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# Paradoxical effects of drug policy in a model with imperfect competition and switching costs<sup>☆</sup>

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## Abstract

This paper presents a stylized model of the market for hard drugs. We assume that there is imperfect competition, that the demand side is dominated by addicts, and that the presence of switching costs leads to consumer loyalty. Drug policies affect the values of the parameters of the model, including the degree of consumer loyalty and the static price elasticity of demand. Taking into account these effects, it is shown that tough policies may lead to an increase in the marketing activities by suppliers and cause a long-run increase in the number of addicts and total consumption. © 2002 Elsevier Science B.V. All rights reserved.

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*Keywords:* Drugs; Addiction; Consumer loyalty; Switching costs

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## 1. Introduction

According to Johnston et al. (1992), the ‘War on Drugs’ in the US in the 1980s coincided with the increased availability of both heroin and cocaine; in Europe, likewise, Prinz (1997) reports an increase in the perceived accessibility of drugs. These findings do not prove that policy was ineffectual, or perhaps even counterproductive, since the availability and use of drugs might have been even higher in the absence of a war on drugs. But other studies also cast doubt on the effectiveness of traditional policies. A famous example is alcohol prohibition in the 1920s and early 1930s, which, according to Miron and Zwiebel (1991), appears to have had only modest effects on alcohol consumption.

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<sup>☆</sup> An early version of this paper was presented in seminars at the Copenhagen Business School and the University of Aarhus, Denmark.

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In this paper we ask whether there are theoretical reasons to doubt the effectiveness of a war on drugs. We do this in the context of a stylized model of the market for *hard* drugs like heroin and cocaine; important aspects of our argument do not apply to soft drugs like marijuana.<sup>1</sup> The model focuses on three key characteristics of the drug market: addiction, imperfect competition, and the presence of switching costs and consumer loyalty. We assume that (high-level) suppliers of hard drugs maximise profits and that they have two choice variables, price and marketing effort. The optimal value of these choice variables depends on the constraints faced by the suppliers, and these constraints will be influenced by drug policy.

Drug policies affect market structure in a number of ways. On the supply side, tough policies may raise the effective unit costs of drugs, impede entry into the industry and reduce the number of suppliers; on the demand side, increased consumer loyalty, more inelastic perceived demand curves, and a downward shift in the demand curves are among the likely effects. Some of these changes tend to increase drug use in the long run: an increase in switching costs and consumer loyalty, for instance, will raise the incentives for suppliers to engage in ‘marketing’ activities aimed at recruiting new addicts. Other effects of tough policies favour a reduction in drug consumption. The net effect is ambiguous but a paradoxical outcome is theoretically possible: a tough policy may in some circumstances be counterproductive. The conditions for this outcome are not, we believe, implausible. But even if, on balance, tough policies do reduce drug use, the existence of partially offsetting effects will weaken the effectiveness of these policies. This weakening should be seen in the context of serious- and well-documented—social and economic side-effects in both consumer and producer countries.<sup>2</sup>

Section 2 describes the empirical evidence that motivates the model. This section also discusses the effects of drug policy on market characteristics, and outlines the reasons why tough drug policies may have paradoxical effects. The formal model is presented and analyzed in Section 3. Section 4 examines the comparative statics of the model, focusing on the relevant, policy-induced changes in the parameters. The concluding Section 4 briefly considers the implications for alternative drug policies.

## 2. Market characteristics and drug policy

### 2.1. Stylized facts

Hard drugs are used by addicts as well as by non-addicted, casual users. Although this distinction can be blurred (some addicts quit, for instance, and casual users can become addicted), the addictive nature of hard drugs has important implications.

As pointed out by Akerlof (1991), drug addicts are implausible candidates for far-sighted rational planning. Since non-addicts rarely expect to become addicts themselves, they too

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<sup>1</sup> Switching costs, for instance, will be much lower and addicts do not dominate the demand side in the case of soft drugs.

<sup>2</sup> Increased violence and crime, a negative impact on health, increased corruption, and political instability are among the consequences of tough policies described by, e.g. United Nations (1995), Rasmussen and Benson (1994), Benson et al. (1992), Niskanen (1992), Miron and Zwiebel (1995).

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