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## PRODUCT MARKET REGULATION AND LABOR MARKET OUTCOMES: HOW CAN DEREGULATION CREATE JOBS?

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## PRODUCT MARKET REGULATION AND LABOR MARKET OUTCOMES: HOW CAN DEREGULATION CREATE JOBS?

### Abstract

This paper reports on ongoing research on the interactions between product regulation and labor market outcomes. In particular, I summarize work on the employment effects of shop-closing regulation in the retail and other related sectors. Evidence on employment in the retail sector from Germany, the Netherlands and the United States suggests that the regulatory regime might play an important role; I argue that a nonnegligible component of the recent Dutch employment miracle could be attributed to product market deregulation, in particular liberalization of shop-closing laws effected in the mid-1990s. I sketch a model, based on Burda and Weil (1999), which can rationalize potential public interest aspects of such regulations as well as identify their employment and output costs.

Keywords: Product market regulation, retail trade, employment

JEL Classification: D62, J22, L81

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"Wir brauchen einen gemeinsamen freien Tag." Margret Mönig-Raane, chairperson of the labor union HBV (Handel, Banken und Versicherungen) quoted in *Tagesspiegel*, 14 August 1999.

"...Das schließt mit ein, dass der Sonntag ein Tag der Arbeitsruhe ist, an dem Menschen gemeinsam das tun können, was sie dürfen und wollen, und nicht, was sie tun müssen." Archbishop Huber, quoted in *Tagesspiegel*, 7 August 1999.<sup>1</sup>

## **I. Serve or Be Served: The Dilemma of the Tertiary Economy**

Employment in service sectors now represent more than 60% of total employment in most OECD economies, and more than 68% in the United States, where it accounts for most net employment growth since 1970.<sup>2</sup> As the pace of post-industrialization quickens, it is natural to expect growth in service employment to continue, as foreseen by Colin Clark, Jean Forastié, Simon Kuznets, and William Baumol, among others. Moreover, it is tempting to attribute the poor unemployment record of Europe over the past two decades to slow employment growth in services, at least compared with the United States. The claim is often made that poor growth in services employment might be due to product market regulation, and deregulation is frequently mentioned as one potential remedy for the European unemployment problem.<sup>3</sup>

In a service economy, one individual *serves* another. This means that in the process of providing services, at least one (and possibly both) of the two parties involved are working, i.e. *not* enjoying leisure. Thus even if one accepts that the service economy is the future of capitalism and an important part of any solution to Europe's unemployment problem, it is important to note that an expansion of employment in services comes at the cost of increased fragmentation or disconnection of individual's social free time. This is especially true of *consumer* services: if I am a waiter, then I must work while you are enjoying your meal in the restaurant. If I am a banker, I will work while advising you how to manage your money. If I

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<sup>1</sup> Mönig-Raane: "We need a common day off." Huber: "...That also includes the fact that Sunday is a day of rest from work, when people can do those things that they can and would like to do, and not what they must do" (author's translation).

<sup>2</sup> Of a total of 55 million jobs created since 1970, roughly 19 of 20 have been created in the service sectors, and 90% (18 of 20) in private services (US Department of Labor, Bureau of Labor Statistics).

am giving you tennis lessons, I am working while you are having fun. It is not an accident that many if not most of these services involve leisure. In the US, a quarter of all employment is in retail and wholesale trade alone, a sector involved in *selling* in the strict sense and one which Americans generally associate with leisure ("shop 'til you drop"). If one includes more restaurants and hotels, and personal services more generally, the fraction rises to well above 40%. It should be clear that an expansion of employment in service activities is necessarily associated with an increase in the *disconnectedness* of society, meaning a decrease in the coordination of its members' private activities. Harvard political scientist Robert Putnam has invoked the image of "bowling alone" to describe what he sees as a secular decline in communal and social activities conducted jointly with others.<sup>4</sup>

Seen in this light, the regulation of service-providing sectors could be regarded as an attempt to coordinate leisure and internalizing positive externalities which arise from resting or enjoying free time collectively. The benefit of "social cohesion" must be traded off against potential employment and output losses resulting from such regulations. This paper reviews and discusses these issues, drawing on joint work with Phillipe Weil on the effects of retail regulation.<sup>5</sup> I found it appropriate to present an overview of this research at the occasion of honoring the Ifo-Institute, for which the economic effects of shop closing has been a favorite *Steckenpferd* (hobby horse) for many years now. My presentation is organized as follows: in the next section I discuss the regulation of trading hours and some cursory evidence for its employment effects. In Section III I present an example of a model developed in joint work with Phillipe Weil which poses the problem of social coordination leisure and shows how the state may try to solve it. Section IV offers some policy conclusions shows how the examples of US, the Germany and Holland support the interpretation offered in the model, and Section

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<sup>3</sup> See McKinsey Global Institute (1997), OECD (1997), Gersbach (1997, 1999), Nickell (1997).

<sup>4</sup> See Putnam (1995). His controversial argument is far-reaching, as it is inferred that the social infrastructure (social capital) has suffered as a result (participation in civic activities have declined). For my purposes it suffices to note that the ability to participate in such activities is sharply limited when job schedules become

V concludes.

## **II. An Example of Product Market Regulation: Restrictions of Retail Trading Hours**

### **II.1. Common Justifications for Retail Regulation**

The "serve-or-be-served" dilemma described in the last section applies *a fortiori* to the retail sector. If retailing of goods were only possible while factories were operating, the customer base would be limited indeed: workers' dependents, the unemployed, and retirees. Shopworkers themselves could not shop unless they were allowed to do so on the job. As in other consumer service sectors, retail activity implies an inherent non-overlap in work schedules. Perhaps due to its size, the retail sector seems to have an important "signaling" function in modern OECD economies and has often been singled out for regulation of hours of operation. Besides, much if not most final output must pass through the retail sector before it is consumed.

State regulation of retail trade date back to the Middle Ages and earlier, with origins relating to Christian, Jewish, and Moslem as well as Roman pagan traditions.<sup>6</sup> In some industrial countries, contemporary regulation of trading activity also extends to weekday opening hours. The example of Germany is instructive, where retail regulation is among the strictest in the civilized world. Until November 1996, stores were required to close by 6:30 pm on weekdays, and by 1:30 pm on Saturday with the exception of the first Saturday each month and the Advent season), with opening forbidden on Sundays. In November 1996 the law was marginally liberalized, extending opening hours to 8:00 pm every working day, and 4:00 pm on Saturdays; almost without exception, stores are closed on Sundays.

The legislative history of retail hours regulation hints that an important original motivation was the regulation of the work week and curbing of excessive hours, particularly

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difficult to coordinate.

<sup>5</sup> Burda and Weil (1999).

<sup>6</sup> For one historical survey of Sunday trading regulation, see Laband and Heinbuch (1987).

in manufacturing.<sup>7</sup> Arguments most often invoked in the public policy debate are (see for example, Stehn 1987): 1) the regulation of working hours in retail; 2) the prevention of unfair competition between different types of retail operations and the preservation of existing market structures; 3) control of retail costs (prevention of destructive competition) and indirectly of retail prices; and 4) economizing on information and search costs by harmonizing hours.

Many of these arguments not particularly well-grounded in economic reasoning. First, rudimentary economic principles teaches that it is better to regulate the workday or workweek directly rather than via the product market. Indeed, the average workweek has become increasingly unrelated to shop opening hours; as the average workweek has declined secularly for decades in most OECD countries, so has the workweek in retail as a fraction of average weekly store opening hours (Stehn 1987). With the possible exception of the self-employed and their families, the workweek now represents less than 2/3 of average shop opening time in the OECD of 60 hours per week or more. Second, the competition policy argument that larger department stores drive smaller shops out of business in an unregulated environment is not airtight. Smaller shops command more flexibility and have lower overheads; at the same time, they require greater labor input from their owners and may suffer if fixed travel costs to the store are high. In any case, the increase in product variety that has characterized the last decades of the 20th century has made shopping time increasingly valuable, so that forced reductions in total available shopping time tend to increase advantages of "one-stop" outlets in economizing on fixed shopping costs.

The most common argument against liberalization of existing regulations is linked to cost control and appeals to "Stützel's Paradox," which asserts that the length of the shopping period can have only second-order effects on the real demand for goods. This "lump of

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<sup>7</sup> For example, the first shop closing law in Germany of import was "Bismarckian": the *Ladenschlußgesetz von 1891* prohibited work in the retail sector (apothecaries excepted) on holidays (1st day of Christmas, Easter Sunday and Pentecost) and only up to 5 hours on Sundays. Localities were allowed to restrict trade even more on

purchasing power" argument against deregulation is a favorite among labor unionists and small store owners. Wolfgang Stützel argued that consumers would tend to react to longer shopping hours by redistributing spending patterns without changing volumes.<sup>8</sup> While not entirely implausible, this hypothesis ignores the value-added contribution of retailing which differentiates goods sold in stores from those produced in factories. Insofar as richer economies are willing to pay more for this nontradable value-added (i.e. the Belassa-Samuelson effect), growth in retail value added is a natural consequence of sustained economic development, and could serve as an engine of employment growth as well. That the relative price of retailed goods can deviate from the price of output is an important aspect of the model presented in the next section.

An alternative, more cynical interpretation of retail regulation is the preservation of quasi-rents to those profiting from a regulated environment. From an initial position of restricted shop opening hours, deregulation will redistribute these rents in several ways. First, to the extent that some consumers wish to shop at nonstandard hours, some stores will stay open, requiring more flexible personnel at higher wage rates, implying a decrease in margins and profits which might be compensated by an increase in prices, but may also be accompanied by losses and exit. Since prices are generally not varied across the day, the emergence of higher price outlets is likely. The overall welfare loss will be related to fixed costs and returns to scale. Second, price changes resulting from deregulation may have distributional effects. With increased market power and higher marginal costs, they will also charge higher prices, which, given the current practice of charging uniform prices over the day, all consumers would pay.<sup>9</sup> Third, current employees may not desire to adopt flexible work schedules which are less synchronized with other workers. Demand for part-time

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Sundays.

<sup>8</sup> See Stützel (1958), also Batzer (1984).

<sup>9</sup> It is often objected that stores could solve this problem by charging prices which depend on the time of the day. While this may be achieved through subtle means (giving coupons, which are generally collected by retirees and the poor who are likely to shop during normal hours) there appears to be a societal resistance to explicit intertemporal price discrimination within the day or week.

workers will also increase, who are generally nonunionized and whose presence will tend to reduce union bargaining power, and evidence from the United States supports this interpretation.

## **II.2. Employment Effects of Deregulation? Cross-Country Evidence from Germany, the Netherlands and the US**

In the context of European unemployment, one is also concerned with the macroeconomic effects of opening time regulation, especially on the quantity and the quality of employment. Thus while overall employment (measured in persons) might rise, total hours may rise by less, if at all. In Sweden, which abolished retail shopping hours regulation completely in 1970, opening hours in retail actually declined (Stehn 1987). The impact of a relaxation of trading restrictions must also be expanded to include its potential for creating part-time, flexible employment for large numbers of people. In the US and the United Kingdom, where shop closing regulations are less severe, employment in the trade sector represented respectively 22% (1993) and 20% (1990) of total employment, compared with more highly regulated Germany (14% in 1993) and Belgium (17% in 1992).<sup>10</sup> At the same time this higher employment may come at the cost of lower wages, as heightened competition bids away shared rents. Indeed average annual compensation in the US and the United Kingdom is only 75% (1991) and 64% (1987) of the national average, compared with 87% (1993) and 93% (1991) in Germany and Belgium, respectively.

Casual observers of recent developments have marvelled at the precipitous declines in unemployment in the United Kingdom and especially the Netherlands in recent years. Less noticed is the role that services, and the retail sector in particular, have played in this development. Consider that wholesale and retail employment in Holland grew by 63.1% between 1985 and 1996 or by 4.6% per annum; in the recent period 1995-1997 it grew by 7%. In Germany retail employment grew by only 26.3% or 2.1% per annum; in the last three years

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<sup>10</sup> Source: OECD Labor Force Statistics. The higher relative position of retail and wholesale trade wages in the

it shrank by 1.5%! A similar picture emerges in the banking and financial service sectors. This conspicuous difference cannot be attributed to the overall GDP growth in the two countries, which were rather close (2.7% in Holland versus 2.3% in Germany). Table 1 further documents this development in terms of total employment and evolution since 1985, showing a shift in the structure of retail employment of almost three percentage points over the period in the Netherlands, moving it towards United States in the sectoral distribution of jobs.<sup>11</sup> These data are also inconsistent with claims that Germany has "caught up" with the United States as has been maintained by one prominent German research institute.<sup>12</sup>

**Table 1.**  
**A Dutch Miracle? Evolution of Service Employment as % of Total Employment**  
**and % of Total Resident Population (in parentheses), 1985-1995**

|  | <i>Germany</i> |                | <i>Netherlands</i> |                | <i>USA</i>     |                |
|--|----------------|----------------|--------------------|----------------|----------------|----------------|
|  | <i>1985</i>    | <i>1995</i>    | <i>1985</i>        | <i>1995</i>    | <i>1985</i>    | <i>1995</i>    |
| Wholesale and retail trade, restaurants and hotels       | 15.9<br>(6.9)  | 16.9<br>(7.5)  | 16.8<br>(6.0)      | 19.6<br>(8.7)  | 21.8<br>(10.0) | 21.8<br>(10.5) |
| Transport, storage and communication                     | 5.8<br>(2.5)   | 5.8<br>(2.6)   | 6.3<br>(2.2)       | 5.9<br>(2.6)   | 5.4<br>(2.4)   | 5.4<br>(2.6)   |
| Financing, insurance, real estate, and business services | 7.1<br>(3.1)   | 9.9<br>(4.4)   | 10.4<br>(3.7)      | 12.9<br>(5.8)  | 10.1<br>(4.6)  | 10.8<br>(5.2)  |
| Community, social and personal services                  | 24.6<br>(10.7) | 26.9<br>(12.0) | 32.2<br>(11.5)     | 31.1<br>(13.9) | 30.5<br>(13.9) | 34.3<br>(16.5) |
| <b>TOTAL</b>   | 53.3<br>(23.2) | 59.6<br>(26.5) | 65.7<br>(23.5)     | 69.6<br>(31.0) | 67.8<br>(30.9) | 72.3<br>(34.7) |

*Source:* Statistical Compendium of the OECD 1998, Author's calculations.

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overall distribution suggests that this is not merely due to wage compression in the latter two countries.

<sup>11</sup> The employment data belie the claim that the Dutch miracle is due to early retirements and phony disability pensions or simply due to "free riding" from German unification (aggregate demand). The drop in unemployment was accompanied by a rapid increase in service employment, some but by no means all, in the form of part-time work. In Holland, 68% of all women work in part-time positions; in Germany the percentage is only 35%.

<sup>12</sup> See DIW (1997), which argues that there is no lack of individuals involved in service-generating when examined on an *occupational* as opposed to a sectoral basis. While interesting, this finding fails to explain the overall deficit of service occupations in Germany when measured on a *per capita basis*; furthermore, it is questionable whether the traditional industrial sectors represent the most efficient mechanism for efficient supply of services. As is well-known, German enterprises prefer in-house provision of legal, marketing, business accounting, and information services, not to mention building maintenance, security, dining and family facilities, etc. A marked lack of outsourcing of services is one key difference with the Anglo-Saxon economies and potentially the barrier to the creation of a dynamic and competitive supply of services.

### III. Modeling the Desynchronized Provision of Services

The following general equilibrium model is a variant of Burda and Weil (1999), which was originally developed for studying the effects of retail trade regulation, but can be applied to all activities in which some interpersonal desynchronization of leisure is implied. Because the regulation of product markets applies in a large measure to services – think of banking and insurance regulations, restaurant and bar licensing restrictions, as well as strictures on Sunday activity in general – this model is readily generalized and thus applies to a broad component of economic activity.

#### III.1. Households

Consider an economy comprised of two representative households. The first, the M-family, produces a single, nondurable composite good  $Y$ , while the R-family is in the business of retailing it to the entire economy. Preferences of either family are given by the utility function  $U(C, l_s, l_c)$ , where  $C$  is consumption of the retailed good,  $l$  is leisure, and the subscripts  $s$  and  $c$  refer to the way leisure is enjoyed:  $s$ -leisure (solitary) occurs when the other family works, while  $c$ -leisure (communal) occurs while both families rest simultaneously. Denoting partial derivatives by subscripts we assume that  $U_1, U_2, >0$  and  $U_{11}, U_{22} < 0$ . I restrict  $U_3$  only in that it has the opposite sign of  $U_{33}$ . Mobility between families is ruled out.

The unit period in the economy during which all activity takes place is the interval  $[0,1]$ . At every instant  $\tau \in [0,1]$ , either family is either working, enjoying  $s$ -leisure, or  $c$ -leisure.

Using superscripts to denote families, preferences can be written as

$$(1) \quad U(C^M, \int_0^1 l^M(\tau) d\tau - \int_0^1 l^M(\tau) l^R(\tau) d\tau, \int_0^1 l^M(\tau) l^R(\tau) d\tau)$$

and

$$(2) \quad U(C^R, \int_0^1 l^R(\tau) d\tau - \int_0^1 l^M(\tau) l^R(\tau) d\tau, \int_0^1 l^M(\tau) l^R(\tau) d\tau),$$

where  $l(\tau)$  is an indicator function which takes value of 1 when the household is not working

at  $\tau$  and 0 otherwise.

Households are assumed to choose the length of their working day. For simplicity, we consider an economy in which production begins daily at  $\tau=0$ , so that the M-household chooses only the length of the working day,  $t$ . The R-household in contrast, chooses both the starting time  $s$ , and the shift length  $h$ .<sup>13</sup> We assume that the starting time  $s$  lies on the interval  $[0,1)$  and that the shift length  $h$  lies on the interval  $(0,1]$ . Since the natural time constraint requires  $s+h \leq 1$ , it follows that  $0 < h \leq 1-s$ ; the later retail workers begin their shift, the shorter it must be. In addition, factory workers are assumed to shop during their leisure time so  $s+h > t$ . It follows that the retail shift length must lie between  $t-s$  and  $1-s$ .

Furthermore, I assume that both households face nontrivial fixed costs of going to work, so that neither would choose to work more than one shift per day.<sup>14</sup> Under these conditions, the outcome can be reduced to two possibilities. In the first, expressions (1) and (2) can be reduced to

$$(3) \quad U(C^M, (1-t)-(1-s-h), (1-s-h)) = U(C^M, (s+h-t), (1-s-h))$$

$$(4) \quad U(C^R, (1-h)-(1-s-h), (1-s-h)) = U(C^R, s, (1-s-h))$$

In words, stores open before factories close, and there is some overlap in the workday ( $s < t$ ). Figure 1a below summarizes work and leisure patterns for both households under these assumptions.

The second possibility is that stores open *after* the factories close ( $s > t$ ), so that there is no overlap in work schedules. In this case (1) and (2) become

$$(3') \quad U(C^M, (1-s)-(1-s-h), (1-s-h)) = U(C^M, h, (1-t-h))$$

$$(4') \quad U(C^R, (1-h)-(1-s-h), (1-s-h)) = U(C^R, t, (1-t-h)).$$

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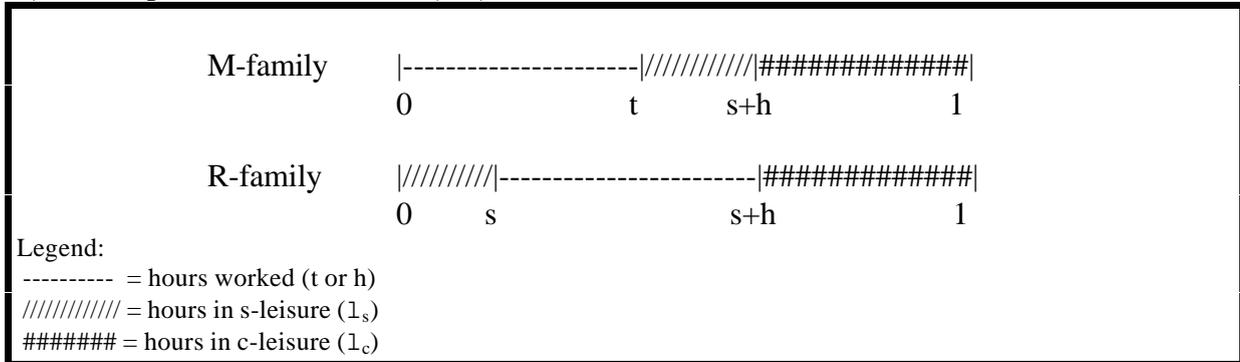
<sup>13</sup> This distinction is important, and has been stressed by Clemenz and Inderst (1990) in their informal discussion of the effect of liberalizing shop-closing regulations as well as by Stehn (1987). For a treatment of related issues related to production externalities, see Weiss (1996).

<sup>14</sup> This assumption is made to ensure that the integrals can be expressed in a simple way. It would be possible to allow for a fixed maximal number of shifts.

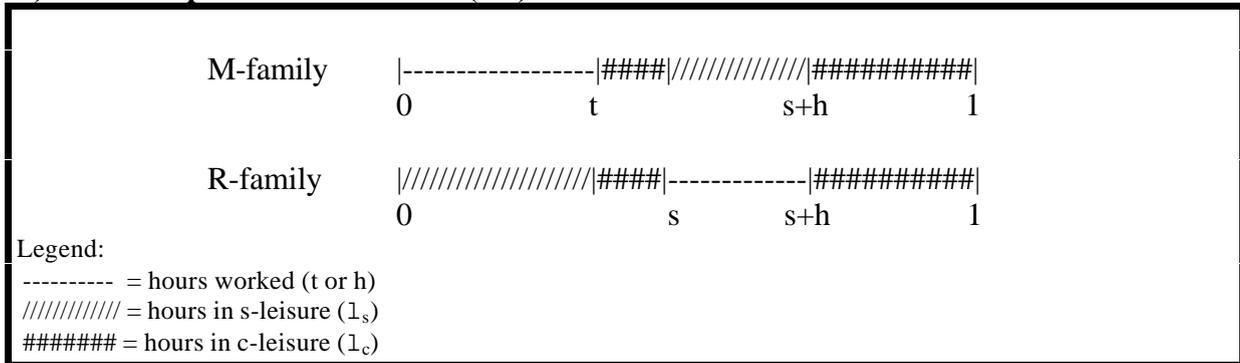
This configuration is depicted in Figure 1b).

**Figure 1. The structure of the day for M- and R-families**

**a) Overlap in work schedules ( $t > s$ )**



**b) No overlap in work schedules ( $s > t$ )**



In the first case, the R-household's choice of both starting time  $s$  and shift length  $h$  will have an external effect on the M-family. This externality will depend on the relative valuation of the two types of leisure:  $\partial U^M / \partial s = \partial U^M / \partial h = U_2 - U_3 = U_2 (1 - \lambda)$ , where  $\lambda \equiv U_3 / U_2$  can be thought of as the terms of trade of c- for s-leisure. Without a clear assignment of property rights, the R-household will not consider this externality when choosing its work schedule.<sup>15</sup> In the second case the interaction is symmetric: the s-leisure of each family is equal to the time worked by the other. Because the latter constellation case presumes that workhours are short and communal leisure long, we will consider it less interesting and focus on the case  $s < t$ .

<sup>15</sup> A more general formulation would rule out the second case by making  $s < t$  essential for production (restocking, sales to retail workers, etc). Manufacturing would then have a similar externality on the retail

### III.2. Technology of Manufacturing and Retail

Production of goods occurs in both sectors under constant returns to scale.<sup>16</sup> In the manufacturing goods sector, output  $Y$  is given by

$$(5) \quad Y = at$$

where  $a > 0$  is the constant marginal product of labor. The retail sector converts raw output and hours worked by the retail family into marketed consumption good according to the technology

$$(6) \quad C = Y^\alpha h^{1-\alpha}$$

with  $0 < \alpha < 1$ . The assumption made here is that hours are equally effective in retail activity, regardless when worked, an assumption which will be discussed below.  $Y$  can be thought of as inventories, or unpackaged output. The decreasing marginal returns assumption implicit in (6) is justified by the idea that more goods in the shops become increasingly difficult to sell without additional manpower, while low inventories with too many shopkeepers also results in low levels of service and value added.

### III.3. The Social Optimum versus the Decentralized Outcome

#### *The Planner's Problem*

To derive the benchmark against which the competitive equilibrium can be assessed, we first consider the problem faced by a benevolent social planner who seeks to maximize the unweighted sum of the welfare of the two households. Her problem is

$$(7) \quad \max_{C^M, C^R, s, h, t} U(C^M, s+h-t, 1-s-h) + U(C^R, s, 1-s-h)$$

subject to the production functions (5) and (6), the resource constraint  $C = C^M + C^R$ , and the

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family, by affecting the length of the peak  $[t, s+h]$  and off-peak  $[s, t]$  shifts.

<sup>16</sup> This assumption rules out threshold labor and the resulting increasing returns in retail, which generally lead to the result that increased competition increases the scale of stores and raises prices (DeMeza 1984, Gradus (1996).

time constraint  $s+h<1$ . Assuming an interior solution, the first order conditions characterizing the optimum can be written as

$$(8) \quad U_1^M = U_1^R = \bar{U}_1$$

$$(9) \quad U_2^M = a\alpha(h/Y)^{1-\alpha} U_1^M$$

$$(10) \quad U_2^R = (1-\alpha)(Y/h)^\alpha U_1^R$$

$$(11) \quad U_3^R + U_3^M = U_2^M + U_2^R$$

The solution chosen by the social planner, denoted as  $\{C^{M*}, C^{R*}, h^*, t^*, s^*\}$ , recognizes the effects of leisure's timing on total welfare. The first condition equates marginal utility of consumption across the two families, which follows from the assumption of identical preferences and equal weights in (7). The second and third equations equate the marginal utility of s-leisure with its social opportunity cost for each family. The last condition (11) explicitly recognizes the social externality of c-leisure, and equates the net social utility of an additional hour spent in c-leisure to its "opportunity costs" spent alone.

### ***The Decentralized Market Outcome***

Can the decentralized market achieve the social optimum? Let us consider an economy of competitive product and factor markets in which both families own the firms which employ them. Constant returns to scale guarantees that normal economic profits are zero after both factors are paid their respective marginal revenue products. Both representative families behave as price takers in output and factor markets; taking the manufactured good as numeraire, let  $p$  denote the relative price of consumption (retailed output). Under these conditions the M-family will choose its supply of labor  $t$  such that

$$(12) \quad (w^M/p)U_1^M = U_2^M$$

holds, where  $w^M$  is the nominal manufacturing wage. Since the marginal value product of labor in manufacturing is constant, this is the only equilibrium value possible for  $w^M$ . The labor supply decision of the M-family implies that it produces output  $Y=at$ .

In contrast to M-family, the R-household sector has a more complicated decision. It can choose its shift length  $h$  *and* its opening time  $s$  (or equivalently, its shift length  $h$  and its *closing* time  $s+h$ ). In order to simplify further, we consolidate the decisions of the retail firm and the retail household, letting it solve

$$\max_{C^R, s, h} U(C^R, s, (1-s-h))$$

Since  $C^R = C - C^M = Y^\alpha h^{1-\alpha} - Y/p$ , the problem becomes

$$\max_{s, h} U(Y^\alpha h^{1-\alpha} - Y/p, s, (1-s-h))$$

taking  $p$  and  $Y$  as given. The first order conditions are

$$(13) \quad U_2^R = (1-\alpha)(Y/h)^\alpha U_1^R$$

$$(14) \quad U_2^R = U_3^R$$

Equation (13) equates marginal utility from consumption and  $s$ -leisure for the retail family, while (14) sets the marginal utility of private leisure to equal that of communal leisure, given the behavior of the other family. Along with (12), we have three equations in  $t$ ,  $s$ ,  $h$ , and  $p$ . To close the model, we impose as an equilibrium condition the equality of final household demand and supply of retail output:

$$at/p + (1-\alpha)(at/h)^\alpha h = (at)^\alpha h^{1-\alpha}.$$

The market-clearing price is then

$$(15) \quad p = \alpha^{-1}(at/h)^{(1-\alpha)}.$$

We can employ (15) and the fact that  $w^M = a$  to rewrite the market equilibrium in a form that can be compared with the social planner's optimum (8)-(11):

$$(16) \quad U_2^M = a\alpha(h/Y)^{(1-\alpha)}U_1^M$$

$$(17) \quad U_2^R = (1-\alpha)(Y/h)^\alpha U_1^R$$

$$(18) \quad U_2^R = U_3^R$$

Inspection shows that the market will generally not replicate the planner's optimum, except in the special case  $U_2^M = U_3^M$ . Even if it were in R-family's interest to induce this outcome

strategically, sufficient instruments are unavailable to do so. The market generally fails to achieve the optimal allocation because the two agents will generally have different incomes and different marginal utilities of consumption. In fact, with homothetic utility, the social optimum occurs only if both agents are working and consuming in identical quantities.

The failure of the market to achieve the social optimum lies in the fact that conditions necessary for the first and second welfare theorems do not obtain. C-leisure is a nonrivalrous "good" which is not traded on a market, presumably due to the difficulty in assigning property rights. One might imagine a number of institutions which could arise to solve this problem: clubs, slavery and religion are some examples. The state could also serve this function. In the next section, we show how regulatory regulation on hours worked in retail can achieve the social optimum when  $U_3 > 0$ . In general we demonstrate the effect of regulation on hours, productivity, equilibrium competitive wages, and other important retail variables.

#### III.4. The Economic Effects of Shop Closing Regulations

In the present model, shop closing regulations can be formulated simply as an upper limit on  $s+h$ , say  $\bar{H}$ .<sup>17</sup> Almost trivially, the central planner can replicate the social optimum by choosing  $\bar{H} = s^* + h^*$ . To see this, consider the market outcome under regulation imposing  $s+h < \bar{H}$ . Under these conditions the R-family's problem reduces to

$$\max_h U(Y^\alpha h^{1-\alpha} - Y/p, \bar{H} - h, 1 - \bar{H})$$

and the R-family's choice of  $h$  will replicate that of the social planner. By forcing the R-family to enjoy the socially optimal level of c-leisure at the end of the day, the planner induces it to choose optimal levels of s-leisure and consumption, too. In doing so, the planner removes the externality, so the market achieves the social optimum.<sup>18</sup>

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<sup>17</sup> This is the form normally taken in Europe, although limits on  $s$  and  $h$  also exist in some countries. Blue laws prohibiting trade on Sundays can be considered a simple generalization of the unit interval to a week.

<sup>18</sup> It could be argued that a Pigovian tax is superior to a quantity constraint; while this is true in general, in our case there is no market for leisure and a labor tax would not achieve the desired outcome without a good deal of

In general, it will be difficult to know whether policymakers are maximizing welfare. It is important to note, however, that shop closing laws affect observable variables like employment, wages, productivity and the relative price of retailed goods. To see this, we shall consider the behavior of the economy as described by the first order conditions, rewritten so that  $\bar{H}$  is *defined* as the value of  $s+h$  that would obtain in a decentralized market. Since an increase in  $\bar{H}$  from this point is not binding and therefore irrelevant, we only consider the effect of a small decrease in  $\bar{H}$ . In general equilibrium, this decrease will affect hours worked in both sectors as well as output and the relative price of retailed goods. While the effect is not unambiguous, it can be shown in a wide range of cases that employment in both sectors is reduced by tightening of regulations of shop closing hours, and that under certain conditions there is an employment bias against retail. While in the present model the effect on price is unambiguous, it more generally it is ambiguous.<sup>19</sup> Stricter shop regulation increases the "capital intensity" of retailing, reduces output, and increases its relative price. Lower retail employment means higher value marginal product and market wage, which is consistent with lower levels of retail output.<sup>20</sup>

#### IV. Discussion and Policy Relevance

The Burda/Weil (1999) model of retail trading regulation isolates the synchronization of leisure as a public interest motivation for the regulation of opening hours in the retail trading sector.<sup>21</sup> The model clearly identifies "negative" effects of these regulations: they can suppress employment and value-added in the retail sector. If the state is acting optimally in

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complexity, since taxes would be contingent on what the other agent is doing!

<sup>19</sup> These conditions are fleshed out in detail in Burda and Weil (1999).

<sup>20</sup> These predictions can be contrasted with those of Gradus (1996), who studies a more conventional demand/supply framework with increasing returns at the firm level. He predicts a decrease in retail prices and margins resulting from regulation, as well as an increase in sales, and an ambiguous effect on employment. In his model, the socially optimal policy is 168 hours (round the clock opening hours), which suggests that the model does not consider all general equilibrium channels.

<sup>21</sup> It also stresses another externality which, for reasons of space, is not discussed here: "ruinous competition" among retailers via the instrument of opening time, which tends to raise fixed costs in the quest for the marginal consumer.

the interests of its citizens, this regulation can nevertheless increase welfare, so caution is warranted. In this sense, the model draws attention to observable implications, which can be useful in clarifying policy discussions. Moreover, while the theoretical model does not always generate unambiguous results, it robustly rejects Stützel's Paradox -- that value-added in retail is invariant to shop closing restrictions.

While the theoretical literature on retail trading restrictions address a variety of important issues, they have generally ignored macroeconomic, general equilibrium effects of such regulation on product and especially labor markets. Most work has focused on the effect of shop trading laws on retail industrial organization, or the search-theoretic aspects of uniform closing times. De Meza (1984) shows that, in the Salop model with imperfect competition, shop regulation can actually induce more competition and result in lower travel costs as well as lower prices. In contrast, Clemenz (1990) concludes that deregulation is associated with more search, better price information, while possibly inducing higher costs. Tanguay et al. (1995) study the reaction of prices to shopping hours liberalization when smaller stores are closer, but larger, cheaper stores are farther away. Morrison and Newman (1983) show that smaller, inefficient firms have the most to gain from retail operation restrictions. In a spirit similar to our model below, Bennett (1981) provides an analysis of the peak load aspects of shop opening times, invoking arguments by Becker (1965). Gradus (1996) studies the effects of shop liberalization using a partial equilibrium supply-demand model with parameters estimated from a Swedish study. Overall, few contributions deviate from a single agent model, and therefore cannot address redistribution aspects. Most importantly, none has examined the potential role for common leisure in shaping the desirability or costs of shop opening regulation.

## **V. Conclusion**

One often hears the view expressed in public and private contexts that "Europeans

don't like to serve others." For the service economy to function, so the argument goes, one needs lots of inequality, and the inequality necessary to motivate Europeans into service occupations to the extent observed in the US is too high, perhaps even "socially unacceptable". One interpretation is the lingering association of service with social hierarchy based on birthright. This could explain why services ranging from banking, consulting, dry cleaning, filling stations, as well as grocery stores are more capital intensive in Europe than the USA. Another interpretation, equally valid, is that Europeans value communal leisure to an extent which is inconsistent with a service sector in the dimensions observed in the United States.<sup>22</sup>

Besides the public interest approach, the more cynical "political economy" view of shop closing laws would attribute regulation to special interest lobbying and regulatory capture. While always valid, I have avoided such arguments in this paper to focus on the basic point that synchronization of activity might have the attributes of a public good. Survey results in Germany, Italy and Switzerland seem to support this interpretation. While this concern appears less pronounced in the United States, it is an important element of the European policy discussion. For example, in their extensive survey of shop-closing regulations, the Ifo-Institute paid particular attention to public opinion surveys placing more value on "social" free time on Saturdays compared to weekday evenings (Ifo-Institut 1995: 254-6).

The analysis of this paper suggests that such product market regulations such as shop closing laws will in general have a negative effect on employment and output. The mechanism is somewhat different to that usually stressed in the literature, which focuses on lower markups, efficiency gains and more rapid expansion of the product mix (see for example Gersbach 1999), although these effects are likely to be relevant as well. Regulation of the time that consumer services can be offered is likely to concentrate purchases

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<sup>22</sup> At the same time it is ironic that Great Britain, and more recently the Netherlands and Denmark, have belied the alleged unwillingness of Europeans to subject themselves to a service-society culture. These developments

inefficiently over shorter time intervals, leading to higher capital intensity of production, higher prices, and potentially less activity in the sector (allocative inefficiency). Furthermore, these regulations clearly discriminate against singles and one-adult households who cannot conduct retail purchases during working hours (Thum and Weichenrieder (1997)). They also lead to inefficiencies associated with costly circumvention of the laws. Substitution of telemarketing, catalogue sales, and other modes of activity for traditional stores is common in countries where regulations are binding.<sup>23</sup> Of course, since welfare may still be higher under such a regime, if shared leisure and synchronization is valued sufficiently highly. One modest contribution of this research would be to bring these considerations, as well as available empirical evidence, more clearly to the attention of policymakers.

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are also coincidental with recent product market deregulation.

<sup>23</sup> For example, the fraction of total German retail sales accounted for by mail-order and teleshopping was 5.4% in 1993, compared to 2.1% in the UK, 2.3% in Sweden and only 1.9% in the United States (Euromonitor 1995). In Germany, gas stations are allowed to sell goods related to travel, which with a liberal interpretation can be interpreted as including basic groceries, automobile parts and alcoholic beverages. As a result, off-hours retailing represents the key source of profits in the declining gas station sector.

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