Advertising, Mass Consumption and Capitalism*

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1 Introduction and Motivation

Western societies have developed into a historically new stage in the evolution of capitalism, one which is characterized by corporations exercising monopolistic power and sustaining demand by advertising through the media. While this theme has been emphasized e.g., by by J. A. Schumpeter in *Business Cycles; A Theoretical, Historical and Statistical Analysis of the Capitalist Process*, ch. III, [1] and by J.K. Galbraith in the *Affluent Society*, it seems to have become a fundamental tenet of some of the most recent theoretical work in sociology, and in Postmodernist circles.

The importance of monopoly power in the recent development of capitalist society has also been forcefully stressed by Marxist historians, e.g., from P. Baran and P. Sweezy, in *Monopoly Capital* to E. Mandel, in *Late Capitalism*, and G. Arrighi, *The Long Twentieth Century*. Postmodernist theory, on the other hand, has been constructed around Marxist historicism and "social constructionism", the view that the individual self is socially constituted (see Leonard (1997) and Anderson (1998)). As a consequence, the interaction of monopoly power and advertising has taken a new meaning in the Postmodernist literature, and concepts like "consumerism", "commodification" of culture, and "manipulation of preferences" have become the central core what could be called a Postmodernist critique of the organization of society. D. Harvey's *The Condition of Postmodernity* is a good example of such critique, where, it is argued for instance, that "the promotion of a culture of consumerism" is needed to "sustain sufficient buoyancy of demand in consumer markets to keep capitalist production profitable" (p. 61).[2]

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[1] Thanks to Andy Atkenson for this reference.

[2] See also, F. Jameson's *The Cultural Turn*. For a very radical anarchistic advocacy of this point of view, see C. Palahniuk, *The Fight Club,* , Holt and Co., 1996, and particularly the 1999 movie of the book by the same title, directed by David Fincher. A good survey of the positions of the Postmodernist literature on "consumerism" is Lee (2000), and especially

Monopoly power and advertising are intended as a form of "manipulation". They interact to "manifacture individual identities," to induce a system of values and preferences on the part of consumers ("consumerism") which is not "natural" as, e.g., it is not supported by psychological and anthropological data (see e.g., M. Douglas and B. Isherwood, *The World of Good*, D. Rushkoff, *Coercion*, M. Sahlins, *Culture and Practical Reason*). As a consequence, the consumption and leisure choices of agents go against their more "fundamental" will ("spontaneous consumer needs" in Galbraith, 1958): consumers are in "psychological denial" regarding their consumption and leisure habits (Schor, 1998, p. 19), and desire commodities which are "useless, altered in a senseless way from the point of view of the rational consumer" (Mandel, 1972, p. 394 of the English 1978 edition).

In particular, such "manipulation of preferences", it is argued, induces consumers to reduce the time devoted to leisure activities, entering a "work and spend cycle" (J. Schor, *The Overworked American: The Unexpected Decline of Leisure*, and *The Overspent American: Why We Want What We Don't Need*).

The existing evidence on the labour supply in the U.S. is far from conclusive, and the "work and spend cycle", if any, needs to be disentangled from the effects of the real wage and productivity increases since the $50's$ on the labour supply.[3] A favorable if not litteral interpretation of the Postmodernist critique, which we adopt, has it that the "work and spend cycle" operates to compensate the possibly opposite effect on leisure induced by the growth in labor productivity realized since the 50's.

Finally, another important aspect of the critique is the consideration of leisure itself as "commodified": "private corporations have dominated the leisure 'market,' encouraging us to think of leisure as a consumption opportunity" (Schor (1992), p. 162).

To summarize, the basic argument of the Postmodernist critique can be reconstructed as follows (obviously considerably simplifying across the wealth of different positions). Exploiting their monopoly power, firms manipulate the preferences of consumers through advertising, to the effect of creating new (false) needs. As a consequence, profits increase and consumers' spending increases to the point that consumers reduce the time devoted to leisure activities (or at least they do not increase it enough following productivity and wage increases), entering a "work and spend cycle". Leisure itself is transformed in a form of consumption (e.g., in exotic vacations, eating out, etc.), leisure is "commodified." Such pattern of behavior, the "work and spend cycle" and the "commodification of leisure," reduces consumers' overall welfare, when welfare is evaluated with respect to the consumers' ex-ante preferences, before advertising takes place.

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the paper by Campbell, p. 48-72. For an excellent general discussion of the development of postmodernist ideas, see also Anderson (1998).

[3] The average weekly hours of market work per person in the U.S. has been roughly constant since the $50's$. But large shifts have occurred in the the composition of average weekly hours across the population; McGrattan-Rogerson (1998) extensively document trends in average weekly hours, disaggregated along demographic lines; Leete Guy-Schor (1992) document average yearly hours and decompose the trends in hours with respect to employment status; see Section 5 for further discussion of this evidence.

While it is easy for economists to ignore the Postmodernist literature, especially because of its associated methodological positions,[4] what we have identified as the Postmodernist critique nonetheless constitutes a coherent statement about economic quantities that can be studied with the tools of economists. Moreover, even if the Postmodernist literature per se is ignored, the critique we have identified is receiving a large attention in the academic profession at large, in the humanities as well as in the social sciences, and in the analyses of many social observers.

We study a simple general equilibrium model economy with advertising and monopolistic competition, with the objective of evaluating the effects of advertising on the consumers' welfare and its implications on their consumption/leisure decision. Our exercise is aimed at identifying, in a neoclassical model at the center of the "economic paradigm," some of the conditions under which the consumption/leisure patterns as well as the welfare implications associated with the Postmodernist critique can arise.[5]

To this end, our economy is constructed to embed all the elements of the Postmodernist critique. Firms have monopoly power: they set prices of consumption goods and extract rents from leisure activities. They also advertise to affect the demand of consumers for the commodities that they produce and the leisure activities they market. The only objective of advertising is to influence preferences: the purpose of advertising is not to provide consumers with information about the commodities in the market. Consumers passively accept advertising and by no means are they able to limit its influence on their preferences.

Our economy is nonetheless a standard general equilibrium economy: consumers simultaneously choose how much to consume and how much time to devote to leisure vs. working, and their choice is restricted by their budget constraint which links consumption expenditures to earned wages. The firms' and the consumers' choices result in an economic equilibrium in which consumers face advertising and the prices set by firms, firms face the consumers' demand for consumption and leisure activities and their labour supply, and markets clear: the commodities produced by the firms are consumed, the labour supplied by consumers is demanded by firms, the leisure activities offered by firms are demanded, and the profits of the firms, if any, are distributed to (and consumed by) their owners.

In order to assess whether the negative welfare consequences of advertising surmised by the Postmodernist critique are correct, our first task must be to define an appropriate welfare ordering when preferences change in response to advertising. We adopt the stringent convention that a consumption plan is inferior (superior) to another one if it yields a smaller (larger) utility both according to pre-advertising and post-advertising preferences (see Section 2.2).

[4] The improper use of scientific jargon in the Postmodernist literature, for instance, has been exposed by Sokal-Bricmont (1998).

[5] We do not concern ourselves here with the direct empirical validation of the critique. In Section 6 however we will however discuss some empirical evidence which pertains to the parametrization of our model.

Under such convention it is more difficult for the welfare implications of the Postmodernist critique to be satisfied, as we require advertising to have negative welfare effects not just, as the critique would require, with respect to ex-ante preferences, but also with respect to ex-post preferences. We adopt this convention because the Postmodernist literature is not clear, in our understanding, about how welfare judgements based on ex-ante preferences (before society's influence and advertising) can be logically sustained in a conceptual system based on "social constructionism". Why should ex-ante preferences represent the consumers' "fundamental will" ? In other words, Is it necessarily bad if advertising makes consumers "better utility machines" ?[6]

Even based on such demanding welfare criterion, we show that, when all the aspects of the interaction of monopoly and advertising are taken into account, it is possible to construct equilibria which support the Postmodernist critique. In particular we shed light on which model specifications and which parameter configurations give rise to such equilibria, and we asseess their plausibility.

The key to the analysis of the effect of advertising on welfare is that, in an economy in which prices are distorted by monopoly power of firms, advertising might, depending of the parameters of the economy, either exacerbate such effects, or it might introduce a form of non-price competition across firms which mitigates the effects of monopolistic distortions and Pareto improves welfare. In fact if monopoly power raises market prices above their competitive levels and restricts output, advertising that results in higher aggregate output and less leisure can improve welfare by bringing the economy closer to the competitive equilibrium. The negative welfare consequences of advertising tend to occur precisely in those cases which lead to output levels that are even lower than the monopolistic level without advertising. The key question for the Postmodernist Critique then is whether the possible negative welfare effects of advertising can rather be accompanied by higher consumption expenditures and less leisure.

Such outcomes are possible, and they present the strongest case in favor of the Postmodernist Critique, either when the distribution of profits is highly unequal, or when there is free entry under monopolistic competition. In the first case higher profits that result from higher post-advertising prices do not accrue to the segment of the population with little or no stock ownership. The fall of real income due to higher prices not only reduces the welfare of this segment of the population, but also induces them to work harder and to spend more.

In the case of free entry, even if the ownership of firms is uniformly distributed, profits are dissipated on fixed costs, as entry expands product variety until profits are exhausted. When advertising is introduced, not only can the monopoly distortion increase further, but the potential profits from higher prices are further dissipated on fixed costs due to entry. So the net effect is identical to the case with unequal profit distribution, except that in this case everyone works harder, spends more, and everyone is worse off.

At first we focus on an economy in which leisure is a non-market activity, and hence the "commodification of leisure" is impossible by assumption. We

[6] This terminology is due to Becker; see Becker (1996).

concentrate on the "work and spend cycle" and on the negative welfare effects of advertising, to conclude the following:

When advertising affects the intensity of preferences, it might generate a "work-spend cycle". This however requires a large elasticity of substitution between consumption and leisure, and will in general have positive welfare effects for the consumers, even if their welfare is evaluated according to the preferences consumers are endowed with before advertising "manipulates" them. Such a positive welfare effect is a direct consequence of the monopoly power of firms. Monopoly power in fact inefficiently distorts the prices of consumption goods and generates too much leisure in equilibrium. Advertising generates a "work and spend cycle," thereby favoring competition across firms, and mitigating the effects of the distortions due to monopoly power.

Under the alternative specification in which advertising affects the elasticity of substitution across goods, advertising does have unambiguous negative welfare effects. Moreover, in equilibrium a "work and spend cycle" is generated in such a formulation either if a) firms make positive profits (entry is restricted) and the distribution of the titles to the ownership of the firms across the consumers is very unequal (the "work and spend cycle" operates only for the fraction of consumers with low or no stock ownership); or, b) the free entry of monopolistically competitive firms expand, at a fixed cost, the variety of goods produced until profits are driven to zero.

In the model where firms can extract monopoly rents from the consumers' leisure activities ("commodification of leisure") we find the following:

Advertising that affects the elasticity of substitution across leisure activities has unambiguously positive welfare effects, as it offsets the distortions introduced by monopoly power and advertising in consumption goods (and it limits the "work and spend cycle" if one such exists). Again, these results depend on the assumption that stocks distributed across consumers are in proportion to to their wealth and that firms' entry to expand variety is restricted, so that they make positive profits. If a fraction of consumers are restricted out of the stock market, or if entry is free, then the "commodification of leisure" exacerbates the "work and spend cycle" for such consumers, and has an unambiguously negative effect on their welfare. Similar implications arise in the corresponding economy with free entry and expanding variety.

The parametrization of our economy which is mostly consistent with the the pattern of consumption, leisure, and consumers' welfare associated with the Postmodernist critique involves then advertising aiming at product differentiation, a low elasticity of substitution between consumption and leisure, and either a largely unequal distribution of the fraction of wealth held as stocks across the consumers, or free entry and expanding variety driving excess profits to zero.

The evidence on the key aspects of such parametrization is in general fair controversial. We attempt a discussion in Section 6 as a first step towards a more coherent empirical analysis. We also note that in such parametrization the secular rise of real wages due to productivity increases which more than compensate the increase in the price level, has the effect of decreasing the consumers' labor supply. Therefore a general decrease in the time devoted to leisure activities,

as documented for instance by Leete Guy-Schor (1992), is in our analysis inconsistent with the critique. An interpretation of the evidence which is instead consistent with the critique has it that the decrease in leisure is possibly due to the compositional effect of an increase for males and a decrease for females, and that the decrease in leisure for females might have independent socio-economic explanations, in terms e.g., of changing norms about family structure. Following such interpretation, avdertising might have had a compensating opposite effect on the increase in time devoted to leisure activities for males since the 50's, possibly accompanied by negative welfare effects.

Our analysis so far postulates a demanding form of psychological sophistication for consumers: they anticipate future advertsing and hence they understand that their preferences will evolve over time. But what if consumers are not endowed with such psychological sophistication ? In this case their behavior will be time inconsistent: at any moment, consumers will make plans for future consumption and leisure which they will not want to abide by. Advertising might for instance make present consumption particularly desirable, and as a consequence consumers will accelerate current consumption and postpone saving. At each future date however advertising makes present consumption particularly desirable. The consumer is "surprised," and may continue current consumption and keep postponing savings to future dates. The result may be that consumers will go into debt, until eventually they will have to consider repaying their debt, reducing consumption, and possibly increasing their labor supply as well.

It can be argued that such myopic behavior is just what the Postmodernist critique envisions.[7] Even though we did not find any consistent statement of time inconsistency of preferences in the Postmodernist literature (but Jameson, 1998, refers to the "fragmentation of time into a series of perpetual presents", p. 20), the "dependence on debt" is an important part of the explanation of the "work and spend cycle" (see Schor, 1992, ch. 5, and Sullivan-Warren-Westbrook, 2000; but see also Galbraith, 1958, ch. 13).

Our analysis shows though that the "work and spend (and debt) cycle" is the equilibrium outcome for consumers who are not psychologically sophisticated enough to anticipate future advertising only when advertising affects the intensity of the consumers' preferences for the consumption goods. But, when advertising targets the the elasticity of substitution between the goods, the opposite holds. In this case the consumer may observe higher prices today as a result of advertising, but fail to expect that in future advertising will continue, and that prices will remain high. Expecting prices to revert to their pre-advertising levels, the consumer will then postpone consumption and instead of going into debt, will have higher savings.

This contrasts with our results for rational agents, where the Postmodernist critique is mostly supported when, among other conditions, advertising has the

[7] *The Fight Club* for instance ends emphatically with the bombing of all credit card companies' corporate centers, to "free society from the slavery of debt."

more plausible effect of differentiating commodities from their substitutes. In other words, allowing for consumers which are not psychologically sophisticated to anticipate future advertising does not complement the arguments in favor of the "work and spend cycle" derived for rational agents, as the "cycle" is rationalized under different sets of parameters.[8]

2 The Economy

A representative consumer is alive at time t, $0 \leq t \leq 1$. At each t, he consumes a continuum of goods indexed by i, $0 \leq i \leq 1$. (The set of goods consumed is exogenously fixed; we will study in Section 4 an economy with expanding variety in which the set of goods produced and consumed is endogeneized.) Let $x_{it} \geq 0$ denote his consumption of good i at time t. The consumer is endowed with one unit of time at each moment t. Let L_t, $0 \leq L_t \leq 1$, denote the share of his/her time he/she devotes to work in period t (hence $1 - L_t$ denotes the share of time devoted to leisure at t). The consumer evaluates consumption and leisure plans with a constant elasticity of substitution utility function with no discounting. At time $t = 0$, he/she maximizes his/her utility in terms of aggregate consumption and leisure goods:

$$\max_{[x_{it}]_{0\leq i\leq 1}^{0\leq t\leq 1},\, [L_t]^{0\leq t\leq 1}} \int_0^1 \left[(X_t)^{\frac{\sigma-1}{\sigma}} + (1-L_t)^{\frac{\sigma-1}{\sigma}} \right]^{\frac{\sigma}{\sigma-1}} dt \tag{1}$$

where

$$X_t := \left[\int_0^1 \alpha_{it} \left(x_{it}\right)^{\frac{\theta_{it}-1}{\theta_{it}}} di \right]^{\frac{\int_0^1 \theta_{it} di}{\int_0^1 \theta_{it} di - 1}}, \quad \theta_{it} > 1 \tag{2}$$

The parameter σ represents the elasticity of substitution between aggregate consumption and aggregate leisure. The parameter θ_{it} represents the elasticity of substitution associated with good i at time t; finally α_{it} represent the intensity level of utility associated to good i at time t.[9]

[8] We do not discuss preferences for status and conspicuous consumption in this paper, even though they constitute a relatively common justification for the Postmodernist critique; see e.g., Schor, 1998. It is hard to maintain that status consciousness is limited to capitalism. To the extent that a preference for status is common to many societies in time and place, as documented by anthropologists, and maybe part of human nature, it ceases to be a problem of capitalism per se. Moreover, the empirical identification of preferences for status out of available data involves deep yet unresolved econometric problems; see e.g., Manski (1999).

[9] Imperfect substitability of the consumption and leisure aggregators can be incorporated into the analysis, by having preferences written as

$$\frac{\int_0^1 \left[\left[(X_t)^{\frac{\sigma-1}{\sigma}} + (1-L_t)^{\frac{\sigma-1}{\sigma}} \right]^{\frac{\sigma}{\sigma-1}} \right]^{1-\rho} - 1}{1-\rho} dt,$$

without affecting on the results. The case in which $\sigma = 1$ corresponds to the Cobb-Douglas aggregator between consumption and leisure, the special case often used in macroeconomics; see Browning-Hansen-Heckman (1999) for a survey; our more general CES aggregator is used e.g., by Auerbach-Kotlikoff (1987).

The consumer's utility maximization is subject to his/her budget constraint, as his/her total expenditures must be financed by earned wages, $w\int_0^1 L_t dt$, and by the firms' aggregate profits, π, as firms are owned by the representative consumer:[10]

$$\int_0^1 \int_0^1 p_{it}x_{it}\, di\, dt = w\int_0^1 L_t dt + \pi \tag{3}$$

The single budget constraint the consumer faces is justified by the implicit assumption of perfect capital markets.

Let E_t denote the representative consumer's nominal expenditures at time t. Let $x_{it} = x_{it}(p_{it}, p_t, E_t; \alpha, \theta)$ denote the demand of good i at time t, evaluated at $p_{jt} = p_{j't} := p_t$, for all $j, j' \neq i$, and $\alpha_{it} = \alpha$, $\theta_{it} = \theta$.[11] At each time t, each good i is produced using labour by a firm who is monopolistically competitive in the good's market and perfectly competitive in the labour market. The wage rate has been denoted w. We adopt the normalization that the production of one unit of good at time t requires $\frac{1}{w}$ units of labor. The parameter w is then an index of the marginal product of labor, as well as the wage rate, and is assumed independent of t. Later, we will investigate the comparative statics with respect to w.

Any firm producing good i at time t chooses price p_{it} to maximize profits

$$p_{it} = p(p_t, E_t; \alpha, \theta, w) = \text{argmax}\ \ (p_{it} - 1)\, x_{it}$$

subject to

$$x_{it} = x(p_{it}, p_t, E_t; \alpha, \theta)$$

If the representative consumer has symmetric preferences, $\alpha_{it} = \alpha$, and $\theta_{it} = \theta$, independent of i and t, the economy has a symmetric equilibrium, in which prices, consumption and leisure choices, and profits are constant over time.

Definition 1 *A symmetric monopolistically competitive equilibrium is composed of allocations $x_{it} = x$, $X_t = (\alpha)^{\frac{\theta-1}{\theta}} x$, $L_t = L$, prices $p_{it} = p$ such that:*

$$x_{it}(p, p, wL + \pi; \alpha, \theta) = x, \ \ \pi = (p-1)x, \ \ p = p(p, wL + \pi; \alpha, \theta), \ \ x = wL.$$

In the general equilibrium context of our model, the firms' profits are redistributed to (and spent by) their owners. (In section 4.2 we will also consider the case in which there is free entry leading to expanding product varieties: new brands are introduced at a fixed costs until profits are zero in the economy.) The representative agent framework then implies that expenditures are equal to total wages plus total profits: $E_t = E = px = wL + \pi$. As a consequence,

[10] We study in a later section economies populated by heterogenoeous consumers in which the issue of the distribution of profits can be analyzed, and "capitalist" and "workers" can be distinguished.

[11] I.e, formally, $x(p_{it}, p_t, E_t, \alpha, \theta) := \text{argmax}\left[\int_0^1 \alpha\,(x_{it})^{\frac{\theta-1}{\theta}}\, di\right]^{\frac{\theta}{\theta-1}}$ subject to $\int_0^1 p_{it}x_{it}\, di \leq E_t$, and, as we focus on symmetric equilibria, $p_{jt} = p_{j't} := p_t$, for all $j, j' \neq i$.

in equilibrium, consumption and the time devoted to labour are perfectly correlated, $x = wL$.

In turn, each firm producing an arbitrary good i at an arbitrary time t sets prices

$$p = \frac{\theta}{\theta - 1}$$

and the equilibrium price depends negatively on the elasticity of substitution θ.

We assume, as a benchmark, that if firms do not advertise, the representative consumer has symmetric preferences, and $\alpha_{it} = 1$, $\theta_{it} = \theta > 1$. In this case the equilibrium ratio of labour to leisure that the representative consumer chooses solves the following equation,

$$\frac{L}{1-L} = \frac{1}{w}\left(\frac{p}{w}\right)^{-\sigma}$$

so that L decreases with the price p. Also, L decreases (increases) with the productivity of labour, w, if the elasticity of substitution between goods and leisure, σ, is less than (greater than) 1.

2.1 Advertising

We model advertising as directly affecting consumers' preferences: consumers are passively subject to firms' advertising. In other words, we do not take the view that advertising represents simply "a good or a bad" as in Becker-Murphy (1993), and as a consequence that the amount of exposure to advertising can be freely chosen by the consumer. In such an approach the consumer controls the intake of advertising and the equilibrium output of advertising is determined by market supply and demand. This view of advertising, while quite compelling, is at odds with the Postmodernist view of the world that we aim at analyzing in this paper.[12] [13]

In the main body of the paper we concentrate on advertising for consumption goods, and model leisure as a non-market activity. Advertising will affect the preference parameters α and θ (respectively, the intensity of preferences, and the elasticity of substitution across consumption goods), but not σ (the elasticity of substitution between consumption and leisure). In section 5 however we will consider an extension of the model to analyze the effect of the "commodification of leisure."

[12] In fact the modelling of "advertising as a good or bad" has striking implications when accompanied with perfect competition in the advertising industries, but should not significantly affect the qualitative results when adopted in a monopolistic competition setting like ours, as the compensation for being exposed to advertising "as a bad" (for instance, free TV), would not completely compensate the consumers at the margin.

[13] Again, for the sake of our analysis of the Postmodernist critique, we do not either consider informational advertising, i.e., advertising conveying useful information about consumer products. The literature on advertising aimed at informing consumers about products is quite extensive; see Becker (1996), especially ch. 1, for a view of advertising which stresses its informational aspect, and Tirole (1990), p.290), for an overview.

We assume that advertising is costly. For simplicity we will not explicitly model such costs. Instead we will derive conditions which guarantee that if a firm, say the firm producing good i at t, expects all other firms not to advertise, then it will have an incentive to advertise. As a consequence, under such conditions a Nash equilibrium with no advertising does not exist, and explicit cost functions, with increasing marginal costs ranging from 0 to ∞, can be constructed such that a Nash equilibrium with symmetric advertising across all firms does exist. Consequently, before advertising takes place, $\alpha_{it} = 1$ and $\theta_{it} = \theta > 0$, but after advertising takes place, $\alpha_{it} = \alpha_+ > 1$ and $\theta_{it} = \theta_+ < \theta$.

At any time τ, we assume the representative consumer evaluates his/her possible present and future consumption paths with preference parameters, $\alpha_{it} = \alpha_+$, $\theta_{it} = \theta_+$, for all $t \geq \tau$. In other words, at any moment consumers are sophisticated in anticipating advertising in the future, and hence the dynamics of their own preferences. We study later, in section 7, the case in which consumers do not anticipate the change in their own preferences and advertising introduces time inconsistency into the consumer's choice.

2.2 Welfare Analysis

An important part of our analysis will consist of studying the effects of advertising on consumers' welfare. As advertising changes consumers' preferences, it is not at all obvious what the reference welfare criterion should be. This is a controversial issue. There is ample evidence that the Postmodernist literature favors welfare comparisons in terms of ex-ante preferences. (We argued in the introduction however, that such position may-be inconsistent with the philosophical foundation of Postmodernist theory, the social construction of the individual self.) The requirement that the consumer be worse off, as an effect of advertising, according to ex-post preferences seems unlikely to hold if advertising makes the consumer a "better utility machine." If the choice set of the consumer is not changed or restricted too much due to the general equilibrium effects of advertising, a revealed preference argument would suggest that the consumer may indeed be better off according to ex-post preferences. We will show though that several of our welfare comparisons are in fact unambiguous, in the sense that they hold for the partial ordering induced by both ex-ante as well as for ex-post preferences. In an economy in which prices are distorted by monopoly power of firms, in fact, advertising might, depending of the parameters of the economy, either exacerbate such effects, and hence possibly reduce welfare with respect to both ex-ante and ex-post preferences, or it might introduce a form of non-price competition across firms which mitigates the effects of monopolistic distortions and hence on the contrary unequivocally improves welfare.

Given the preference parameters α, θ (we use for simplicity a notation which abuses by postulating symmetry), the representative consumer's equilibrium allocations are denoted by $x(\alpha, \theta)$, $L(\alpha, \theta)$; and his/her equilibrium utility is denoted $\mathcal{U}(x(\alpha, \theta), L(\alpha, \theta); \alpha, \theta)$. Suppose advertising has the effect of changing

his/her preference parameters (α, θ) into (α_+, θ_+).

Definition 2 *We say that the consumer's welfare unambiguously increases due to advertising if and only if it increases with respect to ex-post preferences so that*

$$\mathcal{U}(x(\alpha_+, \theta_+), L(\alpha_+, \theta_+); \alpha_+, \theta_+) \geq \mathcal{U}(x(\alpha, \theta), L(\alpha, \theta); \alpha_+, \theta_+) \tag{4}$$

and it also increases with respect to ex-ante preferences

$$\mathcal{U}(x(\alpha_+, \theta_+), L(\alpha_+, \theta_+); \alpha, \theta) \geq \mathcal{U}(x(\alpha, \theta), L(\alpha, \theta); \alpha, \theta), \tag{5}$$

with at least one inequality holding strictly.[14]

It is important to note that our welfare analysis disregards the direct costs of advertising. Even though such costs are potentially empirically relevant, we abstract from them because they are not an essential elelment of the Postmodernist critique.

3 The Equilibrium Effects of Advertising

We distinguish between two forms of advertising. We study economies in which an arbitrary firm producing good i at time t can, by advertising its product either affect the intensity of consumers' preferences for the product, that is increase α_{it}, and/or it can differentiate the product from its substitutes, that is decrease its elasticity of substitution θ_{it} in the consumer's preferences.

Consider first an arbitrary firm, say the firm producing commodity 0 at time 0. Suppose that by advertising the firm can affect the intensity of the consumer's utility associated to the consumption of the commodity it produces (resp. the elasticity of substitution associated to the commodity it produces); i.e., it can increase α_{00} (resp. decrease θ_{00}). Consider such a firm's incentive to advertise if all other firms do not. We show in the Appendix, Proposition A.1-A.2, that, modulo some qualifications, such firms would in fact want to advertise.

We now consider a symmetric equilibrium with advertising in which $\alpha_{i0} = \alpha_+ > 1$ (resp. $\theta_{i0} = \theta_+ < \infty$), for any i, and consumers rationally expect $\alpha_{it} = \alpha_+$ (resp. $\theta_{it} = \theta_+$), for all t. We consider first the case in which advertising affects the intensity of preferences and in turn the case in which it affects the elasticity of substitution across goods.

[14] Dixit and Norman (1978) suggest that such partial ordering can be surprisingly effective for the analysis of the effects of advertising. Stigler-Becker (1977) compellingly argue in favor of the formulation of metapreference orderings which depend on advertising (see also Becker (1996)). The partial ordering just introduced is robust to such formulation in the sense that, in our set up, it generates welfare comparisons which hold for all metapreference orderings increasing in ex-ante and ex-post preferences (Harsanyi (1954) notes that this is not necessarily the case in general.)

3.1 Intensity of Preferences

Let $\alpha_{i0} = \alpha_+ > 1$, for any i. Consumers rationally expect $\alpha_{it} = \alpha_+$ for all t. Then in equilibrium $X_t = \alpha_+^{\frac{\theta}{\theta-1}} x$, $L_t = L$, and x, L solve:

$$\max_{x,L} \left[\left(\alpha_+^{\frac{\theta}{\theta-1}} x \right)^{\frac{\sigma-1}{\sigma}} + (1-L)^{\frac{\sigma-1}{\sigma}} \right]^{\frac{\sigma}{\sigma-1}}$$

subject to

$$px \leq wL + \pi$$

The first order conditions for this problem imply

$$\alpha_+^{\frac{\theta}{\theta-1}\frac{\sigma-1}{\sigma}} x^{-\frac{1}{\sigma}} = (1-L)^{-\frac{1}{\sigma}} \frac{p}{w}$$

Market clearing requires $x = wL$, and hence, substituting,

$$\frac{L}{1-L} = \frac{1}{w} \left(\frac{p}{w} \right)^{-\sigma} \alpha_+^{\frac{\theta(\sigma-1)}{\theta-1}}$$

The effect of advertising is to increase α from 1 to $\alpha_+ > 1$, and hence to increase the labor supply L if $\sigma > 1$ (advertising has no effect on labor supply L if $\sigma = 1$, i.e., if preferences are logarithmic).

Proposition 1 *In a symmetric equilibrium, the representative consumer's labour supply and consumption increase (resp. decreases) if $\sigma > 1$ (resp. $\sigma < 1$) with advertising on the intensity of preferences.*

The result has a simple intuition. First of all, as already argued, in equilibrium, consumption and time devoted to labour are identical in the normalization adopted in this paper, $x = L$. Also, the elasticity of substitution between aggregate consumption X and leisure, $1 - L$, is σ; advertising augments the value of aggregate consumption at the margin, and an high eleastiticity of substitution implies that the consumer is willing to accept to work more to consume more.

The result has an important welfare implication:

Proposition 2 *In a symmetric equilibrium, if $\sigma > 1$ and α_+ not too high, the representative consumer is unequivocally, with respect to ex-ante as well as ex-post preferences, better off with advertising on the intensity of preferences than with no advertising. If instead $\sigma < 1$, or $\sigma > 1$ but α_+ very high, the representative consumer is better off with respect to ex-post preferences, but worse off with respect to ex-ante preferences.*

The intuition is straightforward.[15] First of all, advertising on the intensity of preferences increases welfare with respect to ex-post preferences since

[15] See Dixit and Norman, 1978, for a related argument. The reader will verify that any metapreference ordering increasing in ex-ante and expost preferences will give the same conclusions.

it uniformly increases utility levels (ex-post "consumers are better utility machines", that is they transform commodities into utility levels more efficiently). But, most importantly, if $\sigma > 1$ advertising on the intensity of preferences has competitive effects: it increases welfare with respect to ex-ante preferences because it reduces the distortion towards leisure that is induced by monopolistic competition. Monopoly power has the effect of increasing equilibrium prices above marginal cost ($p > 1$) and, as a consequence, labour supply L is lower than it would be in an efficient equilibrium (which would be achieved at prices $p = 1$). Advertising has the effect of increasing the labour supply, L, and hence it moves the economy's equilibrium allocations towards efficiency even with respect to ex-ante preferences (provided α_+ is not too large, in which case it overcompensates the monopoly distortion, and the labour supply increases too much with respect to ex-ante preferences).

In summary, in the case in which advertising affects the intensity of preferences for consumption, consumption/leisure patterns which support a "work and spend cycle" are possible, but they do require a high elasticity of substitution between consumption and leisure, $\sigma > 1$, which implies an increase in the consumer's welfare. Moreover, if $\sigma > 1$ an increase in hours worked, L, could be simply due to an increase in labour productivity, w, rather than to the effects of advertising.

3.2 Product differentiation

We consider now a symmetric equilibrium with advertising on product differentiation, in which $\theta_{it} = \theta_+ < \theta$. Decreasing the elasticity of substitution θ_{00} has the effect of differentiating commodity 0 at time 0 from all other commodities in the consumer's preferences; in other words, the consumer's compensation required for a unit percentege decrease in the consumption of good 0 at time 0 increases with the elasticity of substitution associated to the good. Let $p_+ = \frac{\theta_+}{\theta_+ - 1}$. In equilibrium then $X_t = x$, $L_t = L$; and x, L solve:

$$\max_{x,L} \left[(x)^{\frac{\sigma-1}{\sigma}} + (1-L)^{\frac{\sigma-1}{\sigma}} \right]^{\frac{\sigma}{\sigma-1}}$$

subject to

$$p_+ x \leq wL + \pi$$

The first order conditions of such a problem, using the market clearing condition $x = wL$, implies that L solves:

$$\frac{L}{1-L} = \frac{1}{w} \left(\frac{p_+}{w} \right)^{-\sigma}$$

In equilibrium, $x = wL$, and advertising directed to the elasticity of substitution has the effect of increasing the price, from p to p_+, and hence to decrease L.

Proposition 3 *In a symmetric equilibrium, the representative consumer's labour supply and consumption decrease with advertising as product differentiation.*

As firms advertise to differentiate the commodities they produce from the others, and all firms do the same, the effect is an overall lower elasticity of substitution, $\theta_+ < \theta$. As a consequence, the consumer's demand is less elastic and firms exploit their monopoly power by increasing the price of consumption goods ($p_+ > p$) and hence profits. Profits however are redistributed to agents, and our formulation of preferences has the property that each firm, by advertising to differentiate its own product from its substitutes, offsets the effect of advertising by other firms on the preferences of consumers. Hence in equilibrium the marginal substitutability of aggregate consumption and leisure remains unaffected. The only effect of advertising as product differentiation is due to the price increase on the margin. As the relative price of consumption increases, the representative consumer's allocation is distorted towards leisure. As we argued in the previous section, the firms' monopoly power, independently of advertising, inefficiently distorts the consumer's allocation towards leisure. With advertising affecting the differentiation of commodities, the consumer's equilibrium allocation is distorted further away from the efficient allocation, and the consumer's welfare unambiguously declines.

Proposition 4 *In a symmetric equilibrium, the representative consumer is unequivocally, with respect to ex-ante as well as ex-post preferences, worse off with advertising as product differentiation than with no advertising.*[16]

In this case the decrease in welfare is in line with the Postmodernist view, but it is the consequence of the decrease in consumption and work, rather than because of a "work and spend" cycle that is associated with the Postmodernist position.

4 The Role of Profits

4.1 Unequal Distribution of Profits

The analysis of the previous section shows that, when advertising targets the differentiation of commodities in the consumer's preferences, it does have negative welfare effects, but through the opposite of a "work and spend cycle." Lower welfare for the consumer is the result of lower consumption and higher leisure in equilibrium. This analysis relies on our assumption regarding the distribution of profits. The representative agent formulation requires that profits be uniformly distributed across the consumers of the economy, and implies the equilibrium condition $x = L$. However, is it possible that in an economy in which consumers are heterogeneous (no agent is representative), in the sense that a large fraction of consumers do not hold stocks and hence receive no profits from firms, advertising has negative welfare effects and the labour supply of the consumers with no stocks increases? We turn now to this question.

[16] Note that in this case ex-ante and ex-post preferences actually coincide. Any metapreference ordering increasing in ex-ante and ex-post preferences will then necessarily give the same conclusions.

Suppose that the economy is populated by two groups of consumers: workers, in measure $1-\lambda$, who do not own stocks to the firms, and capitalists, in measure λ, who do. The representative worker's (resp. capitalist's) labour supply at time t is denoted L_{wt} (resp. L_{ct}). Workers face the budget constraint (3) , with $\pi = 0$. Let $x_{wit}(p_{it}, p_t, E_{wt}; \alpha, \theta)$ define the demand of workers, where E_{wt} is their nominal expenditure. Capitalists face the budget constraint (3). Let $x_{cit}(p_{it}, p_t, E_{ct}; \alpha, \theta)$ denote their demand, where E_{ct} is their nominal expenditure.

Definition 3 *A symmetric monopolistically competitive equilibrium with unequal distribution of profits is composed of allocations* $x_{sit} = x_s$, $X_{st} = (\alpha)^{\frac{\theta-1}{\theta}} x_s$, $L_{st} = L_s$, *for* $s = w, c$, *prices* $p_{it} = p$ *such that:*

$$x_{wit}(p, p, wL_w; \alpha, \theta) = x_w; \quad x_{cit}(p, p, wL_w + \pi; \alpha, \theta) = x_c$$

$$p = p(p, (1-\lambda)wL_w + \lambda\left(wL_c + \pi\right); \alpha, \theta)$$

$$x_w = \frac{wL_w}{p}, \quad x_c = \frac{wL_c + \pi}{p}$$

$$\pi = (p-1)\left(\lambda x_c + (1-\lambda)\, x_w\right)$$

Since workers and capitalists face different budget constraints, we need to distinguish their consumption and labour supply patterns. We concentrate on the effects of advertising as product differentiation on the workers. Advertising then has the effect of increasing the price level from p to p_+. Using the budget constraint of workers, equation (3) with $\pi = 0$, we have $x_w = \frac{wL_w}{p_+}$. By the first order condition of the workers' maximization problem, L_w solves:

$$\frac{L_w}{1 - L_w} = \left(\frac{p_+}{w}\right)^{1-\sigma}$$

The analysis of the first order condition of workers shows:

Proposition 5 *In a symmetric equilibrium with unequal distribution of profits, the labour supply of workers increases for any* $\sigma < 1$ *with advertising as product differentiation; also, in this case, the workers' consumption decreases and their consumption expenditures increase.* [17]

[17] It is easy to see the labour supply of capitalists decreases (or remains unchanged in the extreme case in which they do not work in equilibrium for any $\sigma > 0$). As for the aggregate labour supply: If $L_c > 0$, then advertising directed at the elasticity of substitution (an increase in p_+) has a negative effect on the aggregate labor supply, $L := \lambda L_c + (1-\lambda)L_w$. Of course, if $\sigma < 1$ and λ is small enough, $L_c = 0$. In that case for advertising directed to the elasticity of substitution, an increase in p_+ has the effect of increasing the aggregate labour supply L because L_c remains constant at 0 and L_w increases. (The proof of these statements is reported for completeness in Appendix B)

It follows that the welfare conclusions of the previous section, obtained for an economy with uniformly distributed profits, still hold for workers (but not necessarily for capitalists).[18]

Proposition 6 *In a symmetric equilibrium with unequal distribution of profits, if $\sigma < 1$, the workers are unequivocally, with respect to ex-ante as well as ex-post preferences, worse off with advertising as product differentiation than with no advertising.*

If $\sigma < 1$, workers who do not own stocks will experience a "work and spend cycle" as well as a decrease in welfare when advertising targets the elasticity of substitution across goods (advertising as product differentiation). In our previous specification, workers shared in the higher profits of the firm which were the result of the higher post-advertising prices. Facing the higher prices in the market, they could substitute towards leisure. When they do not own enough stocks to share in the higher profits and their real income is lower, they must compensate by working more and of course spending more to buy the higher-priced goods.

Note also that in this case, if $\sigma < 1$, productivity gains (higher w) tend to decrease the labour supply L. Therefore the effects of advertising and of productivity gains on the labour supply go in opposite direction and hence tend to compensate each other. The real wage rate $\frac{w}{p_+}$ determines the labour supply in equilibrium.[19]

4.2 Free Entry and Expanding Varieties

In the economy studied in the previous sections, producers gain positive profits in equilibrium, and profits are distributed to the agents who own the firm. Furthermore, the set of goods (the number of varieties of goods) produced in the economy is fixed in advance. In the long run, such assumptions may not be tenable, unless there are barriers to the entry of new firms producing (imperfect) substitutes for the goods already produced in the economy. In this section we study an economy in which firms face no barriers to entry, and the production of each good entails a fixed cost c, which can consist of fixed production costs as well as advertising costs. In equilibrium there are no profits, as new firms enter the market and expand the varieties produced until it is no longer profitable to do so. Therefore the number of varieties produced, n, is endogenous for this specification of the economy.

[18] Note also that the analysis of the effect of advertising directed to the intensity of preferences remains valid for economies with unequal distribution of profits (see Appendix B for the proof).

[19] It is straightforward to generalize our results to the case where the distribution of profits is less polarized. Suppose a fraction λ of the population receives a fraction $\delta < \lambda$ of the profits. Then there exists a non-negative cut-off for δ, depending on λ, say $\underline{\delta}(\lambda)$, such that, for $\delta < \underline{\delta}(\lambda)$, the fraction of the population λ is worse-off according to both ex-ante and ex-post preferences, and works and spends more.

In such an economy, the consumption aggregator is:

$$X_t := \left[\int_0^n \alpha_{it} \left(x_{it} \right)^{\frac{\theta_{it}-1}{\theta_{it}}} \, di \right]^{\frac{\int_0^n \theta_{it} di}{\int_0^n \theta_{it} di - 1}}, \quad \theta_{it} > 1 \tag{6}$$

as the agent derives utility for all the n varieties produced.

The budget constraint is similarly modified to:

$$\int_0^1 \int_0^n p_{it} x_{it} \, di \, dt = w \int_0^1 L_t dt + \pi \tag{7}$$

Let $x_{it}(p_{it}, p_t, E_t; \alpha, \theta)$ denote the representative consumer's demand, where E_t denotes the his/her nominal expenditures at each time t.

Definition 4 *A symmetric monopolistically competitive equilibrium with free entry is composed of allocations $x_{it} = x$, $X_t = (\alpha)^{\frac{\theta-1}{\theta}} x$, $L_t = L$, prices $p_{it} = p$ and varieties n such that:*

$$x_{it}(p, p, wL; \alpha, \theta) = x, \;\; p = p(p, wL; \alpha, \theta), \;\; nx = wL - nc$$

and profits $\pi = pnx - wL = 0$.

If the representative consumer has symmetric preferences, $\alpha_{it} = \alpha$, and $\theta_{it} = \theta$, independent of i and t, the economy has a symmetric equilibrium, in which prices, p, consumption and leisure choices, x and L, are constant over time. Each firm chooses $p_{it} = p = \frac{\theta}{\theta - 1}$. Agents face prices p, and hence consume $\frac{E}{p} = nx$ units of goods at each t. Market clearing then requires that the goods consumed, nx, equals the goods produced in the economy, $wL - nc$.

At a symmetric equilibrium, firms will expand varieties until profits are driven down to zero:

$$pnx = wL$$

For such an economy we study the effects of advertising as product differentiation. The first order condition for for the choice of labor in the case of advertising on product differentiation is:

$$\frac{L}{1-L} = \left(\frac{p_+}{w} \right)^{1-\sigma}$$

Proposition 7 *In a symmetric equilibrium with free entry, the representative consumer's labour supply increases for any $\sigma < 1$ with advertising as product differentiation; also, in this case, the representative agent's consumption decreases and his/her consumption expenditures increase.* [20]

Also, obviously, the resources devoted to the production of new varieties nc increase.

[20] A proof that nx decreases and $p_+ nx$ increases with an increase in p_+ when $\sigma < 1$, is provided for completeness in Appendix B.

In this case the welfare analysis is clear: if $\sigma < 1$, an increase in θ reduces the representative consumer's welfare both by worsening the price distortion due to the monopolistic competition, and by increasing n and decreasing consumption nx. Furthermore leisure decreases, agents work more, and consume less.

Proposition 8 *In a symmetric equilibrium with free entry, if $\sigma < 1$, the representative agent is unequivocally, with respect to ex-ante as well as ex-post preferences, worse off with advertising as product differentiation than with no advertising.*

This is the best case for the Postmodernist critique. The results are similar to those derived for the corresponding economy with positive equilibrium profits for the agents with no stock ownership, but in this case apply to everyone. The intuition is clear: in an economy with unequal distribution of profits, the fraction of the agents who receive profits are better off in equilibrium after an increase in advertising directed to product differentiation, and tend to decrease their labour supply as a consequence. In an economy with free entry monopoly rents are "wasted" on the fixed costs in expanding product variety, rather than be redistributed to the agents . As a consequence all agents are worse off and tend to increase their supply of labour, giving rise to the "work and spend cycle."[21]

The two cases considered above, the unequal distribution of profits, and free entry with expanding varieties, seem to lend some support to the Postmodernist view. Under the plausible assumption on preferences that $\sigma < 1$, advertising directed to the elasticity of substitution results in lower leisure, and higher spending on consumption (though not in higher consumption). It also leads to lower welfare, for the agents without stock ownership in in the case of the unequal distribution of profits, and for all agents in the case of free entry. Note again however that even if advertising leads to a rise in the the price of consumption goods (from p to p_+), the secular rise in real wages ($\frac{w}{p}$) would imply a decline in the supply of labor, so that the effect of positive advertising on labor supply would be more than offset.

5 The Commodification of Leisure

We have modelled leisure as a non-market activity (as e.g., sleep); its cost consists only of foregone wages. Such modelling, while it simplifies the analysis, does not allow us to consider an important component of the Postmodernist critique, the "commodification of leisure". Not only, it is argued, is the time

[21] It is easy to show that in a symmetric equilibrium with advertising as product differentiation and free entry, the representative agent's labour supply increases if $\sigma > 1$ (the proof is resported for completeness in Appendix B. The representative agent's consumption in equilibrium and the welfare analysis are in this case ambiguous. An increase in α due to advertising on intensity tends to increase the welfare of the representative consumer by reducing the price distortion due to monopolistic competition. However, it also increases the amount of resources which are devoted to the production of new varieties, nc, as n increases as a consequence of advertising in intensity.

devoted to leisure reduced as a consequence of advertising, but the mere distinction of consumption and leisure is blurred, as our preferences are "manipulated" to choose forms of leisure which are complementary to consumption; "private corporations have dominated the 'leisure market' ...How many of us, if asked to describe an ideal week-end, would choose activities that cost nothing ?" (Schor (1992), p. 162).

To identify the conditions under which the "commodification of leisure" has positive or negative effects on the welfare of the consumers, we will study an extension of our basic economy in which monopolistically competitive firms can, by advertising, extract rents from the consumers' leisure activities, as leisure becomes composed of different market activities.

Such an economy is characterized by the existence of a continuum of leisure activities, indexed by $j \in [0,1]$. The aggregator of leisure which enters in the utility function of agents is

$$L_t := \left(\int_0^1 L_{jt}^{\frac{\omega_{jt}-1}{\omega_{jt}}} dj \right)^{\frac{\int_0^1 \omega_{jt} dj}{\int_0^1 \omega_{jt} dj - 1}}, \quad \omega_{jt} \geq 1, \ \forall j,t \tag{8}$$

where $1 - L_{jt}$ is interpreted as the amount of labour given up to leisure activity j at time t.

Leisure activity j at time t is controlled by a monopolistic firm. The fee charged by the firm per unit of leisure time on activity j at time t is denoted q_{jt}; such fee represents a pure rent, as it is assumed that controlling leisure activity j at time t requires no resources as inputs.

The case in which leisure is merely a non-market activity, analyzed in the previous sections, corresponds to the special case in which all leisure activities are perfect substitutes, $\omega_{jt} = \infty$, for all j,t. Perfect substitability in fact implies that no rents can be extracted by controlling the different leisure activities in the market, which might then as well be interpreted as non-market activities, as the fees imposed by the firms controlling such activities are necessarily zero in equilibrium.

If instead, for instance, $\omega_{jt} = \omega < \infty$, for all j,t, then the demand for market leisure activities is rigid, consumers will devote some time to each one of such activities in equilibrium, and firms with monopoly power controlling the different leisure activities in the market will charge a positive fee for a profit.

We assume that advertising by firm j at time t affects ω_{jt}. We assume that, before advertising, leisure is composed by non-market activities, $\omega_{jt} = \infty$, for all j,t. "Commodification of leisure" in such an economy is then naturally represented by a situation in which advertising makes different leisure activities imperfect substitutes, and hence the demand for each activity inelastic: positive rents, in the form of positive fees q_{jt} arise in equilibrium as a consequence.

The structure of the economy is as in the previous sections, in which leisure is modelled as a non-market activity. We do not repeat here the details of the analysis, and proceed informally by indicating only the necessary modifications and the main results. In particular, the budget constraint for this economy is:

$$\int_0^1 \int_0^1 p_{it} x_{it} di\, dt = \int_0^1 \int_0^1 w L_{jt} dj\, dt - \int_0^1 \int_0^1 q_{jt} \left(1 - L_{jt}\right) dj\, dt + \pi$$

where profits π now include the profits by the firms controlling the leisure activities.

In equilibrium, firms will advertise, and symmetry guarantees that the elasticity of substitution across different leisure activities will be $\omega_{jt} = \omega < \infty$.[22] Also, it is easy to show that monopolistically competitive firms choose $q_{jt} = q = \frac{1}{\omega - 1}$. In equilibrium, $L_{jt} = L$, and L solves:

$$\frac{L}{1-L} = \frac{1}{w} \left(\frac{p_+}{w+q} \right)^{-\sigma} \tag{9}$$

The analogous condition relative to the economy in which leisure is merely a non-market activity (obtained for $q = 0$) is $\frac{L}{1-L} = \frac{1}{w} \left(\frac{p_+}{w}\right)^{-\sigma}$. A positive q offsets the distortionary effects due to monopoly power and advertising. Such distortions in fact increase the price index of consumer goods, as the equilibrium price with advertsing is $p_+ > p > w$ (p is the price without advertsing, and w is the efficient competitive price); but the relative price, $\frac{p_+}{w+q}$, is what matters for the determination of hours worked L and hence of the welfare of the representative consumer. "Commodification of leisure" has then the clear effect of increasing the representative agent's labor supply in an economy in which monopoly and advertising on consumption goods reduce the labour supply from its efficient level. In other words, 'commodification of leisure" increases hours worked, but by doing so it drives the economy towards efficiency, and hence in general increases the representative consumers' welfare unambiguously with respect to ex-ante and ex-post preferences (unless it overcompensates the monopoly and consumption advertising distortions).

We consider next the case in which a (large) fraction of the agents (the "workers") is restricted from owning stocks, i.e., the distribution of stocks is unequal. In this case the relevant first order condition to determine the labour supply of the "workers," L_w, is:

$$\frac{L_w}{1-L_w} = \left(\frac{p_+}{w}\right)^{1-\sigma} + q$$

As a consequence in this case, if $\sigma < 1$, consistent with the Postmodernist critique, the "commodification of leisure" and the "work and spend cycle" are associated to an unambiguous reduction in the welfare of "workers".[23]

A similar analysis follows in the case of the expanding varieties model, where "commodification of leisure" and the "work and spend cycle" are associated to a decrease of welfare both ex-ante and ex-post for all consumers, if $\sigma < 1$.

[22] An argument analogous to the one developed in Proposition A.2 in the Appendix guarantees that firms will have an incentive to advertise, since the pre-advertising benchmark coincides with the case of perfect substitution across leisure activities.

[23] We considered in this section only the case of advertising as differentiation rather than advertising which affects the intensity of preferences for consumption. The first order condition

6 The Postmodernist Critique

The analysis of our general equilibrium economy with advertising identifies a set of conditions (or parametrizations of the model) which may lend some support to what we called the Postmodernist critique. We now summarize our results and briefly discuss the available evidence.

For clarity we distinguished advertising which affects the intensity of the preferences for consumption from advertsing as product differentiation. In the first case, while advertising might generate a "work-spend cycle", this has positive welfare effects for the consumer, even if his/her welfare is evaluated with the preferences the consumer is endowed with before advertising manipulates them. This is because the firms' monopoly power inefficiently distorts the prices of consumption goods and generates too much leisure in equilibrium. Advertising mitigates such effects. The only possibility for a "work and spend cycle" that yields negative welfare effects (with respect to ex-ante preferences only, since welfare increases with respect to ex-post preferences in this case) is when advertising overcompensates the monopoly effects or else wastes too many resources in expanding variety. Even in this case however, advertising generates a "work and spend cycle" only if consumers have high elasticity of substitution between consumption and leisure, that is $\sigma > 1$. Such an elasticity of substitution implies that advertising has the same effect on labor supply as an increase in labour productivity w, and any evidence of an increase in labour L since the 50's could then as well be explained by productivity gains.

A more reasonable parametrization in which the Critique is sustained occurs for the case in which advertising operates as product differentiation. In this case advertising does have unambiguous negative welfare effects. If barriers to entry exist so that positive profits are realized in equilibrium, and consumers hold a uniform share of their wealth in stocks, then no "work and spend cycle" is generated in equilibrium, as consumers actually work less (this is what generates the negative welfare effects of advertising). If on the other hand, a large fraction of consumers do not hold stocks, and hence do not receive any profits, and if the elasticity of substitution between aggregate consumption and leisure is low ($\sigma < 1$), then for the subset of consumers with no stocks, a "work and spend cycle" is indeed generated and is associated with negative welfare effects. Similarly, if free entry drives equilibrium profits to zero through dissipation on fixed costs, and if $\sigma < 1$, a "work and spend cycle" is indeed generated and is associated with negative welfare effects for all consumers.

When advertising is aimed at product differentiation, and either a large fraction of agents do not hold any wealth in stocks, or there is free entry that expands product variety and drives profits to zero, the "commodification of

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which determines the labour supply in this case is:

$$\frac{L}{1-L} = \frac{1}{w}\left(\frac{p_+}{w+q}\right)^{-\sigma} \alpha_+^{\frac{\theta(\sigma-1)}{\theta-1}}$$

Again, commodification has the positive welfare effect of offsetting the monopoly distortion of the price of consumption goods.

leisure" also has unambiguous negative welfare effects.

In summary, in our economy the pattern of consumption, leisure, and consumers' welfare associated with the Postmodernist critique is mostly consistent with *i)* advertising as product differentiation, *ii)* low elasticity of substitution between consumption and leisure, *iii)* either a largely unequal distribution of the fraction of wealth held as stocks across the consumers, or *iv*) free entry and expanding variety driving excess profits to zero.

The evidence on *i-iv)* is in general fair controversial. We attempt a discussion here, as a first step towards a more coherent empirical analysis.
i) Advertising and Product Differentiation. Advertising, including television, newspapers, direct mail, magazines and radio (and now online advertising) is a non-negligible industry mounting to 2-3% of GNP in theUS. Advertising expenditures to sales ratios vary by industry, ranging from 10-20 percent for drugs, perfumes, and cereals, to practically no advertising in homogenous commodities like beet sugar (see Tirole (1990), p.289.

Most of the evidence of the effect of advertising consistently documents that its main role consists of affecting the consumer's perceived difference across physically homogenous goods, rather than the intensity of preferences for consumption goods (see e.g., Arens (1996), and Sutherland, 1993)).
ii) Elasticity of Substitution Between Consumption and Leisure. Much of the microeconomic empirical evidence consistently documents a σ smaller than 1 (see e.g., Pencavel, 1987). Such a low elasticity however may be considered at odds with the implied elasticity of aggregate labour supply. In particular, macroeconomic models are often calibrated with values of σ close to one, as the average weekly hours per capita remained roughly constant in the U.S. since the 50's while real wage rates increased dramatically in the same period; see e.g., the contributions of Kydland, and of Cooley-Prescott, in Cooley (1995); this argument dates back to Lucas-Rapping (1969), and Ghez-Becker(1975).[24] On the other hand McGrattan-Rogerson (1998) document vast compositional shifts of average weekly hours of market work in the U.S., especially along demographic lines. For instance, average weekly hours substantially increased for families of two or more in the U.S. since the 50's, have decreased for males and increased for females. Not much is known about the factors driving such compositional shifts in hours worked. Similarly, a recent extensive review of the evidence by Browning-Hansen-Heckman (1999) concludes that the preference parameter that controls the response of labor supply to real wages is poorly estimated, that it varies significantly with demographics, labor force status, and the level of consumption, and that the evidence is inconsistent with a uniform parameter value that is constant across the population. They note however that, restricting to the male population, it is safe to conclude from the evidence that this parameter, which corresponds to our σ, is slightly less than 1 (changing norms about family structure might have had a significant independent impact on female labor-leisure choices, making it difficult to separately identify the elasticity

[24] Leete Guy-Schor (1992) argue though that average yearly hours of those workers who were employed full time in the whole year have actually increased in the period $1969 - 89$.

of substitution effect).
iii) Distribution of Wealth as Stocks. Carroll (2000) extensively documents that the distribution of stock ownership across the population is very unequal. In particular, the "rich" (defined as the top 1% of households by net worth) hold a disproportionate share of their wealth in stocks. This however is not due to the fact that a large fraction of the population only receive labor income. The evidence suggests that the "rich" hold wealth in stocks mostly because capital market imperfections require largely self-financed entrepreneurial activities, while the rest of the population mostly holds wealth in portfolios concentrated in real estate.

Finally, it should be noticed that the evidence on time diaries collected by Robinson-Godbey (1997) indicates that the "rich," rather than the "poor," have increased their average weekly hours at work; such evidence casts doubt on the explanation of the "work and spend cycle" based on the unequal distribution of stocks.
iv) Free Entry and Profits. The average return on capital in the US seems to be low, around 4% per annum, suggesting that profits are probably low as well (see Basu (1996)). However it is possible that there are variations across industries, and that barriers to entry prevent the dissipation of profits (for example in pharmaceuticals). In the US there are few pure monopolies, and in the absence of regulatory restrictions, multimarket firms are the norm (Tirole (1990), p.351). Bresnahan and Reiss (1991)'s empirical results suggest that in general competitive conduct in a market is established after the entry of a second or third firm, with further entry having little effect. Therefore the hypothesis favorable to the Postmodernist critique, of free entry that dissipates profits on fixed costs, does seem plausible.

In the parametrization most favorable to the critique, the maintained assumptions that advertising operates as product differentiation and as a consequence through an increase in the price level and that $\sigma < 1$ imply that the secular rise of real wages, $\frac{w}{p_+}$, due to productivity increases which more than compensate the increase in the price level, has the effect of decreasing the labor supply. An interpretation of the documented evidence which is in fact consistent with the critique can be obtained by noting that the decrease in leisure is possibly due to the compositional effect of an increase for males and a decrease for females, and that the decrease in leisure for females might have independent socio-economic explanations, as argued above.[25] Following such interpretation, advertising might have had a compensating opposite effect on the increase in time devoted to leisure activities for males since the 50's, possibly accompanied by negative welfare effects.

[25] This interpretation of the empirical evidence contrasts though with the increase in the average yearly hours devoted to work documented by Leete Guy-Schor (1992) for employed males and females; such evidence relies though on a very restrictive definition of occupation which excludes part-time.

7 Myopic Preference Formation

So far we have assumed a great deal of psychological sophistication by the consumers. They anticipate future advertsing and hence they understand that their preference will evolve over time. As a consequence when they choose an allocation at time t, they evaluate their consumption/leisure pattern with ex-post preferences, parametrized by the intensity levels or the elasticities of substitution which will be induced by advertising, that is by α_+, θ_+ in our notation.

However, what if the consumer is not capable of such psychological sophistication ? In this case his/her behavior can be time inconsistent. In other words, the consumer at any moment, say τ, will make plans for consumption and leisure at all times $t > \tau$ which he/she will not want to abide by when time t arrives. Advertising will make present consumption particularly desirable for the consumer, and as a consequence he/she will spend a "large" amount E_τ in consumption goods at time τ, planning to save in later periods (at all times $t > \tau$) to satisfy the budget constraint. At all time $t > \tau$ though, advertising will make again present consumption particularly desirable and the consumer might continue spending and postponing the savings at future dates.[26]

Are consumers really unsophisticated and myopic, in the sense that they do not anticipate future advertising when planning their consumption and leisure patterns? The experimental evidence is rather controversial, but the advertising industry certainly claims being able to understand and exploit various cognitive and psychological responses of consumers; see e.g., Ogilvy (1987); see also Percy (1983) and Sutherland (1993) for direct analyses of such responses to advertising. Some support for time inconsistency is developing in the psychological and economic literature (see Loewenstein and Prelec, 1992, and Loewenstein and Thaler, 1989);

The presumption in this case is that the consumer will be running into debt, until eventually he/she will have considers repaying, and hence reducing consumption and possibly working longer hours. Does such a "work, spend (and debt) cycle" arise in equilibrium from the behavior of a consumer who is not psychologically sophisticated enough to anticipate future advertising ? We turn now to this question. (We restrict ourselves for simplicity to the economy in which leisure is a non-market activity.)

Let x_t^τ, for $t \geq \tau$, denote the choice of the consumption path (over time) from the standpoint of time τ; and, similarly, let L_t^τ, for $t \geq \tau$, denote the choice of the labor supply path (over time) from the standpoint of time τ. The actual consumption and labor supply paths are then x_τ^τ, L_τ^τ, for $0 \leq \tau \leq 1$. Let D_τ be the debt accumulated by the consumer at time τ (it will be determined

[26] Time inconsistency of preferences might arise even if agents rationally anticipate the effects of advertising, if the equilibrium notion involves agents each period with their period preferences playing a game with their future selves (as in Strotz (1956) and Laibson (1996)). Such an equilibrium concept turns out to be substantially more complex to analyze. The analysis of the conditions for time inconsistency of preferences in a model with equilibrium advertising is the object of a companion paper by the same authors.

endogenosuly later). Let $(1-\tau)\pi$ be the uniformly distributed profits at time τ.[27]

At any time τ the consumers know their present preference parameters, $\alpha_{i\tau}^{\tau}$ and $\theta_{i\tau}^{\tau}$, and observe the present prices, $p_{i\tau}^{\tau}$; they also form expectations about their own preference parameters and the prices at any time $t > \tau$, α_{it}^{τ} and θ_{it}^{τ} p_{it}^{τ}.

At any time $\tau \geq 0$, then, the consumer solves the following problem, given D_τ, π, p_{it}^{τ}, $t \geq \tau$:

$$\max_{[x_{it}^{\tau}]_{0\leq i\leq 1}^{\tau\leq t\leq 1},\, [L_t^{\tau}]^{\tau\leq t\leq 1}} \int_{\tau}^{1} \left[\left(X_t^{\tau}\right)^{\frac{\sigma-1}{\sigma}} + \left(1-L_t^{\tau}\right)^{\frac{\sigma-1}{\sigma}} \right]^{\frac{\sigma}{\sigma-1}} dt$$

where

$$X_t^{\tau} := \left[\int_0^1 \alpha_{it}^{\tau} \left(x_{it}\right)^{\frac{\theta_{it}^{\tau}-1}{\theta_{it}^{\tau}}} di \right]^{\frac{\int_0^1 \theta_{it}^{\tau} di}{\int_0^1 \theta_{it}^{\tau} di - 1}},$$

subject to:

$$\int_{\tau}^{1} \int_0^1 p_{it} x_{it}^{\tau}\, di\, dt = \int_{\tau}^{1} wL_t^{\tau} dt + (1-\tau)\pi - p_{\tau}^{\tau} D_\tau$$

As we are assuming that consumers do not anticipate the change in their preference parameters due to advertising in the future, we need consider a weaker form of symmetry:

$$\alpha_{it}^{\tau} = \alpha_t^{\tau} = \begin{cases} \alpha^0 & \text{for } t = \tau \\ \alpha^e & \text{for all } t > \tau \end{cases}, \quad \theta_{it}^{\tau} = \theta_t^{\tau} = \begin{cases} \theta^0 & \text{for } t = \tau \\ \theta^e & \text{for all } t > \tau \end{cases}$$

We let $x_{it}^{\tau}(p_{it}^{\tau}, p_t^{\tau}, E_t^{\tau}; \alpha_t^{\tau}, \theta_t^{\tau})$ denote the consumer's demand, where E_t^{τ} denotes his/her nominal expenditure at t from the standpoint of time τ.

Definition 5 *A symmetric monopolistically competitive equilibrium with myopic preference formation is composed of allocations* $x_{it}^{\tau} = x_t^{\tau} = \begin{cases} x_{\tau}^{\tau} & \text{for } t = \tau \\ x^{\tau} & \text{for all } t > \tau \end{cases}$, $X_t^{\tau} = (\alpha)^{\frac{\theta^{\tau}-1}{\theta^{\tau}}} x^{\tau}$, $L_t^{\tau} = \begin{cases} L_{\tau}^{\tau} & \text{for } t = \tau \\ L^{\tau} & \text{for all } t > \tau \end{cases}$, *and prices* $p_{i\tau}^{\tau} = \begin{cases} p^0 & \text{for } t = \tau \\ p^e & \text{for all } t > \tau \end{cases}$ *such that:*

$$x_{it}^{\tau}(p_t^{\tau}, p_t^{\tau}, wL^{\tau} + (1-\tau)\pi - p_{\tau}^{\tau} D_\tau; \alpha_t^{\tau}, \theta_t^{\tau}) = x_t^{\tau}$$

$$\pi = (p^0 - 1) \int_0^1 x_{\tau}^{\tau} d\tau$$

$$p_t^{\tau} = p(p_t^{\tau}, wL^{\tau} + (1-\tau)\pi - p^0 D_\tau; \alpha_t^{\tau}, \theta_t^{\tau})$$

$$x^{\tau} = (1-\tau)wL^{\tau} - D_\tau$$

$$\frac{d\, D_\tau}{d\, \tau} = x_{\tau}^{\tau} - x^0, \quad \textit{with } D_0 = 0 \tag{10}$$

[27] It will be clear from the analysis which follows that this is not without loss of generality: the distribution of profits over time has an effect on the consumption path in equilibrium, because of the time inconsistency of preferences.

In a symmetric equilibrium at each time $\tau \geq 0$, the consumer's plan will involve a constant consumption allocation relative to any time $t > \tau$, $x_t^\tau = x^\tau$. Similarly, $L_t^\tau = L^\tau$ for any $t > \tau$. Such a consumption plan is budget feasible, and hence, if carried over would repay any outstanding debt,

$$p^0 D_\tau = \int_\tau^1 p_t^\tau x_t^\tau \, dt - \int_\tau^1 w L_t^\tau dt - (1-\tau)\pi$$

However, at any time $\tau \geq 0$, $x_\tau^\tau \neq x^\tau$, because of the postulated myopia of preference formation. The debt accumulated by the consumer up to time τ, D_τ, solves the differential equation (10).

Note also that, at a symmetric equilibrium, actual realized prices, p^0 are constant, but at any time τ they might be different from the future expected prices p^e. In other words, not surprisingly prices inherit the structure of preference parameters.

We will consider the two cases where advertising affects the intensity of preferences and where advertising is directed to the elasticity of substitution between goods.

7.1 Intensity of Preferences

In a symmetric equilibrium with myopic preference formation and advertising on the intensity of preferences,

$$\alpha^0 = \alpha_+ > 1, \;\; \alpha^e = 1$$

$$p^0 = p^e = p = \frac{\theta}{\theta - 1}$$

As a consequence, it is easy to show that $x_\tau^\tau > x^\tau$. In particular, $x_0^0 > x^0$, and hence (by continuity and using $D_0 = 0$) the dynamics of debt satisfies $D_\tau > 0$, for τ sufficiently close to 0.

The first order conditions which determine x^τ include:

$$\frac{x^\tau}{1 - L^\tau} = \left(\frac{p}{w}\right)^{-\sigma}$$

In equilibrium at every τ, $(1-\tau)\, x^\tau = (1-\tau)\, w L^\tau - D_\tau$, and hence the first order condition becomes

$$\frac{(1-\tau)\, w L^\tau - D_\tau}{(1-\tau)\,(1 - L^\tau)} = \left(\frac{p}{w}\right)^{-\sigma}$$

whose solution for L^τ is increasing in D_τ.

Proposition 9 *In a symmetric equilibrium with myopic preferences and advertising on the intensity of preferences the representative consumer accumulates debt; moreover, his/her labour supply increases and his consumption decreases with the accumulated debt.*

The equilibrium behavior of consumers who are not able to anticipate future advertising actually does have some features that resemble a "work and spend (and debt) cycle", if advertising affects the intensity of preferences.

While an analysis of welfare is complex in this case because closed form solutions are lost, it suffices here to notice that the main effect of myopic preference formation when advertising is on the intensity of preferences, is to add a negative component to the representative consumer's welfare due to the lack of smoothness of the equilibrium consumption/leisure pattern.

7.2 Product Differentiation

In a symmetric equilibrium with myopic preference formation and advertising as product differentiation, at any time $\tau \geq 0$,

$$\theta^0 = \theta_+, \;\; \theta^e = \theta < \theta_+$$

As for price expectations, we distinguish two cases. In the first, which we call *Rational Expectations Prices*, the representative consumer faces prices $p^0 = p_+ = \frac{\theta_+}{\theta_+ - 1}$, and also rationally expects prices $p^e = p_+$, for all future periods. In the second case, which we call *Consistent Prices*, consumers also face prices $p^0 = p_+ = \frac{\theta_+}{\theta_+ - 1}$, but they expect prices $p^e = p = \frac{\theta}{\theta - 1}$ (as they expect $\theta^e = \theta$), for all future periods. No compelling methodological argument seems to guide the choice of the two price regimes.

Rational Expectations Prices. As we already argued, our formulation of preferences has the property that firms, each by advertising to differentiate its own product from its substitutes, offsets the effect of other firms on the preferences of consumers, and hence in equilibrium do not affect the marginal substitutability of aggregate consumption and leisure. The only effect of advertising as product differentiation comes from the price increase. The rational expectation assumption on prices then implies that the myopic preference formation mechanism is immaterial in this case for the equilibrium.

Proposition 10 *The representative consumer's consumption and labour supply at a symmetric equilibrium with myopic preference formation, advertising as product differentiation and rational expectation prices coincide with those of a a symmetric equilibrium with advertising as product differentiaition.*

Consistent Prices. The first order condition of the maximization problem with respect to the the current and future consumption implies:

$$x_\tau^\tau = \delta^\gamma x^\tau$$

with $\delta = \frac{\theta_+ - 1}{\theta_+} \frac{\theta}{\theta - 1} < 1$: the consumer plans present consumption to be lower than future consumption. As a consequence, $x_\tau^\tau < x^\tau$ and $D_\tau \leq 0$. The labour supply analysis implies, in this case, that L^τ actually decreases as a consequence of advertising.

Proposition 11 *In a symmetric equilibrium with myopic preferences, advertising as product differentiation and consistency of prices, the representative consumer accumulates savings; moreover, his/her labour supply decreases and his consumption increases with the accumulated savings.*

The intuition is straightforward: advertising at time t has the effect of decreasing the consumer's elasticity of substitution associated with time t commodities to $\theta_+ < \theta$, and hence it makes the consumer's demand for time t relatively inelastic with respect to price. As a consequence firms exploit their monopoly power by increasing their price to $p_+ > p$. Since advertising will occur in the future as well, prices will also be high in the future. The consumer however does not anticipate future advertising, nor higher future prices, and as a consequence at any time t, expecting lower prices in the future, chooses to postpone consumption. Instead of unanticipated debt, the consumer ends up with unanticipated savings. At some time t his/her accumulated wealth will be excessive and the consumer will start spending on consumption goods and reducing time devoted to work.

In summary the "work and spend (and debt) cycle" might correspond to the equilibrium outcome with myopic preference formation only when advertising affects the intensity of the consumers' preferences, and not when advertising targets the the elasticity of substitution between the goods. This contrasts with our results for rational agents, where the Postmodernist critique is mostly supported when, among other conditions, advertising has the more plausible effect of differentiating commodities from their substitutes.

8 Conclusions

We identified a Postmodernist critique to the organization of society. Such critique identifies the negative welfare effects for consumers deriving from the interaction of monopoly power and advertising. Advertising takes the form of the "manipulation of preferences," that lead to behavior by consumers that can be characterized as "work and spend cycles" and the "commodification of leisure."

We studied the interaction of monopoly power and advertising in a simple general equilibrium model, constructed to satisfy the basic postulates of the critique (especially in terms of the effects of advertising on consumers' preferences).

We have shed light on which model specifications and which parameter configurations give rise to equilibria which can be thought of as supporting the Postmodernist critique.

While we have discussed the available empirical evidence pertaining to the key aspects of our parametrization which are mostly consistent with such equilibria, a formal empirical analysis is necessary before a stand can be taken on the relevance of the critique. Our analysis might provide a framework for such

analysis. In particular, it would be important to assess more precisely the relevance of the component of advertising which is stressed in the critique, the "manipulation of preferences", relatively to e.g., the informational component. Also, the relative empirical relevance of the distortion possibly caused by advertising and identified by the Postmodernist critique, in the face of the many distortions and frictions present in the U.S. economies (from incompleteness of financial markets and borrowing constraints, to asymmetric information and distortionary taxation schemes) is far from clear.

Finally, our whole analysis has been conducted under the Postmodernist postulate that advertising directly affects the consumers preferences. The cognitive and psychological effects of advertising are not yet well understood, and the opposite view (associated to Becker), that the level of advertising is determined by supply and demand of rational consumers and firms needs to be better evaluated possibly at the experimental level.

Appendix A

Proposition A. 1 *Advertising on the intensity of preferences occurs in equilibrium.*

Proof. Firm 0's demand, given prices p and expenditures at time 0, E_0, as a function of α_{00}, is:[28]

$$x_{00}(p_0, p, E_0, \alpha_{00}, \theta) = \left(\frac{p_{00}}{p\ \alpha_{00}}\right)^{-\theta} \frac{E_0}{p}$$

Profits of the firm producing commodity 0 in 0 then increase with α_{00} (hence with advertising), since, as all other firms do not advertise in the thought experiment, the demand the firm faces for its own product increases with α_{00} for given prices. Facing such demand, given other firms prices p, firm 0 at time 0 would charge a price $p_{00} = \frac{\theta}{\theta - 1} = p$, independent of α_{00}. Since the firm has been chosen arbitrarily, in a symmetric Nash equilibrium, once costs are explicitely modelled, all firms will advertise at symmetric levels. ■

Proposition A. 2 *Advertising as product differentiation occurs in equilibrium if, before advertising, the elasticity of substitution across goods is large enough.*

Proof. Firm 0's demand, given p and E_0, as a function of θ_{00},[29] is:

$$x_{00}(p_0, p, 1, \theta_{00}) = \left(\frac{\theta_{00}}{\theta_{00} - 1}\frac{\theta - 1}{\theta}\right)^{-\theta_{00}} \left(\frac{p_{00}}{p}\right)^{-\theta_{00}} \frac{E_0}{p}^{\frac{\theta_0}{\theta}}$$

The price is:

$$p_{00} = \frac{\theta_{00}}{\theta_{00} - 1} = p$$

Does firm 0 at time 0 have an incentive to advertise and hence decrease θ_{00} at a cost?

---

[28] I.e., the solution of

$$\max_{[x_{00}]} \left[\int_0^1 \alpha_{i0}(x_{i0})^{\frac{\theta-1}{\theta}}\ di\right]^{\frac{\theta}{\theta-1}} \tag{11}$$

subject to:

$$\int_0^1 p_{i0}x_{i0}\ di = E_0 \tag{12}$$

with $\alpha_{i0} = 1$, $p_{i0} = p$, for all $i > 0$.

[29] I.e., the solution of

$$\max_{[x_{00}]} \left[\int_0^1 (x_{i0})^{\frac{\theta_{i0}-1}{\theta_{i0}}}\ di\right]^{\frac{\theta}{\theta-1}} \tag{13}$$

subject to:

$$\int_0^1 p_{i0}x_{i0}\ di = E_0 \tag{14}$$

with $\theta_{i0} = \theta$, $p_{i0} = p$, for all $i > 0$.

The expression for the profits of the firm is:

$$\pi_{00} := (p_{00} - 1) \left(\frac{\theta_{00}}{\theta_{00} - 1} \frac{\theta - 1}{\theta} \right)^{-\theta_{00}} \left(\frac{p_{00}}{p} \right)^{-\theta_{00}} x^{\frac{\theta_0}{\theta}}$$

and can be written as:[30]

$$\pi_{00} = (\theta_{00} - 1)^{2\theta_{00}-1} \left(\theta_{00} \frac{\theta - 1}{\theta} \right)^{-2\theta_{00}} x^{\frac{\theta_0}{\theta}}$$

It is easy to show then that

$$\lim_{\theta_{00}=\theta \to \infty} \pi_{00} = 0$$

$$\lim_{\theta \to \infty} \pi_{00} = (\theta_{00} - 1)^{2\theta_{00}-1} \left(\frac{1}{\theta_{00}} \right)^{2\theta_{00}} > 0$$

In other words, positive profits are made by the firm which produces good 0 at time 0 and advertises to reduce the elasticity of substitution associated with its own good (to differentiate its own good), if the good is ex-ante an homogeneous good, $\theta = \infty$. By continuity, advertising in the form of a $\theta_{00} < \theta$ occurs if θ, the elasticity of substitution prior to advertising, is large enough, i.e., if the elasticity of substitution across goods is very high. ■

[30] It can be shown that local analysis around θ is in general ambiguous.

Appendix B

Proof of the statement in footnote 17. The first order conditions of the problem of capitalists is:

$$\frac{wL_c + \frac{1-\lambda}{\lambda}(p_+ - 1)\frac{wL_w}{p_+}}{1 - L_c} \geq \left(\frac{p_+}{w}\right)^{-\sigma} \quad (\text{with } = \text{ if } L_c > 0) \tag{15}$$

The statement regarding the labour supply of capitalists now follows.

From the first order conditions of the capitalists and the workers,

$$L_w = \frac{\left(\frac{p_+}{w}\right)^{1-\sigma}}{1 + \left(\frac{p_+}{w}\right)^{1-\sigma}},$$

$$L_c = \frac{1}{w}\frac{p_+^{-\sigma}}{1 + p_+^{-\sigma}} - \frac{1-\lambda}{\lambda}\frac{p_+ - 1}{p_+}L_w\frac{1}{1 + p_+^{-\sigma}}$$

and

$$L = \frac{1}{w}\left[(1-\lambda)\frac{p_+^{1-\sigma}}{p_+ + p_+^{1-\sigma}} + \lambda\frac{p_+^{-\sigma}}{1 + p_+^{-\sigma}}\right]$$

If λ is close to 1 (most consumers are capitalists), the second term dominates and L decreases with p_+ and hence with advertising on the elasticity of substitution. If instead λ is close to 0, the change in L is driven by the first term, hence by $\frac{\partial \frac{p_+^{1-\sigma}}{p_+ + p_+^{1-\sigma}}}{\partial p_+} = \frac{(1-\sigma)p_+^{1-\sigma} - p_+^{1-\sigma}}{D} < 0$, where D is the positive denominator ■

Proof of the statement in footnote 18. The first order conditions which determine the labour supply are:

$$\frac{L_w}{1 - L_w} = \left(\frac{p}{w}\right)^{1-\sigma} \alpha_+^{\frac{\theta(\sigma-1)}{\theta-1}}$$

$$\frac{wL_c + \frac{1-\lambda}{\lambda}(p-1)\frac{wL_w}{p}}{1 - L_c} \geq \left(\frac{p}{w}\right)^{-\sigma} \alpha_+^{\frac{\theta(\sigma-1)}{\theta-1}} \quad (\text{with } = \text{ if } L_c > 0)$$

As a consequence, for $\sigma > 1$, workers increase their labour supply, L_w, since $\alpha_+^{\frac{\theta(\sigma-1)}{\theta-1}} > 1$. As for capitalists, if λ is small enough, they do decrease their labour supply, L_c. The aggregate labour supply L is (with $w = 1$):

$$L = \frac{1}{w}\left[(1-\lambda)\frac{p_+^{1-\sigma}\beta}{p_+ + p_+^{1-\sigma}\beta} + \lambda\frac{p_+^{-\sigma}\beta}{1 + p_+^{-\sigma}\beta}\right] \tag{16}$$

with $\beta = \alpha_+^{\frac{\theta(\sigma-1)}{\theta-1}}$. It is easy to show that both terms in (16) increase with β. Also, if λ is small enough that $L_c = 0$, L still increases, since L_w does. The welfare effects however are positive with respect to both ex-ante and ex-post

preferences, both for workers and capitalists. ■

Proof of the statement in footnote 19. The first order condition can be written as

$$\frac{\frac{wL}{p_+}}{1-L} = \left(\frac{p_+}{w}\right)^{-\sigma}$$

and hence as

$$\frac{wL}{p_+} = \frac{\frac{p_+}{w}}{1+\frac{p_+}{w}}$$

But since $nx = wL - nc = \frac{wL}{p_+}$, the first order condition as written above implies directly the result. ■

Proof of the statement in footnote 20. The first order condition in this case is:

$$\frac{L}{1-L} = \left(\frac{p}{w}\right)^{1-\sigma} \alpha^{\frac{\theta}{\theta-1}(\sigma-1)}$$

and the statement follows. ■

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