{c}^e = \theta\bar{c}(p, M_L; \alpha) + (1-\theta)\underline{c}(p, M_H; \alpha)]$, *with low income consumers consuming* $\bar{c}(p, M_L; \alpha)$ *and high income consumers consuming* $\underline{c}(p, M_H; \alpha)$.

The intuition is that there can be no norm which all consumers actually consume, but both low and high income consumers get as close as possible to a common level of consumption by consuming at the upper and lower boundaries of their norm-consistent intervals respectively, with the unique norm being the weighted average of these consumption levels.

Case 3.2 Two Norms

Suppose low income consumers adhere to an equilibrium norm $\tilde{c}_L^e$ and high income consumers adhere to an equilibrium norm $\tilde{c}_H^e$. Then we have:

Result 5 *The norm for each type of consumer must lie in that type's norm-consistent interval and satisfy the conditions* $\hat{v}(p, M_L; \tilde{c}_L^e, \alpha) > \hat{v}(p, M_L; \tilde{c}_H^e, \alpha)$ *and* $\hat{v}(p, M_H; \tilde{c}_H^e, \alpha) > \hat{v}(p, M_H; \tilde{c}_L^e, \alpha)$, *for which a necessary, but not sufficient, condition is* $\tilde{c}_L^e < \tilde{c}_H^e$.

That each consumer's equilibrium norm must lie in its norm-consistent interval follows from Result 1. The additional conditions are just a restatement of Definition 2 of an equilibrium norm to prevent each consumer type adhering to the other's norm. If the two norm intervals are not overlapping then the norm for the low income group must lie below the norm for the high income group. If the norm intervals do overlap then if $\tilde{c}_L^e < \tilde{c}_H^e$ did not hold each consumer's norm would be further from the Marshallian demand than the norm of the other type, and so they would want to switch. But $\tilde{c}_L^e < \tilde{c}_H^e$ is not sufficient to guarantee that the inequalities in indirect utility are satisfied; to see why, suppose there was considerable overlap in the norm-consistent intervals such that $\tilde{c}_L^e < \tilde{c}_H^e = c^0(p, M_L)$; then low income consumers would switch to the norm for high income consumers.

This completes the examples we have used to illustrate the implications of our definition of equilibrium norms we apply in Stage 2. We will give further examples in section 3. We now turn to Stage 1.

1.3 **Stage 1: Decision on Whether or Not to Adhere to a Norm.**

An individual with income *M a*nd strength of adherence to a norm *α* who adheres to an equilibrium norm $\tilde{c}^e$ rather than her Marshallian demand $c^0(p,M)$ suffers a flow loss of utility denoted

$$L(p,M;\alpha,\tilde{c}^e) \equiv v^0(p,M) - \hat{v}(p,M;\alpha,\tilde{c}^e) \qquad (13)$$

Note that this loss has two potential components (i) adopting an equilibrium norm which is different from the Marshallian level of demand; (ii) choosing a level of consumption different from the norm (when the norm lies outside the individual's *norm-consistent interval* of consumption). On the other hand the individual gains the (constant) utility benefit, *φ*, from her s*trength of desire for conformity*. The individual will conform to the equilibrium norm $\tilde{c}^e$ iff $L(p,M;\alpha,\tilde{c}^e) \le \varphi$; otherwise the individual will consume her Marshallian demand.

To illustrate how the strength of adherence to a norm, *α*, and the strength of desire for conformity, *φ,* affect a consumer's choices we define:

Definition 3: For an individual with income *M,* strength of adherence to a norm, *α*, and strength of desire for conformity, *φ,* we define

$$\underline{\underline{c}}(p,M,\alpha,\varphi) < c^0(p,M): \qquad v(p,M;\underline{\underline{c}},\alpha) + \varphi = v^0(p,M) \qquad (14a)$$

$$\overline{\overline{c}}(p,M,\alpha,\varphi) > c^0(p,M): \qquad v(p,M;\overline{\overline{c}},\alpha) + \varphi = v^0(p,M) \qquad (14b)$$

and $[\underline{\underline{c}}(p,M,\alpha,\varphi),\overline{\overline{c}}(p,M,\alpha,\varphi)]$ as the *participation-consistent interval* of norms.

It is clear that the *participation-consistent interval* of norms is wider the higher is the value of *φ*. It follows that $[\underline{\underline{c}}(p,M,\alpha,\varphi),\overline{\overline{c}}(p,M,\alpha,\varphi)] \subset [\underline{c}(p,M,\alpha),\overline{c}(p,M,\alpha)]$ if *φ* is sufficiently small, while the reverse is true if *φ* is sufficiently large. Finally, because $v(p,M;\tilde{c},\alpha)$ is decreasing in *α* for any norm $\tilde{c}$, it follows from (14a,b) that, while greater values of *α* **widen** *the norm-consistent interval of consumption*, they **narrow** the *participation-consistent interval* of norms.

We now bring together the concepts of equilibrium norms and participation-consistent norms, which we refer to as the set of *full equilibrium norms* :

Definition 4: For an individual with income *M*, strength of adherence to a norm, *α*, and strength of desire for conformity, *φ*, the set of **full equilibrium** norms is:

$$I(p,M;\alpha,\varphi) \equiv [\underline{c}(p,M;\alpha),\overline{c}(p,M;\alpha)] \cap [\underline{\underline{c}}(p,M;\alpha,\varphi),\overline{\overline{c}}(p,M;\alpha,\varphi)] \qquad (15)$$

Thus the set of full equilibrium norms for an individual is the set of consumption norms that lie in both the individual's norm-consistent interval of consumption and

the individual's participation-consistent interval of consumption. Note that the Marshallian demand $c^0(p,M)$ lies in both intervals so it must lie in the intersection, and so the set of full equilibrium norms, $I(p,M;\alpha,\varphi)$,must be non-empty.

To assess what might be full equilibrium norms we consider again the three cases we introduced in Stage 2.

Case 1: Identical Individuals.

Result 6 *If individuals are identical, then, almost surely, there will be a single full equilibrium norm lying in the interval* $I(p,M;\alpha,\varphi)$.

The argument is the same as for Result 1.

Case 2: Individuals Differ Solely in Strength of Adherence to a Norm

We suppose that α_L (α_H) is the lowest (highest) value of α in the population. Define:

$$\begin{aligned} I(p,M;\alpha_L,\alpha_H,\varphi) &\equiv I(p,M;\alpha_L,\varphi)\cap I(p,M;\alpha_H,\varphi) \\ &= [\underline{c}(p,M;\alpha_L),\bar{c}(p,M;\alpha_L)]\cap[\underline{\underline{c}}(p,M;\alpha_H,\varphi),\bar{\bar{c}}(p,M;\alpha_H,\varphi)] \end{aligned} \quad (16)$$

as the intersection between the sets of full equilibria for the two types of individual. This intersection will also be the intersection between the *norm-consistent interval* for individuals with the *lowest* strength of adherence to a norm and the *participation – consistent interval* for individuals with the *highest* strength of adherence to a norm; the reason is that this is the intersection between the *narrowest norm-consistent* interval (that of individuals with lowest strength of adherence to a norm) and the *narrowest participation- consistent* interval (that of individuals with the highest strength of adherence to a norm).

Then we have:

Result 7 *If individuals differ solely in their strength of adherence to a norm, then, almost surely, there is a single equilibrium norm which can take any value in the participation-consistent interval of equilibrium norms to which all individuals adhere, i.e.* $I(p,M;\alpha_L,\alpha_H,\varphi)$

We know from Result 2 that there is a single norm which must lie in the norm-consistent interval of people with lowest value of α_L,(the narrowest norm-consistent interval common to all members of the population). From the discussion following (14) it must also lie in the participation-consistent interval of people with the highest value of α, α_H (the narrowest participation-consistent interval of norms common to all members of the population). If there was a norm which lay in the norm-consistent interval of people with the lowest value of α, α_L, but not in the participation-consistent interval of people of people with parameter α_H, though within the participation consistent interval of people with lower values of α, then that norm must be further

from the common Marshallian demand level and hence yield lower utility; so any people adhering to that norm would all prefer the norm lying in the narrower participation-consistent interval.

Case 3: Different Income, Same Strength of Attachment to Norm

We assume all individuals have the same strength of attachment to a norm, α, but a fraction θ have low income M_L and a fraction (1-θ) high income $M_H > M_L > 0$. For simplicity of notation we define: $\underline{c}_L \equiv \underline{c}(p, M_L; \alpha), \underline{\underline{c}}(p, M_L; \alpha, \varphi)$ etc.

Case 3.1 Single Norm

For both income groups to adhere to a single norm a necessary condition is clearly that the participation consistent intervals of the two groups intersect: i.e.

$$\underline{c}_H < \overline{\overline{c}}_L \qquad (16)$$

which we assume will hold throughout this sub-section. From the discussion following Definition 3 and condition (14), (16) will hold the narrower is the distribution of income, the greater is the value of φ and the smaller is the value of α. So individuals cannot differ too much in income relative to the desire for conformity.

Case 3.1.1 Single Norm, Overlapping Norm-Consistent Intervals of Consumption

We know from Result 3 that to have overlapping norm-consistent intervals we need:

$$\underline{c}_H < \overline{c}_L \qquad (17)$$

But for a full equilibrium we need condition (16) to also hold. So we have:

Result 8. *If* $\underline{c}_H < \underline{\underline{c}}_H < \overline{\overline{c}}_L < \overline{c}_L$ *then any norm in* $[\underline{\underline{c}}_H, \overline{\overline{c}}_L]$ *can be a full equilibrium norm to which all individuals adhere; if* $\underline{\underline{c}}_H < \underline{c}_H < \overline{c}_L < \overline{\overline{c}}_L$ *then any norm in* $[\underline{c}_H, \overline{c}_L]$ *can be a full equilibrium to which all individuals adhere.*

So we need the two conditions for overlapping intervals (16) and (17) to hold simultaneously for there to be an equilibrium norm.

Case 3.1.2 Single Norm, Non-Overlapping Norm-Consistent Intervals of Consumption.

We now suppose that $\underline{c}_H > \overline{c}_L$. We know from Result 4 that the only potential candidate for an equilibrium norm is $\tilde{c}^e = \theta \overline{c}_L + (1-\theta)\underline{c}_H$. But we now need this to also lie in the overlap of participation-consistent intervals as given by (16). So we have:

Result 9. *If* $\underline{\underline{c}}_H < \overline{c}_L < \overline{c}_H < \overline{\overline{c}}_L$ *then the unique full equilibrium norm to which everyone adheres is* $\tilde{c}^e = \theta\overline{c}_L + (1-\theta)\underline{\underline{c}}_H$*; if* $\overline{c}_L < \underline{\underline{c}}_H < \overline{\overline{c}}_L < \underline{\underline{c}}_H$ *then the unique full equilibrium norm to which everyone adheres is* $\tilde{c}^e = \theta\overline{c}_L + (1-\theta)\underline{\underline{c}}_H$ *provided this lies in* $[\underline{\underline{c}}_H, \overline{\overline{c}}_L]$*; otherwise there is no single full equilibrium norm.*

So a *necessary* condition for $\tilde{c}^e$ to be a full equilibrium norm is that

$$[\underline{\underline{c}}(p, M_H; \alpha, \varphi), \overline{\overline{c}}(p, M_L; \alpha, \varphi)] \cap [\overline{c}(p, M_L; \alpha), \underline{c}(p, M_H, \alpha)] \neq \varnothing \qquad (18)$$

However condition (18) is not sufficient because there could be values of θ for which $\tilde{c}^e \notin [\underline{\underline{c}}(p, M_H; \alpha, \varphi), \overline{\overline{c}}(p, M_L; \alpha, \varphi)]$

Case 3.2 Two Norms

Suppose low income consumers adhere to an equilibrium norm $\tilde{c}^e_L$ and high income consumers adhere to an equilibrium norm $\tilde{c}^e_H$. Then we need these norms to lie in the *participation-consistent interval of equilibrium norms* for each type of consumer, i.e. we need

$$\hat{c}_k \in I(p, M_k; \alpha, \varphi) \quad k = L, H \qquad (19)$$

But we also need to ensure that neither type of consumer has an incentive to choose the norm of the other type. So we have:

Result 10 *The norm for each type of consumer must satisfy* (19) *and the conditions* $\hat{v}(p, M_L; \tilde{c}^e_L, \alpha) > \hat{v}(p, M_L; \tilde{c}^e_H, \alpha)$ *and* $\hat{v}(p, M_H; \tilde{c}^e_H, \alpha) > \hat{v}(p, M_H; \tilde{c}^e_L, \alpha)$*, for which a necessary, but not sufficient, condition is* $\tilde{c}^e_L < \tilde{c}^e_H$*.*

This completes what we have been able to derive for the general model set out at the start of section 2. To illustrate the implications of this model for a rather broader set of cases, in the next section we introduce a special case of the general model, and then in Section 4 we consider some policy implications from this analysis.

2. A Special Model

We now assume that the utility function for a typical consumer takes the form:

$$u(c, M - pc, \tilde{c}; \alpha, \varphi) = 0.5Ac^2 + M - pc + \alpha|\tilde{c} - c| + \varphi \qquad (20)$$

In what follows, we assume that *M* is sufficiently large that consumption of good 2 is always positive, so *M* plays no role and w.l.o.g. we assume it is the same for all individuals and ignore it in future analysis. We assume that individuals differ only

with respect to parameter *A*. Then it is straightforward to see that Marshallian demand and associated indirect utility for a typical consumer are given by

$$c^0 = A - p; \quad v^M(c^0) = 0.5(c^0)^2 \qquad (21)$$

We quickly summarise the implications of this special case for consumption decisions with norms.

Stage 3. Optimal Consumption Choice

It's straightforward to see that this typical consumer's *norm-consistent interval* of consumption is $[\underline{c}(c^0), \bar{c}(c^0)]$ where:

$$\begin{aligned} \underline{c}(c^0) &= c^0 - \alpha \\ \bar{c}(c^0) &= c^0 + \alpha \end{aligned} \qquad (22)$$

and the optimal consumption choice and associated indirect utility of the individual is

$$\begin{aligned} &c(c^0, \tilde{c}) = \tilde{c} \qquad \Leftrightarrow c^0 - \alpha \le \tilde{c} \le c^0 + \alpha; \quad v(\tilde{c}, c^0) = c^0\tilde{c} - 0.5(\tilde{c})^2 \\ &c(c^0, \tilde{c}) = c^0 - \alpha \;\Leftrightarrow \tilde{c} < c^0 - \alpha; \qquad v(\tilde{c}, c^0) = 0.5(c^0 - \alpha)^2 + \alpha\tilde{c} \\ &c(c^0, \tilde{c}) = c^0 + \alpha \;\Leftrightarrow \tilde{c} > c^0 + \alpha; \qquad v(\tilde{c}, c^0) = 0.5(c^0 + \alpha)^2 - \alpha\tilde{c} \end{aligned} \qquad (23)$$

Stage 2 Equilibrium Norms

The conditions for a norm to be an equilibrium are as in Definition 2. We illustrate the implications in the examples below.

Stage 1 Decision Whether to Adhere to a Norm

Let $\Delta \equiv \left| c^0 - \tilde{c}^e \right|$ be the absolute distance between an individual's Marshallian demand and an equilibrium norm $\tilde{c}^e$ and $L(\Delta) = v^M(c^0) - v(\tilde{c}^e, c^0)$ be the loss of utility from adhering to that equilibrium norm rather than consuming at the Marshallian level. Then from (23)

$$L(\Delta) = 0.5\Delta^2, \qquad 0 \le \Delta \le \alpha \qquad (24a)$$

$$L(\Delta) = -0.5\alpha^2 + \alpha\Delta, \quad \Delta > \alpha \qquad (24b)$$

If φ is the fixed utility benefit the consumer gets from adhering to a norm; then it follows that:

Result 11

11.1 If $\varphi \le 0.5\alpha^2$ *then the individual will adhere to an equilibrium norm* $\tilde{c}^e$ *iff* $\Delta \le \bar{\Delta} \equiv \sqrt{2\varphi} \le \alpha$ *, in which case the norm must lie in the norm-consistent interval of consumption of the individual*;

11.2 If $\varphi > 0.5\alpha^2$ *then an individual will adhere to an equilibrium norm* $\tilde{c}^e$ *iff* $\Delta \le \bar{\bar{\Delta}} \equiv (\varphi + 0.5\alpha^2)/\alpha$ *, where* $\bar{\bar{\Delta}} > \alpha \ge \bar{\Delta}$.

So if the benefits of adhering to a norm are large enough, in the sense defined by Result 11, then the individual may be willing to adhere to a norm even if it lies outside her norm-consistent interval of consumption.

3.1 Example 1: Two Types of Consumer

To illustrate the implications we begin with the simple case where there are two types of consumers: a fraction *θ* have low demand for the norm good given by the parameter $A_L > 0$ and a fraction (1-*θ*) have high demand given by the parameter A_H where $A_H = A_L + \hat{A}, \quad \hat{A} > 0$.

Example 1: Stage 3 – Consumption Norm Intervals

In Stage 3 we denote Marshallian demands and norm-consistent intervals by $c_i^0 = A_i - p, \bar{c}_i^{\alpha} = c_i^0 + \alpha, \underline{c}_i^{\alpha} = c_i^0 - \alpha \quad i = H, L; \quad c_H^0 - c_L^0 = \hat{A}.$

Example 1: Stage 2 - Equilibrium Norms

In Stage 2, the choice of equilibrium norms, there are two cases

Case I: Single Norm:

The equilibrium norm is denoted $\tilde{c}^e$: There are two sub-cases.

I(i): $\alpha \le 0.5\hat{A} \Rightarrow \bar{c}_L < \underline{c}_H \Rightarrow \tilde{c}^e = \theta \bar{c}_L + (1-\theta)\underline{c}_H$ (25a)

I(ii): $\alpha > 0.5\hat{A} \Rightarrow \bar{c}_L > \underline{c}_H \Rightarrow \tilde{c}^e \in [\underline{c}_H, \bar{c}_L]$ (25b)

Note that in Case I(ii) there are two possibilities: if $0.5\hat{A} < \alpha < \hat{A}$ then the interval group; if $\alpha \ge \hat{A}$ then the interval $[\underline{c}_H, \bar{c}_L]$ will contain the Marshallian demands of both groups.

Case II: Two Norms:

Denote the two norms by $\tilde{c}_L^e, \tilde{c}_H^e$. By Result 1, these norms must lie in the relevant *norm consistent intervals of consumption* of each group. We also require $v(\tilde{c}_L^e, c_L^0) \ge v(\tilde{c}_H^e, c_L^0), \; v(\tilde{c}_H^e, c_H^0) \ge v(\tilde{c}_L^e, c_H^0)$, so each consumer type prefers its own norm. It is straightforward to see that these conditions require:

$$c_H^0 \geq 0.5(\tilde{c}_L^e + \tilde{c}_H^e) \geq c_L^0 \qquad (26)$$

so the (unweighted) average of the two norms must lie between the Marshallian demands of the two groups.

Example 1: Stage 1 - Decision to Abide by a Norm

Finally in Stage 1, the outcomes are as described in Result 11. Note that if $\varphi \leq 0.5\alpha^2$ then both types of individual will adhere to a single norm only if $\max(\Delta_L, \Delta_H) \leq \bar{\Delta} \leq \alpha$; while if $\alpha < 0.5\hat{\Delta}$ then from (25a) the unique equilibrium single norm *c** is such that $\min(\Delta_L, \Delta_H) > \alpha$. So if $\varphi \leq 0.5\alpha^2 < \hat{\Delta}^2/8$ then there cannot exist an equilibrium single norm. So if the benefits from belonging to a norm are relatively small, and the difference in demand between the two groups is sufficiently large that the possible single norm lies outside the norm consistent intervals, then there is no equilibrium single norm.

3.2 Example 2: Three Types of Consumer

We now suppose that there are three groups of consumers: a fraction θ_L with low demand A_L, a fraction θ_M with medium demand A_M, and a fraction θ_H with high demand A_H where $\theta_L+\theta_M+\theta_H = 1$. We denote $\hat{\Delta} \equiv A_M - A_L$, $\hat{\hat{\Delta}} = A_H - A_M$, $\hat{\Delta} > 0$, $\hat{\hat{\Delta}} > 0$.

Example 2: Stage 3 – Consumption Norm Intervals

We define the consumption norm intervals for the three groups of individuals by $c_i^0 = A_i - p$, $\underline{c}_i = c_i^0 - \alpha$, $\bar{c}_i = c_i^0 + \alpha$, $i = L, M, H$, which we assume are all strictly positive.

In what follows it will be useful to introduce the notation:

(a) $\theta_{LM} \equiv \theta_L/(\theta_L + \theta_M)$; $c_{LM} \equiv [\theta_{LM}\bar{c}_L + (1-\theta_{LM})\underline{c}_M]$;

(b) $\theta_{MH} \equiv \theta_M/(\theta_M + \theta_H)$; $c_{MH} \equiv [\theta_{MH}\bar{c}_M + (1-\theta_{MH})\underline{c}_H]$;

(c) $\theta_{LH} \equiv \theta_L/(\theta_L + \theta_H)$; $c_{LH} \equiv [\theta_{LH}\bar{c}_L + (1-\theta_{LH})\underline{c}_H]$;

(d) $\bar{c}_{LMH} \equiv \theta_L\bar{c}_L + \theta_M\bar{c}_M + \theta_H\underline{c}_H$; $\underline{c}_{LMH} \equiv \theta_L\bar{c}_L + \theta_M\underline{c}_M + \theta_H\underline{c}_H$.

Clearly $\underline{c}_{LMH} < \bar{c}_{LMH}$.

Example 2: Stage 2 - Equilibrium Norms

In this sub-section we analyse what norms may be stable, and there are now three cases: a single norm to which all groups adhere, two norms with two groups adhering to one norm and the other group to the other norm, and three norms with each group adhering to its own norm.

Case I: Single Norm

Result 12 *If consumers belong to three types which differ only in their levels of demand and adhere to a single norm, then the possible equilibrium norms are as follows:*

(i) $\underline{c}_L < \underline{c}_M < \underline{c}_H \le \overline{c}_L < \overline{c}_M < \overline{c}_H$

$\Leftrightarrow c_L^0 + \hat{A} + \hat{\hat{A}} - \alpha < c_L^0 + \alpha \Leftrightarrow \alpha > 0.5(\hat{A} + \hat{\hat{A}})$.

Any $\tilde{c}^e$ s.t. $\underline{c}_H \le \tilde{c}^e \le \overline{c}_L$ is a possible equilibrium norm.

(ii) $\underline{c}_L < \underline{c}_M < \overline{c}_L < \underline{c}_H < \overline{c}_M < \overline{c}_H$

$\Leftrightarrow c_L^0 + \hat{A} - \alpha < c_L^0 + \alpha < c_L^0 + \hat{A} + \hat{\hat{A}} - \alpha < c_L^0 + \hat{A} + \alpha$

$\Leftrightarrow \max[0.5\hat{A}, 0.5\hat{\hat{A}}] < \alpha < 0.5(\hat{A} + \hat{\hat{A}})$.

The unique equilibrium norm is: $\tilde{c}^e = c_{LH}$

(iii) $\underline{c}_L < \underline{c}_M < \overline{c}_L < \overline{c}_M < \underline{c}_H < \overline{c}_H$

$\Leftrightarrow c_L^0 + \hat{A} - \alpha < c_L^0 + \alpha < c_L^0 + \hat{A} + \alpha < c_L^0 + \hat{A} + \hat{\hat{A}} - \alpha$

$\Leftrightarrow 0.5\hat{A} < \alpha < 0.5\hat{\hat{A}}$

If $0.5\hat{A} < \alpha < 0.5\hat{\hat{A}}[1 - (\frac{\theta_{LH}}{1-\theta_{LH}})(\frac{\hat{A}}{\hat{\hat{A}}})] < 0.5\hat{\hat{A}}$ which requires $\theta_{LH} < (1 - \frac{\hat{A}}{\hat{\hat{A}}})$ then the equilibrium norm is $\tilde{c}^e = \overline{c}_{LMH}$; otherwise the equilibrium norm is $\tilde{c}^e = c_{LH}$

(iv) $\underline{c}_L < \overline{c}_L < \underline{c}_M < \underline{c}_H < \overline{c}_M < \overline{c}_H$

$\Leftrightarrow c_L^0 + \alpha < c_L^0 + \hat{\hat{A}} - \alpha < c_L^0 + \hat{A} + \hat{\hat{A}} - \alpha < c_L^0 + \hat{A} + \alpha$

$\Leftrightarrow 0.5\hat{\hat{A}} < \alpha < 0.5\hat{A}$

If $0.5\hat{\hat{A}} < \alpha < 0.5\hat{A}[1 - (\frac{1-\theta_{LH}}{\theta_{LH}})(\frac{\hat{\hat{A}}}{\hat{A}})] < 0.5\hat{A}$ which requires $1 > \theta_{LH} > \tilde{\tilde{A}}/\tilde{A}$ then the equilibrium norm is: $\tilde{c}^e = \underline{c}_{LMH}$; otherwise the equilibrium norm is $\tilde{c}^e = c_{LH}$.

(v) $\underline{c}_L < \overline{c}_L < \underline{c}_M < \overline{c}_M < \underline{c}_H < \overline{c}_H$

$\Leftrightarrow c_L^0 + \alpha < c_L^0 + \hat{A} - \alpha < c_L^0 + \hat{A} + \alpha < c_L^0 + \hat{A} + \hat{\hat{A}} - \alpha$

$\Leftrightarrow \alpha < \min(0.5\hat{A}, 0.5\hat{\hat{A}})$

If $0.5\hat{A} < \alpha < 0.5\hat{\hat{A}}[1-(\frac{\theta_{LH}}{1-\theta_{LH}})(\frac{\hat{A}}{\hat{\hat{A}}})] < 0.5\hat{\hat{A}}$ and $1 > \theta_{LH} > (1-\frac{\hat{A}}{\hat{\hat{A}}})$ then the equilibrium norm is $\tilde{c}^e = \bar{c}_{LMH}$; if $0.5\hat{\hat{A}} < \alpha < 0.5\hat{A}[1-(\frac{1-\theta_{LH}}{\theta_{LH}})(\frac{\hat{\hat{A}}}{\hat{A}})] < 0.5\hat{A}$ and $\theta_{LH} < \hat{\hat{A}}/\hat{A}$ then the equilibrium norm is: $\tilde{c}^e = \underline{c}_{LMH}$; otherwise the equilibrium norm is $\tilde{c}^e = c_{LH}$.

It is interesting to note that, particularly in cases (ii), iii) and iv), if the equilibrium norm is c_{LH}, the outcome is significantly driven by the norm intervals of the groups with lowest and highest levels of demand. This is perhaps not very surprising if one is searching for a single equilibrium norm to which all groups would adhere.

Case II:Two Norms

A second possible outcome is where two groups adhere to one norm with the other group adhering to a different norm and there are three possible such cases: (A) *L* and *M* conform to one norm, *H* to another; (B) *M* and *H* conform to one norm and *L* to another; (C) *L* and *H* conform to one norm and *M* to another. We denote by $\tilde{c}_2^e, \tilde{c}_1^e$ the consumption norms adhered to by the 2 groups and 1 group respectively. The following Result shows which of these possible norms will be stable.

Result 13: *If consumers belong to three different groups, who adhere to two norms then:*

13.1 *There are no stable norms of type (C);*

13.2 *The possible stable equilibrium norms are as follows for the same parameter configurations as in Result 12:*

(i) $\underline{c}_L < \underline{c}_M < \underline{c}_H < \bar{c}_L < \bar{c}_M < \bar{c}_H$ i.e. $\alpha \geq 0.5(\hat{A} + \hat{\hat{A}})$

(a) $\tilde{c}_2^e \in (\underline{c}_M, \bar{c}_L)$; $\tilde{c}_1^e \in (\underline{c}_H, \bar{c}_H)$; $\tilde{c}_2^e < \tilde{c}_1^e$; $\tilde{c}_2^e, \tilde{c}_1^e$ need to satisfy the condition in Definition 2(ii) for all three income groups, but note that *H* will not want to switch if $\tilde{c}_2^e < \underline{c}_H$ and *L* will not want to switch if $\tilde{c}_1^e > \bar{c}_L$.

(b) $\tilde{c}_2^e \in (\underline{c}_H, \bar{c}_M)$; $\tilde{c}_1^e \in (\underline{c}_L, \bar{c}_L)$; $\tilde{c}_2^e > \tilde{c}_1^e$; $\tilde{c}_2^e, \tilde{c}_1^e$ need to satisfy the condition in Definition 2(ii) for all three income groups, but note that *H* will not want to switch if $\tilde{c}_1^e < \underline{c}_H$ and *L* will not want to switch if $\tilde{c}_2^e > \bar{c}_L$.

(ii) $\underline{c}_L < \underline{c}_M < \bar{c}_L < \underline{c}_H < \bar{c}_M < \bar{c}_H$ i.e. $\max[0.5\hat{A}, 0.5\hat{\hat{A}}] < \alpha < 0.5(\hat{A} + \hat{\hat{A}})$

(a) $\tilde{c}_2^e \in (\underline{c}_M, \overline{c}_L)$; $\tilde{c}_1^e \in (\underline{c}_H, \overline{c}_H)$; $\tilde{c}_2^e < \tilde{c}_1^e$; neither *L* nor *H* will wish to switch; $\tilde{c}_2^e, \tilde{c}_1^e$ need to satisfy the condition in Definition 2(ii) for *M;*

(b) $\tilde{c}_2^e \in (\underline{c}_H, \overline{c}_M)$; $\tilde{c}_1^e \in (\underline{c}_L, \overline{c}_L)$; $\tilde{c}_2^e > \tilde{c}_1^e$; neither *L* nor *H* will wish to switch; $\tilde{c}_2^e, \tilde{c}_1^e$ need to satisfy the condition in Definition (ii) for *M*;

(iii) $\underline{c}_L < \underline{c}_M < \overline{c}_L < \overline{c}_M < \underline{c}_H < \overline{c}_H$ i.e. $0.5\hat{A} < \alpha < 0.5\hat{\hat{A}}$

(a) $\tilde{c}_2^e \in (\underline{c}_M, \overline{c}_L)$; $\tilde{c}_1^e \in (\underline{c}_H, \overline{c}_H)$; $\tilde{c}_2^e < \tilde{c}_1^e$; *L, M* and *H* will not wish to switch;

(b) $\tilde{c}_2^e = c_{MH}$; $\tilde{c}_1^e \in (\underline{c}_L, \overline{c}_L)$; $\tilde{c}_2^e > \tilde{c}_1^e$; neither *L* nor *H* will wish to switch; if $\tilde{c}_1^e > \underline{c}_M$, *M* will want to switch to $\tilde{c}_1^e$, so this will not be a stable set of norms;

(iv) $\underline{c}_L < \overline{c}_L < \underline{c}_M < \underline{c}_H < \overline{c}_M < \overline{c}_H$ i.e. $0.5\hat{\hat{A}} < \alpha < 0.5\hat{A}$

(a) $\tilde{c}_2^e = c_{LM}$; $\tilde{c}_1^e \in (\underline{c}_H, \overline{c}_H)$; $\tilde{c}_2^e < \tilde{c}_1^e$; neither *L* nor *H* will want to switch; if $\tilde{c}_1^e < \overline{c}_M$ then *M* will want to switch, so this will not be a stable set of norms;

(b) $\tilde{c}_2^e \in (\underline{c}_H, \overline{c}_M)$; $\tilde{c}_1^e \in (\underline{c}_L, \overline{c}_L)$; $\tilde{c}_2^e > \tilde{c}_1^e$; *L, M,* and *H* will not wish to switch;

(v) $\underline{c}_L < \overline{c}_L < \underline{c}_M < \overline{c}_M < \underline{c}_H < \overline{c}_H$ i.e. $\alpha < \min(0.5\hat{A}, 0.5\hat{\hat{A}})$

(a) $\tilde{c}_2^e = c_{LM}$; $\tilde{c}_1^e \in (\underline{c}_H, \overline{c}_H)$; $\tilde{c}_2^e < \tilde{c}_1^e$; *L, M* and *H* will not want to switch;

(b) $\tilde{c}_2^e = c_{MH}$; $\tilde{c}_1^e \in (\underline{c}_L, \overline{c}_L)$; $\tilde{c}_2^e > \tilde{c}_1^e$; *L, M* and *H* will not wish to switch.

There are two points to note about these results. First, case (C), where *L a*nd *H* abide by one norm and *M* by another is never a stable configuration of norms. So if there are three groups of individuals and two equilibrium norms, then the groups adhering to a common norm must be from groups with adjacent levels of demand. As we move from parameter configurations (i) to (v) we are moving from a configuration where there is overlap between the norm-consistent intervals of all three income levels to a configuration where there is no overlap between any of the norm-consistent intervals. In cases (iii) and (iv), where the norm-consistent intervals for low and high income groups do not overlap but the norm-consistent interval for group *M* overlaps one of the other intervals, there may be no stable norm.

Second, whereas in the single norm case the selected norm was to a considerable extent driven by the need to get the extreme demand groups to abide by the norm, with two possible norms that is no longer the case and it is the medium group who influence which norms emerge as stable norms.

Case III: Three Norms

The analysis of this case follows straightforwardly from the analysis in section 3.1 Case II.

Example 2: Stage 1 – Decision to Abide by a Norm

Finally in Stage 1, the outcomes are as described in Result 11. Note that if $\varphi \leq 0.5\alpha^2$ then all types of individual will adhere to a single norm only if $\max(\Delta_L, \Delta_M, \Delta_H) \leq \bar{\Delta} \leq \alpha$; while if $\alpha < 0.5(\hat{A} + \hat{\hat{A}}) = 0.5(A_H - A_L)$ then from Result 12, the unique equilibrium single norm *c** is such that $\min(\Delta_L, \Delta_M, \Delta_H) > \alpha$. So if $\varphi \leq 0.5\alpha^2 < (A_H - A_L)^2/8$ then there cannot exist an equilibrium single norm. So if the benefits from belonging to a norm are relatively small, and the difference in demand between the two groups with highest and lowest levels of demand is sufficiently large that the possible single norm lies outside at least one group's norm consistent interval, then there is no equilibrium single norm.

This suggests that for a given level of benefit from adhering to a norm, if an increase in the number of demand groups is associated with a widening of the overall range of demands, then it will prove less likely that there will be a single equilibrium norm. Of course this depends significantly on our assumption that the benefit from adhering to for the benefit of adhering to norm to depend on how many other groups adhered to that norm, then this would offset that effect and make it more likely that there may be single equilibrium norm to which all groups adhere. But as our analysis suggests it is the width of the overall spread of demand levels, rather than the number of groups into which that is sub-divided that matters. It would be useful to have some empirical evidence to indicate what might be an appropriate assumption to make about what determines the benefits of adhering to a consumption norm.

3. Policy Analysis

The above analysis explains why consumers may choose to adhere to consumption norms. We now turn to policy analysis. For simplicity we shall use the special case from the previous section with two types of consumers.

We assume that policies are set prior to Stage 1 of the games set out in Sections 2 and 3 above. There are two kinds of policy issues we wish to explore. First, what does the fact that consumers are not consuming their Marshallian demands but abiding by norms imply for policy? Second, if there is some other form of distortion in the economy, how does the fact that consumers are abiding by norms affect the design of policy to correct that distortion?

3.1 Policy To Address Norms.

The government is concerned to maximise welfare defined by:

$$W(c_L, c_H \mid \tilde{c}) \equiv \theta[A_L - 0.5c_L^2 - \gamma c_L - \alpha|c_L - \tilde{c}| + \varphi] + (1-\theta)[A_H - 0.5c_H^2 - \gamma c_H - \alpha|c_H - \tilde{c}| + \varphi] \quad (27)$$

Note from (25a) that in Case I (i), the equilibrium norm is a weighted average of the upper and lower limits of the consumption norm intervals of the low and high demand groups respectively. Since these limits depend on the Marshallian demands of the two groups, and because the Marshallian demands are sensitive to price, it is possible to shift the norm closer to the level of demand that would arise under Marshallian demand, which will raise welfare while preserving the benefits of adhering to the norm. Now we know that low demand consumers are consuming more than their Marshallian demand by an amount α while high demand consumers are underconsuming by a similar amount. So it is straightforward to show that if the government imposes a tax

$$\hat{\tau} = \alpha(2\theta - 1) \quad (28)$$

this will align aggregate consumption with a norm with the aggregate Marshallian demand. If $\theta > 0.5$, so low demand consumers predominate, then the optimal policy will be a tax to dampen the effects of their 'overconsumption'; if $\theta < 0.5$, then high demand consumers predominate and the optimal policy is a subsidy to boost demand; finally if $\theta = 0.5$ the two effects cancel out and there is nothing the government needs to do.

In Case I(ii), it is clear from (25b) that the norm is not sensitive to modest changes in price. In this case the best the government can do to align individual decisions with the optimum is to ensure that the Marshallian demand lies in the overlap of the norm-consistent intervals of norms. This can be achieved by any tax/subsidy in the interval:

$$\theta(a_H - a_L) - \alpha \le \hat{\tau} \le \alpha - (1-\theta)(a_H - a_L) \quad (29)$$

In a wide range of circumstances this could be consistent with a zero tax.

Whether implementing such a tax/subsidy policy will achieve the optimum is problematic, for large changes in price (through either a tax or a subsidy) could shift the interval $[\underline{c}^{\alpha}(p, A_H), \bar{c}^{\alpha}(p, A_L)]$ in which the equilibrium norm $\tilde{c}^e$ lies so that $\tilde{c}^e$ no longer lies in this interval. In that case $\tilde{c}^e$ would no longer be an equilibrium norm and consumers would revert to their Marshallian demands.

4.2 Implications of Norms for Design of Other Policies.

As an illustration of the implications of norms for the design of other policies we consider the example of environmental policy. So now suppose that welfare is given by:

$$W(c_L, c_H \,|\tilde{c}) \equiv \theta[A_L - 0.5c_L^2 - \gamma c_L - \alpha|c_L - \tilde{c}| + \varphi] + (1-\theta)[A_H - 0.5c_H^2 - \gamma c_H - \alpha|c_H - \tilde{c}| + \varphi] - \delta[\theta c_L + (1-\theta)c_H] \quad (30)$$

where δ is the environmental damage cost per unit of consumption of the norm good.

The standard prescription from environmental economics would be to impose a Pigovian tax $\hat{t} = \delta$. In Case I(i) the optimal policy will be to impose the Pigovian tax in addition to the tax/subsidy derived from (28). So the overall policy will be to impose a tax $\hat{\tau} + \hat{t} = \alpha(2\theta - 1) + \delta$, which could be negative.

In Case I(ii) again if δ is relatively small the Pigovian tax will have no effect on consumption or pollution, while if it is large it could shift down the interval of consumption so that it no longer contains the norm, and consumers revert to their Marshallian demands. Of course these Marshallian demands with the Pigovian tax will be lower than they would be without the tax. Moreover, if $0.5(A_H - A_L) < \alpha < (A_H - A_L)$ low demand consumers will revert to Marshallian demands which are for sure lower than the lower bound of the interval $[\underline{c}^{\alpha}(p, A_H), \overline{c}^{\alpha}(p, A_L)]$ and hence lower than the norm. On the other hand high demand consumers will revert to their Marshallian demands which are for sure higher than the upper bound of the interval $[\underline{c}^{\alpha}(p, A_H), \overline{c}^{\alpha}(p, A_L)]$ and hence higher than the norm[14]. Could the latter effect outweigh the first two effects? In Dasgupta, Southerton, Ulph and Ulph (2014) we present a simple example which shows that indeed this can be the case, so with consumption norms conventional environmental economics policy recommendation can have the perverse effect of *raising* pollution and *reducing* welfare.

So it is possible that for commodities where consumption norms play a significant role standard economic policy recommendations could have no effect or even perverse effects, due not to any second-best effects but to the non-conventional form of consumer preferences. Of course these non –standard results apply only for some parameter values, but these are parameters which are not estimated in conventional econometric demand analysis.

4. Conclusions

In this paper we have presented a three-stage model of consumption norms to capture the notion that particular commodities individuals may choose to consume amounts which differ from their conventional Marshallian demand levels in order to signify that they wish to be seen as conforming with norms of a group with whom they wish to identify. We have shown that there may be multiple norms to which different groups of individuals choose to adhere, but also that there can be ranges of

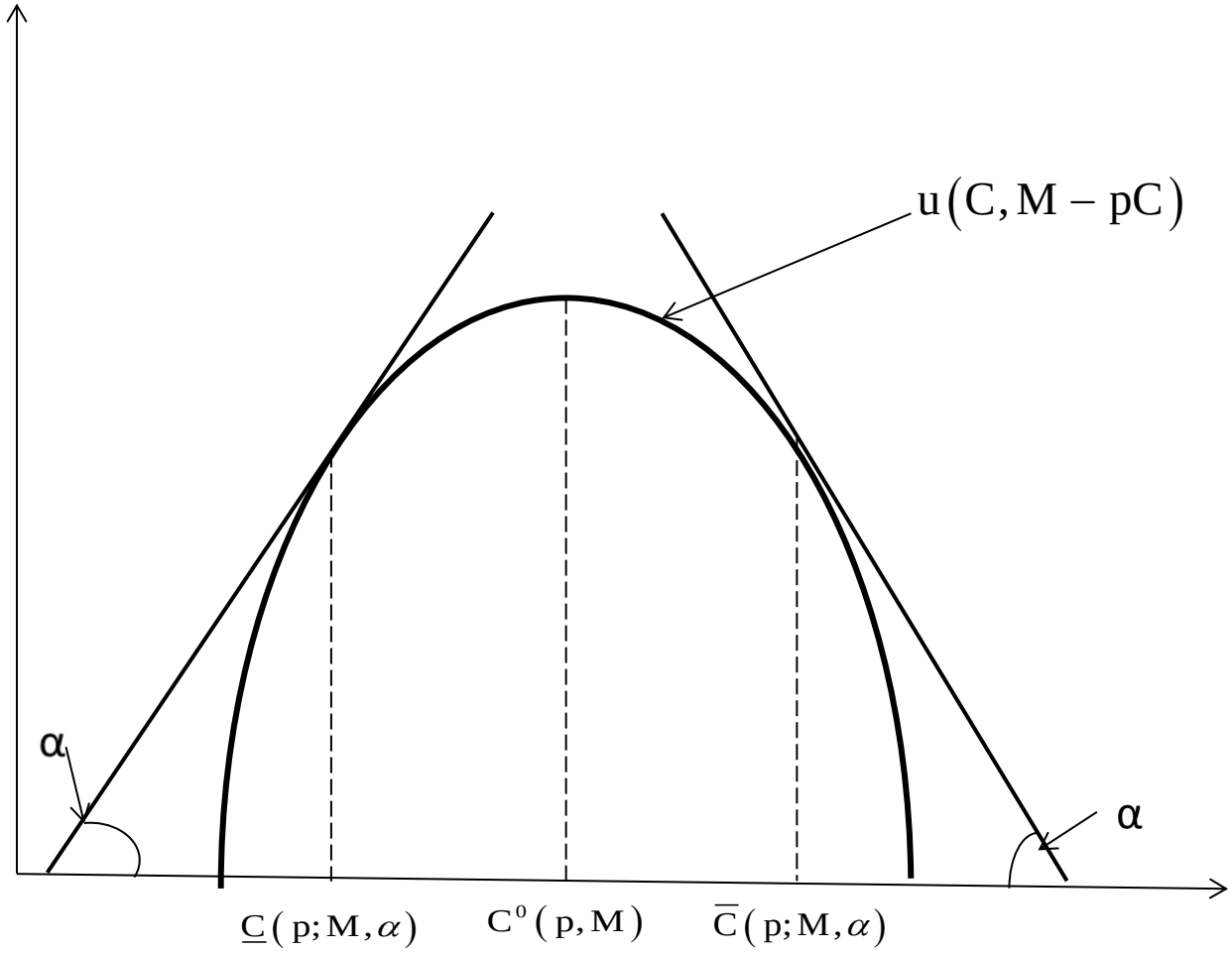
[14] Of course if $\alpha > (A_H - A_L)$ then it is still possible that the norm lies between the two Marshallian demands and so the effects just described still apply

values for consumption of norm goods such that any level of consumption within that range could be a consumption norm.

One important implication of this analysis is that, for commodities subject consumption norms, small changes in prices may have no effect on demand while larger changes could have very marked, and potentially perverse effects, if they lead consumers to move away from a particular norm. This has potentially interesting implications for econometric analyses of consumer demand, so for example conventional estimates which find a low price elasticity of demand may mis-attribute this to underlying features of preferences rather than the existence of norms; this raises interesting questions as to how one might test for the presence of such norms. Similarly, we have also considered the policy implications of consumption norms and shown that for some parameter values conventional policy instruments designed to change consumption behaviour and hence raise welfare, such as Pigovian taxes, may have no effect or may even lead to outcomes which reduce welfare.

There are a number of obvious extensions that could be made to this analysis. One is to consider what happens as we consider a wider range of socio-economic demographic characteristics that affect norms, another what happens if norms affect a range of commodities, and finally to develop a richer model of the evolution of norms: how new norms emerge and what happens when an existing norm is no longer an equilibrium – our assumption that consumers revert to Marshallian demand levels may only be a short-term effect at best.

Figure 1: *Norm-consistent interval of consumption*



Appendix: Proofs of Results

Result 1:

Suppose there is a single norm, $\tilde{c} < \underline{c}(p, M; \alpha)$.Then it follows from (12a) that everyone will choose to consume $\underline{c}(p, m; \alpha)$ so average consumption will be $\underline{c}(p, M; \alpha) > \tilde{c}$, so $\tilde{c}$ cannot be a norm. Similarly we can rule out the possibility that $\tilde{c} > \overline{c}(p, M; \alpha)$. So the norm must lie in the norm-consistent interval. If there are more than one norms lying in the norm-consistent interval, then all consumers will choose the one that yields highest utility, so apart from the case where two norms give identical utility – which happens on a set of parameters of measure zero – only one norm will be adhered to. QED

Result 2:

Suppose there are two types of individual who differ in their strength of attachment α_H, α_L, and, from Result 1, there is a single norm $\tilde{c} \in [\underline{c}(p, M; \alpha_H), \overline{c}(p, M; \alpha_H)]$ but $\tilde{c} < \underline{c}(p, M; \alpha_L)$ then those with strength of attachment α_H will adhere to $\tilde{c}$ while those with strength of attachment α_L will adhere to $\underline{c}(p, M; \alpha_L)$ so average consumption exceeds $\tilde{c}$,so we can rule out this possibility. Similarly if $\tilde{c} > \overline{c}(p, M; \alpha_L)$. So the equilibrium norm must lie in the tightest norm-consistent interval, that for people with lowest strength of adherence to a norm. QED

Result 3:

Suppose the result is not true and that the norm $\tilde{c} < \underline{c}(p, M_H; \alpha)$. Then the high-income consumers will consume $\underline{c}(p, M_H; \alpha)$ while the low-income consumers will consume $\max\{\tilde{c}, \underline{c}(p, M_L; \alpha)\}$. Average consumption will be above $\tilde{c}$ and so $\tilde{c}$ cannot be a norm. A similar argument applies if $\tilde{c} > \overline{c}(p, M_L; \alpha)$. QED

Result 4:

Using the sort of proof employed in Result 3, it is clear that there cannot be a norm with $\tilde{c} \le \overline{c}(p, M_L; \alpha)$, because, if there were, high income consumers would consume $\underline{c}(p, M_H; \alpha) > \overline{c}(p, M_L; \alpha) \ge \tilde{c}$ while low income consumers will consume $\max\{\tilde{c}, \underline{c}(p, M_L; \alpha)\}$. Similarly there cannot be a norm $\tilde{c} \ge \underline{c}(p, M_H; \alpha)$. So any candidate norm must satisfy $\overline{c}(p, M_L; \alpha) < \tilde{c} < \underline{c}(p, M_H; \alpha)$ in which case from (12) the consumption levels of the low and high income groups are $\overline{c}(p, M_L; \alpha)$, $\underline{c}(p, M_H; \alpha)$ respectively. So the only norm which equals the average consumption levels of all individuals conditional on that norm is $\tilde{c}^e = \theta \overline{c}(p, M_L; \alpha) + (1 - \theta) \overline{c}(p, M_H; \alpha)$.

Result 12:

1. Suppose the norm *c** is such that $c^* < \underline{c}_H$. Then the *H* group will consume $\underline{c}_H$ while *L* and *M* groups will consume *c** and it must be the case that $c^* = \theta_L c^* + \theta_M c^* + \theta_H \underline{c}_H \Rightarrow c^* = \underline{c}_H$, which is a contradiction; so $c^* \geq \underline{c}_H$. Similarly if $\bar{c}_L < c^*$ there would be a contradiction. So the only possible equilibrium is a norm *c** such that $\underline{c}_H \leq c^* \leq \bar{c}_L$.
2. Suppose the norm c^* is such that $\underline{c}_M < c^* < \bar{c}_L$; then the *H* group will consume $\underline{c}_H$, the *L* group will consume $\bar{c}_L$ and *M* will consume c^*; so it must be the case that $c^* = \theta_L \bar{c}_L + \theta_M c^* + \theta_H \underline{c}_H \Rightarrow c^* = c_{LH} > \bar{c}_L$, which is a contradiction. Similarly if $\underline{c}_H < c^* < \bar{c}_M$ there would be a contradiction. So the only possible outcome is a norm c^* such that $\bar{c}_L \leq c^* \leq \underline{c}_H$, the *H* group will consume $\underline{c}_H$, the *L* group will consume $\bar{c}_L$ and *M* will consume *c**; so it must be the case that $c^* = \theta_L \bar{c}_L + \theta_M c^* + \theta_H \underline{c}_H \Rightarrow c^* = c_{LH}$.
3. (i) As in 2, the norm cannot lie strictly below $\bar{c}_L$ nor above $\underline{c}_H$. Suppose that $\bar{c}_L \leq c_{LH} \leq \underline{c}_M$, but the norm $c^* \neq c_{LH}$; then group *M* will consume c^*, group *L* will consume $\bar{c}_L$ and group *H* will consume $\underline{c}_H$; so it must be the case that $c^* = c_{LH}$. Finally, suppose that $c_{LH} > \bar{c}_M$, which requires that $0.5\tilde{A} < \alpha < 0.5\tilde{\tilde{A}}[1 - (\frac{\theta_{LH}}{1-\theta_{LH}})(\frac{\tilde{A}}{\tilde{\tilde{A}}})] < 0.5\tilde{\tilde{A}}$ and $\theta_{LH} < (1 - \frac{\tilde{A}}{\tilde{\tilde{A}}})$. Suppose there is a norm c^* such that $\bar{c}_M < c^* \leq \underline{c}_H$; then group *L* will consume $\bar{c}_L$, group *M* will consume $\bar{c}_M$ and group *H* will consume $\underline{c}_H$, so $\tilde{C} = \bar{C}^*_{LMH}$.
   (ii) The proof is analogous to that for 3(i)
4. The proof follows from 3(i) and (ii). **QED**

Result 13:

13.1 w.l.o.g we assume $\underline{c}_L = 0$ so:

$$c_L^0 = \alpha; \bar{c}_L = 2\alpha; \underline{c}_M = \tilde{A}; c_M^0 = \tilde{A} + \alpha; \bar{c}_M = \tilde{A} + 2\alpha; \underline{c}_H = \tilde{A} + \tilde{\tilde{A}}; c_H^0 = \tilde{A} + \tilde{\tilde{A}} + \alpha; \bar{c}_H = \tilde{A} + \tilde{\tilde{A}} + 2\alpha$$

We denote $c_1^* = \tilde{A} + \psi; c_2^* = \tilde{A} + \tilde{\tilde{A}} + \phi$ where w.l.o.g we assume $0 \leq \psi \leq \alpha; 0 \leq \phi \leq 2\alpha - \tilde{A} - \mu$

The conditions for c_2^*, c_1^* to be stable are:

$$\left|c_1^* - c_L^0\right| > \left|c_2^* - c_L^0\right|; \left|c_2^* - c_M^0\right| > \left|c_1^* - c_M^0\right|; \left|c_1^* - c_H^0\right| > \left|c_2^* - c_H^0\right| \text{ i.e.}$$

$$C(i)\left|\tilde{A} + \psi - \alpha\right| > \left|\tilde{A} + \tilde{\tilde{A}} + \phi - \alpha\right|; C(ii) \quad \left|\tilde{\tilde{A}} + \phi - \alpha\right| > \alpha - \psi; C(iii) \quad \alpha + \tilde{\tilde{A}} - \psi > \left|\phi - \alpha\right|$$

There are five possible sets of parameter values:

(a) $\phi > \alpha;\ \tilde{A} + \psi - \alpha > 0$

From C(i) and C(ii): $\psi - \alpha > \tilde{\tilde{A}} + \phi - \alpha > \alpha - \psi > 0$, a contradiction

(b) $\phi > \alpha;\quad \tilde{A} + \tilde{\tilde{A}} - \alpha < 0$

From C(i) and C(ii): $\tilde{\tilde{A}} + \phi - \alpha > \alpha - \psi > 2\tilde{A} + \tilde{\tilde{A}} + \phi - \alpha \Rightarrow \tilde{A} < 0$, a contradiction

(c) $\phi < \alpha;\quad \tilde{\tilde{A}} + \phi - \alpha > 0;\quad \tilde{A} + \psi - \alpha > 0$

As in (a), from C(i) and C(ii) $\psi - \alpha > \tilde{\tilde{A}} + \phi - \alpha > \alpha - \psi > 0$, a contradiction

(d) $\phi < \alpha;\quad \tilde{\tilde{A}} + \phi - \alpha > 0;\quad \tilde{A} + \psi - \alpha < 0$

As in (b) from C(i) and C(ii) $\tilde{\tilde{A}} + \phi - \alpha > \alpha - \psi > 2\tilde{A} + \tilde{\tilde{A}} + \phi - \alpha \Rightarrow \tilde{A} < 0$, a contradiction

(e) $\phi < \alpha;\quad \tilde{\tilde{A}} + \phi - \alpha < 0;$

From C(ii) and C(ii) $\alpha - \psi > \alpha - \phi - \tilde{\tilde{A}} > \alpha - \psi$, a contradiction.

13. 2.

The proof is a straightforward application of earlier results. **Q.E.D.**

References

Abbott, A., S. Nandeibam and L. O'Shea (2013) "Recycling: Social Norms and Warm Glow Re-Visited", *Ecological Economics*, 90: 10-18.

Akerlof, G. and R. Kranton (2000) "Economics and Identity", *Quarterly Journal of Economics,* 115(3): 715-753.

Allcott, H. (2011) "Social Norms and Energy Conservation" *Journal of Public Economics*, 95: 1082-1095.

Axelrod, R. (1986) "An Evolutionary Approach to Norms" *The American Political Science Review*, 80(4):1095-1111.

Azar, O.H. (2004) "What Sustains Social Norms and How They Evolve? The Case of Tipping" *Journal of Economic Behaviour and Organisation*, 54(1), 49-64

Bauman, Z. (1988) *Freedom*, University of Minnesota Press

Bauman, Z. (1990) *Thinking Sociologically*, Blackwell, Oxford.

Bennett, T., M. Savage, E. Silva, A. Warde, M. Gayo-Cal, and D. Wright (2009) *Culture, Class, Distinction*, Routledge: London.

Bernheim, D. (1994) "A Theory of Conformity", *Journal of Political Economy*, 102(5): 841-877.

Bourdieu, P. (1984) *Distinction: A Social Critique of the Judgement of Taste*, Routledge Kegan Paul, London

Bucholz, W., J. Falkinger and D. Rubbelke (2012) "Non-Governmental Public Norm Enforcement in Large Societies as a Two-Stage Game of Voluntary Public Good provision" *ANU Working Paper in Economics and Econometrics, 566*.

Chaudhuri, A. (2011) "Sustaining Cooperation in Laboratory Public Good Game Experiments: a Selected Survey of the Literature" *Experimental Economics*, 14, 47-83

Dasgupta, P. (2000) "Economic Progress and the Idea of Social Capital", in P. Dasgupta and I. Serageldin (eds.) *Social Capital: A Multi-Faceted Perspective*, The World Bank, Washington DC, 325-424.

Dasgupta, P., D. Southerton, A. Ulph and D. Ulph (2014) "Consumer Behaviour with Environmental and Social Externalities: Implications for Analysis and Policy", submitted to special issue of *Environmental and Resource Economics*

Easterlin, R. (1974) "Does Economic Growth Improve the Human Lot? Some Empirical Evidence" in P.David and M. Reder (eds.) *Nations and Households in*

Economic Growth: Essays in Honor of Moses Abramowitz, Academic Press, New York.

Easterlin,R. (2001) "Income and Happiness: Toward a Unified Theory", *The Economic Journal,* 111: 465-484

Frey, B. and S. Meier (2004) "Social Comparisons and Pro-Social Behaviour: Testing Conditional Cooperation in a Field Experiment" *American Economic Review* , 94(5): 1717-1722.

Gerber, A. and T. Rogers (2009) "Descriptive Social Norms and Motivation to Vote: Everybody's voting and So Should You", *Journal of Politics*, 71: 1-14.

Hargreaves-Heap, S. (2013) "Social Influences on Behaviour" in J. Mehta (ed.) *Behavioural Economics in Competition and Consumer Policy*, Report from ESRC Centre for Competition Policy, University of East Anglia.

Hargreaves-Heap, S. and D. Zizzo (2009) "The Value of Groups", *American Economic Review,* 99: 295-323.

Ledyard, J. (1995) "Public Goods: A Survey of Experimental Research" in J. Kregel and A. Roth (eds) *Handbook of Experimental Economics*, Princeton University Press, 111-252.

Putnam, R. (2000) *Bowling Alone: The Collapse and Revival of American Community*, Simon and Schuster, New York.

Southerton, D. (2002), 'Boundaries of 'Us' and 'Them': class, mobility and identification in a new town', *Sociology*, 36(1): 171-193.

Veblen, T. (1924) *The Theory of the Leisure Class: An Economic Study of Institutions*, George, Allen and Unwin, London