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Reconsidering the effect of welfare stigma on unemployment

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Abstract

Stigma has been modeled in the literature as a cost of welfare participation, providing a disincentive to welfare entry; hence, traditional models predict that stigma leads to higher search effort and higher employment. We develop a more comprehensive model that accounts for the fact that welfare stigma may elicit psychological effects and foster negative attitudes towards welfare recipients, affecting their employment prospects. We find two contrasting effects. The first reinforces the standard prediction: rational individuals foreseeing the reduction in employability defer welfare entry (*deterrence effect*); the second goes in the opposite direction: once assisted, individuals experience less welfare-to-employment transitions, both because of reduced search effectiveness and of reduced search effort (*entrapment effect*). When stigma is not too high, the latter effect prevails: more stigma yields to less employment and more welfare participation. The result is stronger if individuals are not able to foresee their loss of employability.

Keywords: Stigma, welfare dependence, employability

JEL code: I38, J64

1. Introduction

Stigma is acknowledged as one of the determinants of welfare participation and there is wide evidence that it negatively affects take-up rates (Currie, 2004; Hernanz *et al.*, 2004). Keeping stigma low is one of the aims of program design as it is recognized that welfare policies will have a limited impact if a significant share of those who are entitled for the benefit do not claim it.

Yet, there is ample consensus that transfer programs reduce work effort. The effect of income support policies has been the object of extensive theoretical (Rogerson *et al.*, 2005) and empirical research (Moffitt 1992; Moffitt, 2002; Blank 2002). The focus is on work disincentives: if the benefit is high enough with respect to wages, individuals choose welfare and stay out of the labor market. Hence, the concern is that anti-poverty programs may indirectly foster non-employment and poverty, triggering the ‘welfare trap’.

Given that (i) stigma reduces welfare programs take-up rates, and (ii) welfare programs reduce labor supply, a positive effect of stigma on employment goes undisputed in the literature. We challenge this view and propose a theoretical model where stigma, in broad regions of the parameter space, plays an unambiguously negative role, decreasing take-up rates while increasing non-employment and welfare participation.

Our analysis ideally applies to social assistance programs, providing cash or in-kind benefits (for example: vouchers to purchase food, subsidized housing). Social assistance is a last resort provision to secure a minimum standard of living for those who do not qualify for unemployment insurance, and is often subject to intrusive means-tests. In-kind programs, having greater public visibility, are particularly exposed to social stigma. Instead, we do not refer to insurance-based unemployment benefits: being related to employment or contribution requirements, these benefits are generally perceived as a worker’s right and are less subject to stigma.¹

The traditional view of stigma is epitomized in Moffitt (1983), who explicitly introduces stigma

¹ Consistently, take-up rates are typically lower for social assistance than for unemployment benefits (Hernanz *et al.*, 2004).

in a job-search model, specifying it as a fixed cost of being on welfare. On the other hand, in their influential work on welfare dependence, Bane and Elwood (1994) consider three alternative explanations for long-term welfare participation: the *rational choice*, the *expectancy* and the *cultural* models.² The rational choice model emphasizes the role of choice and incentives. The expectancy model refers to the individuals' sense of control over a desired outcome: if welfare stigma is inflicted upon claimants, self-confidence will be negatively affected, modifying behavior. The cultural model emphasizes the change in values and attitudes that may occur when living in environments with large shares of poor and welfare recipients. Bane and Ellwood find little evidence for the cultural model and conclude in favor of a broader perspective that takes into account the mechanisms involved in both the choice and the expectancy models.

We pick up the suggestion and formalize a model in which individuals behave rationally and maximize the utility of the available options, but may be subject to psychological effects of discouragement and loss of self-confidence that may progressively deteriorate their search effectiveness. Accordingly, we extend the traditional model by allowing welfare stigma to have two distinct effects: a fixed utility cost of welfare participation (*à la* Moffitt), and a constant rate of decay in the employment probability.

We expect the negative effects of stigma on search effectiveness to cumulate over time on welfare because discouragement, being nourished by previous failures and experiences of discriminatory treatment, develops gradually. A decreasing employment probability may also depend on the behavior of prospective employers: if the number of people knowing about individuals' welfare participation increases over time, recipients will be increasingly more exposed to negative attitudes and discrimination (Yaniv, 1997).

In our model the non-employed choose whether to search for a job and whether to be on welfare. We first prove that, in our setting, the optimal strategy is to enter assistance when the residual

² These models are not formalized in mathematical terms; the authors derive the supposed implications on individual behavior and compare them with the available empirical evidence on a number of related outcomes.

employability falls below a critical value, and stop searching when it reaches another threshold. We then simulate the model in order to derive the implications of this behavior on non-employment and welfare participation, in a static and dynamic perspective.³

The relationship between welfare stigma and non-employment display a non-monotonic, inverse-U shaped pattern, and the same occurs for welfare participation. The intuition behind this result lies in the following trade-off: the loss of employability component reinforces the effect of the fixed welfare participation cost, as individuals anticipating the decay in employment prospects defer welfare entry and search more intensively (*deterrence effect*); on the other hand, those who eventually enter welfare progressively face lower employability and hence reduce their job-search effort (*entrapment effect*).

Moreover, the deterrence effect crucially depends on the ability of individuals to forecast the future loss in employability. This is highly questionable: although individuals might be able to foresee the negative attitude of potential employers, it is unlikely that they will predict their own psychological reactions. Allowing for weak forecasting ability, the positive relation between stigma and non-employment is further strengthened.

The rest of the paper is organized as follows. Section 2 is devoted to defining welfare stigma and describing its consequences, according to the traditional view. In Section 3 we describe the rationale for decreasing employability and discuss the empirical evidence on it. The model is described in Section 4. Theoretical implications on the behavior of decision makers are derived in Section 5. The simulation design and the results are described in Section 6. In Section 7 we provide some raw country-level empirical evidence on the relation between welfare stigma and relevant economic outcomes. Concluding remarks follow.

³ In some countries social assistance benefits are conditional on being actively searching for a job. Attempts to monitor search effort, however, are often limited to formal actions (like being registered at a public employment center), and may fail to measure the *quality* of the search effort, which is crucial in helping finding a job. We consider a simplified environment with no such requirements

2. How is welfare stigma defined and modeled in the literature

In the literature, stigma is defined as «an attribute which is deeply discrediting» (Goffman, 1963); it is ascribed to a personal characteristic that negatively portrays deviants. Those labeled deviant have violated highly accepted rules or norms: the devaluation of deviant individuals and groups entails a negative assessment of personal character. Although not speaking of stigma per se, Paugam (1997) argues that: «It is from the moment they [welfare recipients] are assisted, maybe from the moment their condition might entitle them to social assistance [...], that they become part of a group which is characterized by poverty. This group is not unified through the interaction between its members, but through the collective attitude society as a whole adopts towards it».

The perception that receiving welfare benefits is a stigmatized behavior generates in recipients feelings of lack of self-respect and negative self-characterization (Rainwater, 1979). Stuber and Schlesinger (2006) distinguish between *identity stigma*, defined as a negative self-characterization – led by widespread stereotypes which are internalized by the recipients themselves – and *treatment stigma*, the anticipation of negative treatment, related to the concern of being treated poorly by others. Yaniv (1997) defines welfare stigma as the negative feelings of shame and disrespect arising from being on welfare. He suggests that there is a *self-afflicted* component «emanating from one's own recognition [...] independent of other people's knowledge of one's participation, that could arise even if one's identity were kept in complete secrecy», and a component involving other people's attitudes and beliefs, which needs *public exposure* to operate, and thus others who become aware of one's participation.

The mechanisms through which stigma is elicited by public exposure are addressed in Besley and Coate (1992). The first refers to *statistical discrimination*, according to which stigma depends on the perceived personal characteristics of welfare claimants. Society is deemed to value individual characteristics such as self-reliance and willingness to work hard; welfare claimants are treated poorly because they are believed to possess on average fewer of these characteristics. The second is

the *taxpayer resentment view* model, where taxpayers, who finance the program, may regard the benefit level to be too generous; the amount of resentment is an increasing function of the difference between the actual benefit level and that which is regarded to be desirable.

An attempt to derive a direct effect of stigma on labor supply is the seminal work by Moffitt (1983), where he jointly models the choices of entering welfare and the number of hours of work. Stigma entails a fixed cost of being on welfare; an additional parameter represents a cost proportional to the size of the benefit, although this component does not appear to be empirically relevant. The utility function parameters are allowed to vary across individuals, thus welfare participants are a self-selected sample of the population, who would work less than non-participants even in the absence of the program. Income support affects the available choices of everybody; and those who are not initially eligible may modify their behavior in order to gain access to the program. In this framework, given the level of the benefit, take-up and welfare participation rates are expected to decrease with the amount of stigma: by reducing the incentives of being on welfare, stigma has a positive effect on labor supply.⁴

Focusing on welfare participation decisions, Blank and Ruggles (1996) also assume that stigma enters the model as a fixed cost of being on welfare. However, they posit, but not validate empirically, that stigma costs may vary according to past personal experience and friends' views of welfare receipt. Hence, at each time unit individuals re-evaluate their welfare participation choices in a fully rational perspective: as in Moffitt, no entrapment effects operate.

3. Decreasing employability

Most of job-search models in the literature do not consider that the job-finding probability, given search effort, is likely to decrease with time in unemployment. However, knowledge and skills may become obsolete, while human capital depreciates; moreover, staying out of the labor market may

⁴ The welfare participation rate is the proportion of individuals on welfare; the take-up rate is the proportion of the eligible on welfare.

weaken the relevant social networks (Granovetter, 1995).⁵

Drawing from the sociological literature, we acknowledge that *welfare participation* itself may be responsible of additional effects, beyond those related to being unemployed. If living on public support exposes the individual to social disqualification, behavior may be affected by psychological distress, in line with the ‘expectancy’ model of welfare dependence of Bane and Ellwood (1994). Prolonged welfare participation «[...] may result when people lose a sense of control over their lives, when they cease to believe that they can realistically get off welfare. People become overwhelmed by their situation and lose the ability to seek out and use the opportunities available». This loss of self-efficacy may seriously undermine a successful job-search.

Discouragement effects may also imprison welfare recipients in marginal social networks, and progressively isolate them –even more than unemployment– from those social contacts which help gaining access to work opportunities. All these effects, nourished by repeated failures, build up over time, progressively eroding employment prospects.

Furthermore, a lower employment probability may be yielded by the behavior of employers. According to Yaniv’s (1997) idea of *public exposure*, as time on welfare elapses, more people will acknowledge that the individual is a welfare recipient. If being on welfare is subject to social disqualification, individuals may actually *experience* a discriminatory treatment; hence, their job-finding probabilities will be further reduced. Indeed, this mechanism is more likely to operate in small environments, for programs having greater visibility such as in-kind benefits, and if employers seek information on potential employees.

Notwithstanding these theoretical arguments, obtaining solid empirical evidence on decreasing employability is problematic. While a large body of research has focused on unemployment exit rates and has provided evidence of decreasing exit probabilities with time elapsed in

⁵ Decreasing employability as the unemployment spell grows longer is allowed in Rosholm and Toomet (2005), who also emphasize the role of discouragement, in Pavoni and Violante (2007) and Richiardi and Contini (2008).

unemployment, results regarding welfare exit rates results are inconclusive.⁶ However, the desired effect is particularly difficult to identify empirically. On one side, it is well known that negative duration dependence may be a spurious effect due to neglected heterogeneity. On the other side, however, people may exit welfare for reasons other than employment: the benefit can be withdrawn because it is of limited duration or because individuals no longer meet other eligibility requirements. In this light, welfare to work transitions should be analyzed instead of welfare exit rates, but few works address this issue. In addition, most studies examine single spells and do not take into account that individuals often re-enter welfare soon after leaving it; in this case time on welfare is underestimated, yielding to biased estimates of hazard rates.

Despite the lack of strong direct empirical evidence on the decay of employability due to being on welfare, we agree with Bane and Ellwood (1994) that «[i]t seems ludicrous to argue that motivation and self-worth are not linked closely to behavior, especially to behavior on welfare». In this light, allowing for decreasing employability enables us to show that traditional models *could* be too restrictive and *may lead* to wrong predictions on the effects of welfare stigma on non-employment and welfare participation.

4. The model

Following the traditional approach in the economic literature in which choices are modeled as rational utility maximizing decisions, we develop a simple job-search model in which welfare stigma is allowed to affect individual behavior. We keep wages fixed (say, at the minimum wage); moreover, in a partial equilibrium perspective we only consider the direct effects of stigma on one's job-finding probability, disregarding the indirect effects of stigma on others' job-finding

⁶ Walker and Shaw (1997) and Gustaffson *et al.* (2002) report no duration dependence for social assistance benefits in some European countries; mild evidence of negative duration dependence is provided in O'Neill *et al.* (1987), Blank (1989), Fitzgerald (1991), Sandefur and Cook (1998) on the US program AFDC (*Aid to Families with Dependent Children*), and in Fortin and Lacroix (1998, 2004) on Canadian social assistance, while strong evidence is found in Chay *et al.* (2004) on AFDC. Dahl and Lorenzen (2003), analyzing welfare to work transition for Norway, find no evidence of negative duration dependence.

probabilities via changes in the aggregate labor supply schedule.⁷ To further simplify the environment, we assume that our non-employed individuals are poor and eligible for social assistance, while they are not entitled to receive unemployment benefits. Social assistance is in principle of unlimited duration. We model two individual choices: whether to *search for a job* and whether to *be on welfare*.

4.1 Model assumptions

Current utility

Let $U = U(C, L)$ be the current utility function associated with consumption C and leisure L .

With no stigma, entering welfare has no costs, thus the unemployed will always claim the benefit.

Drawing from Moffitt (1983), we allow welfare stigma to affect current utility as follows:

$$U(C, L, a) = U(C, L) - \phi a \quad (1)$$

where $a=1$ if the individual is on welfare and 0 otherwise, and ϕ is the fixed cost of welfare participation due to stigma.⁸ The negative effect of stigma might outweigh the higher level of consumption provided by the subsidy, hence individuals may choose not to claim the benefit. In the light of the discussion in the previous section, in addition to this *direct* effect on utility, we introduce an *indirect* effect of welfare stigma, affecting the individual employment probability.

Employment probability

The probability of finding a job is allowed to decay with elapsed time in *unemployment*, as skills tend to become obsolete and social contacts facilitating the match between labor supply and demand loosen. We allow welfare stigma yield to a further reduction in employment prospects as time spent on *welfare* grows longer. The employment probability given job-search is thus specified as follows:

⁷ This partial equilibrium approach is justified by the fact that the number of working age individuals who are eligible for social assistance is small when compared to the labor force: hence, their participation decision is unlikely to have a strong effect on the overall labor supply.

⁸ To simplify the model, we assume that stigma is the only factor responsible for non take-up behavior. Various other potential explanations of low-take-up rates for welfare benefits have been addressed in the literature, e.g. pecuniary determinants, information costs, administrative costs (Hernanz *et al.*, 2004).

$$p_t = \gamma_0 (1 - \theta_U)^{\tau_U} (1 - \theta_A)^{\tau_A} \quad (2)$$

where γ_0 is the employment probability at the beginning of the unemployment spell, θ_U is the rate of decay of the employment probability related to time in unemployment and θ_A is the rate of decay related to time on welfare. τ_U and τ_A represent time spent in unemployment and on welfare; since people may delay welfare entry, $\tau_A \leq \tau_U$. With no search, the probability of receiving job offers is 0.⁹

We will refer to parameter ϕ as the *utility* component of stigma and to θ_A as the *employability* component of stigma.

Forecasting ability

In a bounded rationality perspective, we allow decision makers to have limited forecasting ability. We consider two scenarios: in the first individuals correctly anticipate the decay in employment prospects due to being on welfare, in the second they don't.¹⁰ We will refer to the first as the *strong forecasting* model and to the second as the *weak forecasting* model.

Similarly, we assume that individuals don't have a life cycle perspective: instead, they evaluate the value of the alternative options by looking ahead for a limited number of periods. In making their decisions, our unemployed individuals only consider a limited plan horizon h , i.e. they only look at what may happen h periods ahead. Hence, search effort s and welfare participation a at time t are determined by $\max_{(s_t, a_t)} V_t$, where V_t is given by:

$$V_t = \sum_{i=0}^h E[U_{t+i}] R^i \quad (3)$$

⁹ Our focus is on the effects of θ_A , rather than θ_U . However, besides increasing the plausibility of the model, including θ_U has a nice implication: individuals might change their welfare participation choice during their non-employment spell. On the other hand, if employability was not eroded by non-employment, nothing would change in the decision making environment of the non-employed: hence, they would either enter welfare at the beginning of the non-employment spell, or they never would. All the mechanisms discussed in the paper are still at work in this case, but the model always operates in a corner solution.

¹⁰ However, they still correctly anticipate the decay triggered by non-employment. The rationale for this asymmetry is twofold. First, the two sources of decay are different: the loss of employment prospects due to welfare participation, mainly driven by psychological factors, is arguably more difficult to be foreseen than the depreciation of human capital. Second, on a technical note, if individuals did not anticipate the decay in their employment prospects due to non-employment they would either always stay on welfare, or they would never enter welfare (see footnote 9). Moreover, in a scenario where both sources of decay were not anticipated our results would simply be strengthened.

$E[U_{t+i}]$ is the expected utility at time $t+i$, and $R \in (0,1)$ is a discount factor. The parameter $h \in [1, \infty)$ determines the cognitive boundaries of the individuals. When $h = 1$ the model is trivial: if the future is not considered, the most profitable choice is to enjoy free time and not searching. On the other hand, as individuals discount future utility, results for high values of h should not differ much from those with an infinite time horizon, since the contribution to expected utility of periods far away in time becomes negligible. In the strong forecasting version of the model individuals evaluate their employment prospects in (3) by using (2), in the weak forecasting one they compute expected utility assuming $\theta_A = 0$ in (2).

Maximization is carried out through a *rolling plan* strategy: individuals make plans for action over the entire horizon h , that is, they identify the optimal strategy $\{s_t^*, \dots, s_{t+h}^*; a_t^*, \dots, a_{t+h}^*\}$ conditional on being still unemployed up to time $t+h$, however, they always implement only the first step of this strategy, $\{s_t^*; a_t^*\}$, and re-evaluate it in the next period.

4.2 Model specification

To keep things simple, we assume to operate in a rigid labor market with full time jobs only, where individuals consume all their earnings (there are no savings, nor other sources of income). The consumption level is C_E if the individual is employed, C_0 if she is unemployed but not on welfare, C_B if she is unemployed and on welfare, where $C_0 < C_B < C_E$.

Standardizing total time to 2, we fix the minimum time for leisure L to 1; time for work is 1 and time devoted to job search is either $s=0$ or $s=1$. Hence, non-employed individuals either undertake full search in the reference period, or do not search at all.¹¹ No search on the job is allowed, thus $L=1$ for the employed and $L=2-s$ for the non-employed.

We will refer to the following conditions:

$$U(C_E, 1) > U(C_0, 2) \tag{condition 1}$$

¹¹ Modeling whether to search or not to search instead of a continuous job-search is a reasonable simplifying assumption, in particular for small time units.

$$U(C_E,1) > U(C_B,2) \quad (\text{condition 2})$$

$$U(C_B,s) > U(C_0,s) \quad (\text{condition 3})$$

Conditions 1 and 2, that we assume to be always satisfied, state that the utility of employment is higher than that of unemployment, both on and off welfare; in other terms, the reservation wage is always lower than the market wage. This relations hold irrespective of search behavior, since $U(C_B,2) > U(C_B,1)$ and $U(C_0,2) > U(C_0,1)$. Condition 3, which might or might not be satisfied, states that given search behavior the utility from being assisted is higher than the utility from not being assisted.

In this framework, equation (1) becomes:

$$U(C, L, a) = [U(C_0, 2-s)]^{1-a} [U(C_B, 2-s) - \phi]^a \quad (4)$$

where, again, a takes value 1 if the individual is assisted and 0 otherwise. For computational purposes, we specify $U(C,L)$ as a simple Cobb-Douglas function $U = C^\alpha L^\beta$, implying that for the non-employed:

$$U = C^\alpha (2-s)^\beta \quad (5)$$

Regardless of benefit provision, current utility is maximized with no search, as search reduces leisure time. However, it also increases the probability of finding a job, and thus expected future utility:

$$V_{U,t} = U_t(s_t, a_t) + R[(1-p_t(s_t))V_{U,t+1} + p_t(s_t)V_{E,t+1}] \quad (6)$$

where $V_{U,t}$ is the value of being unemployed at time t , $V_{E,t}$ the value of being employed at time t , $U_t(s_t, a_t)$ the current utility of being unemployed (which depends on current search and welfare participation behavior), $p_t(s_t)$ is the employment probability in (2) if the individual is searching and equal to 0 if she is not searching.

Condition 3 is satisfied if $C_0^\alpha < C_B^\alpha - \phi$: in this case individuals *might* enter social assistance. The reason why they not necessarily do is related to decreasing employability: if individuals anticipate

the erosion of employment prospects over time on welfare, they might decide not to claim the benefit even if receiving it they would maximize current utility.

5. Individual behavior

The individual decision problem is divided in two: 1) *optimal planning*, over the planning horizon of length h , and 2) *re-evaluation* of the optimal plan from time t to time $t+1$. The planning stage is solved backward, in a dynamic programming setting, giving the optimal strategy for the first period as a function of all the parameters. The solution dynamics over time as employability decreases specifies the optimal behavior, given that only the plan for the current period is actually implemented. Propositions 1 and 2 characterize the structure of the optimal solution:

Proposition 1. *A forward-looking, utility maximizing individual never plans to (re)start searching after some periods of inactivity. Moreover, she never plans to exit welfare while still unemployed.*

Proposition 2. *In the re-evaluation stage, it is never optimal to (re)start searching after some periods of inactivity. Moreover, it is never optimal to exit welfare while still unemployed.*

In the Appendix we prove Proposition 1 backward for three periods (period h , $h-1$ and $h-2$). The generalization turns out to be rather long and tedious, and we omit it.¹² The Appendix also contains the proof of Proposition 2, for any value of h .

The rationale underlying this behavior is the following: searching entails a current utility cost (less time for leisure) in exchange of an expected future utility benefit (more consumption in case a job is found). Since the probability of finding a job is decreasing, if the costs of searching overcome the benefits in a given period, the same must be true in the following periods. Similarly, being on welfare entails a current utility benefit (more consumption due to income support) but an expected future utility cost (lower expected consumption due to a decreased probability of finding a job). If

¹² It is however available and will be sent to any interested reader upon request.

this trade-off is solved in favor of the immediate utility gain in a given period, it must be so also in the following periods, since the loss in employability are proportional to the current level of employability, and hence are decreasing in absolute terms.

Propositions 1 and 2 imply that the optimal individual behavior can be summarized by two numbers: the time at which the individual stops searching for a job, t_s^* and the time at which the individual enters assistance, t_a^* . These two numbers correspond to two thresholds for the value of the residual employability. Hence, an individual never starts searching after a spell of inactivity (we call this: ‘reversal on s ’), and she never exits welfare while still unemployed (‘reversal on a ’). In principle: $t_s^* \in [0, \infty)$ and $t_a^* \in [0, \infty]$. When $t_s^* = 0$ the individual never searches; if $t_a^* = 0$ she enters welfare immediately, if $t_a^* = \infty$ she never does.

Propositions 1 and 2 have the following implication:

Lemma. *An individual can enter welfare before she stops searching, but she will never find it optimal to do it afterwards: either $t_a^* \leq t_s^*$, or $t_a^* = \infty$, i.e. she never enters welfare.*

Proof. The proof is by contradiction. Suppose that an individual has stopped searching at some time $t_s^* < t$, and finds it optimal to enter welfare at time t . By Propositions 1 and 2, from time t_s^* onward search effort is equal to 0, hence the individual knows she will remain unemployed. In deciding whether to enter welfare or not, she therefore only compares the utility deriving from increased income (from C_0 to C_B) with the disutility deriving from stigma, ϕ , which are both constant in time. Consequently, if the trade-off is in favor of getting the benefit at time t , it must be so even at time $t_s^* < t$.

6. Simulation results

Since the thresholds $\{t_s^*; t_a^*\}$ cannot be derived analytically, we simulate the model. In order to compute aggregate equilibrium statistics, we consider a large number N of identical individuals,

except for their age, which is randomly distributed between 0 and $maxAge$. In each period t , every individual computes her optimal strategy over the planning horizon (from t to $t+h$), and implements it for the current period, with behavior $\{s_t^*; a_t^*\}$. Computation of the optimal strategy is made by enumeration. Coherently with the theoretical results, reversals (*i.e.* return to search after a period of inactivity, or exit from assistance if still non-employed) never occur. When an individual reaches age $maxAge$, she is replaced by another individual of age 0. Hence, the initial conditions (all individuals start as non-employed) affect the state of the system for exactly $maxAge$ periods, when the system, which clearly is stationary and ergodic, converges to its long run behavior.

In order to analyze the behavior of the model, we perform a sensitivity analysis for the relevant parameters, in the stationary state. The parameters we focus on are ϕ and θ_A , characterizing stigma, and the planning horizon h , symbolizing individual's cognitive boundaries. We also allow variation in the initial employment probability γ_0 (as it is likely to change greatly over time and space) and in the benefit level C_B (modifiable by welfare policy). Wishing to keep the value of current utility with no benefit lower than with income support (otherwise no one would ever enter welfare), ϕ never exceeds C_B^2 . A one-at-time (OAT) design is used, letting each parameter vary around a default configuration: this allows to compute the equivalent of the partial derivatives at the equilibrium. The values of the parameters used for the sensitivity analysis are reported in Table 1. The parameters in panel (b) are allowed to vary one at time, while all the others are held constant, according to the values reported in panels (a) and (c).

[Table 1 about here]

The parameters are not empirically calibrated. “Reasonable” values are employed when possible. As an example, market wage is set to four times charity income (recall that we are dealing with a weak sector of the labor force), while the benefit lays somewhere in between, mimicking the fact that in some countries it is near the subsistence level while in others it is close to minimum wage.

The time unit can be thought of as a month; being a very small span, the discount factor is close to 1. Individuals are followed for 120 time units, hence the observation period is 10 years. The exponents in the utility function are set to $\alpha = 2$ and $\beta = 0.5$: these values are chosen to keep low the value of leisure, in order to make the search option sufficiently likely, given the values for the consumption levels.¹³ We report the results for the (cross-sectional) take-up and welfare participation rates, and the (longitudinal) non-employment and welfare spell length. We then analyze the effects of a joint variation of both components of stigma, around the default configuration.

6.1 The effect of ϕ

The utility cost of being on welfare ϕ enters the model as described in Moffitt (1983). As a result, as ϕ increases not all the eligible claim the benefit and take-up rates decline. Since the value of non-employment is negatively affected by ϕ , the search effort increases and *ceteris paribus* non-employment declines. Accordingly, welfare participation rates are also negatively affected. Once on welfare, ϕ does not affect behavior, hence welfare exit rates. However, as ϕ increases only those with lower employment prospects enter welfare. Due to self-selection, the average welfare spell duration increases with ϕ .

6.2 The effect of θ_A

With strong forecasting take-up rates decrease as the employability component of stigma increases (Figure 1). This is due to the *deterrence effect*: individuals anticipate the higher risk of welfare trap, postpone welfare entry and keep searching. This effect does not operate with weak forecasting, because individuals do not foresee the loss of employability.

[Figure 1 about here]

¹³ The general validity of our results is confirmed by repeating the sensitivity analysis for a high number of randomly chosen configurations of the parameters. For the sake of brevity the outcome of this analysis is not reported here; results are however available upon request.

The *entrapment* effect is shown in Figure 2. The share of welfare recipients actively seeking for work decreases, because as θ_A increases the current disutility implied by searching is no longer counterbalanced, as the chances of finding a job wear off.

[Figure 2 about here]

Consequently, fewer individuals exit assistance and welfare spells on average grow longer (Figure 3). These patterns are more pronounced with strong forecasting, as a selection effect adds to this behavioral effect: if individuals anticipate the loss of employability, welfare entry is further delayed, hence only individuals with very low employment prospects will claim the benefit.

[Figure 3 about here]

Our main finding is depicted in Figure 4: the relation between stigma and non-employment is reversed U-shaped with strong forecasting, and positively monotonic with weak forecasting. The intuition is that when θ_A is low individuals enter welfare at the beginning of the non-employment spell; non-employment rises because search effectiveness progressively diminishes and recipients eventually stop searching (the *entrapment effect* prevails). On the other hand, as θ_A increases individuals anticipate the higher risk of welfare trap, postpone welfare entry and keep searching (the *deterrence effect* prevails). The latter mechanism does not operate with weak forecasting, because individuals do not foresee the loss of employability: hence, the probability of active job-searching decreases and the non-employment rate rises steadily with θ_A . The effect of stigma on job-search is shown in Figure 5.

[Figure 4 about here]

[Figure 5 about here]

Given the patterns observed for take-up and non-employment rates, the welfare participation rate is also reversed U-shaped with strong forecasting, while it is positively related to θ_A if individuals do not anticipate the loss of employability due to being on welfare (Figure 6).

[Figure 6 about here]

6.3 The effect of planning horizon

As the individual capacity to look ahead augments, the non-employment rate sharply goes down (Figure 7). The reduction is even stronger if the detrimental effect of θ_A on employment prospects is correctly anticipated. The reason is that, as the planning horizon increases, the deterrence effect is enhanced. Considering all cognitive abilities together, i.e. the extent of the planning horizon and the ability to anticipate the reduction in employability linked to welfare participation, we find that the stronger the individual's forecasting skills, the better the overall economic outcomes. If we are willing to cast doubts on individuals' capability to evaluate future prospects, these results demonstrate that if we incorrectly assume perfect forecasting we are likely to make predictions which could be largely too optimistic.

[Figure 7 about here]

6.4 Rising stigma

So far, we have analyzed the behavior of the economic outcomes of interest as each of the stigma components ϕ and θ_A varies while the other one remains fixed: in particular, non-employment rates decrease as ϕ increases, while for rising θ_A we observe rising rates with weak forecasting and a

reversed U-shape with strong forecasting. However, *both* parameters are likely to be affected if the level of stigma changes, hence, the net effect on non-employment is a priori undetermined.

In this light, we have carried out an additional set of simulations where all combinations of (ϕ, θ_A) are considered. The surfaces in the tri-dimensional plots in Figure 8 depict the non-employment rate for varying (ϕ, θ_A) . Whether non-employment rates rise or fall depends critically on the direction of the change and the initial values of (ϕ, θ_A) . Similar results also hold for welfare participation rates.

[Figure 8 about here]

7. Empirical evidence

While the implications of our theory differ significantly from those of the traditional model, a validation with real data is extremely difficult, because stigma is likely to be endogenous and suitable data to take this issue into account properly are lacking. Nevertheless, we present some raw evidence that, while in line with the predictions of our model, contradict *primo visu* the traditional model.

First, let us note that stigma refers to subjective information that must be collected via survey. To date, there has been little effort to measure welfare stigma. We get some evidence by using data drawn from the international World Values Survey, promoted by a worldwide network of social scientists studying changing values and their impact on social and political life, which provides harmonized questions on values and attitudes for national representative samples from a large set of countries. The following question appears to be directly related to welfare stigma: “*Do you agree with the following statement? It is humiliating to receive money without having to work for it*”. The question was first submitted in 1999, and it was repeated for a subset of countries in 2005.¹⁴

¹⁴ The VWS has been employed to measure different concepts of interest for economists: Algan and Cahuc (2009) employed it for the assessment of civic attitudes, Lindbeck and Nyberg (2006) for the assessment of the strength of work norms.

The answers of the unemployed reflect the feelings of those individuals who are potentially (or have been) personally exposed to welfare stigma. However, these feelings are likely to be influenced by past personal experience and to capture discouragement, which in our model is an intermediate effect of stigma (stigma affects self-confidence, which in turn affects employability). Due to lack of longitudinal data in the VWS, this endogeneity problem cannot be solved, so the net effect of stigma on the relevant economic outcomes at the individual level is not identified.

Yet, the feelings of welfare recipients are affected by the attitudes of the society as a whole. The literature on the origin of welfare stigma (Besley and Coate, 1992) and that on work norms formation (for example, Lindbeck and Nyberg, 2006) suggest that welfare stigma is deeply related to the design of welfare programs. Thus, social disqualification is expected to vary across countries and welfare systems and, at least in the short run, can be considered as given. In this perspective we look at the available evidence at the cross-country level.

The normalized country mean value of the answers to the WVS question is reported in Table 2 for selected OECD nations.¹⁵ 0 denotes absence of stigma (everybody strongly disagrees with the statement) and 1 maximum stigma (everybody strongly agrees). Capturing the views of all individuals –the feelings of welfare recipients and people at risk of poverty on one side, the attitudes of the rest of the society (including prospective employers) on the other– it can be regarded as a country-level index of welfare stigma. Welfare stigma appears to be quite stable over time, and within-country differences are much smaller than those across-country, supporting the view that stigma can be considered as a cultural trait, rather than a contingent factor rapidly changing with the business-cycle.¹⁶

[Table 2 about here]

¹⁵ Answers to the questions are coded from 1 (strongly disagree) to 5 (strongly agree).

¹⁶ The average within-country standard deviation of the stigma index, measuring time variability, is 0.014; the between-countries standard deviation is 0.071 for 1999 and 0.059 for 2005.

The choice of the outcome variable is also problematic. Our model gives predictions about non-employment of a small segment of the population –those individuals at risk of poverty that are in principle willing to work– which is not separately identifiable in the official statistics. Proxies for this outcome must therefore be used. The more natural ones appear to be the long-term unemployment rate and the long-term poverty rate.

The long-term unemployed are at risk of poverty and are willing to work: the fact that they do not find a job shows that their search effectiveness is low, coherently with our setting. Abstracting from the problem of working poor, long-term poor are also likely to be non-employed and potential recipients of social assistance.¹⁷

Moreover, our model gives predictions of welfare participation rates. However, given that the eligibility conditions vary substantially between different institutional settings, it is not possible to use the cross-country variation in welfare participation rates to support our model.

Welfare stigma appears to be *positively* related to long-term unemployment and poverty rates (Figure 9); correlation coefficients are respectively 0.51 and 0.69.¹⁸ A positive relationship between stigma and long-term unemployment or long-term poverty rates is consistent with our theory, while it is *not* in line with the predictions of traditional job-search models. Of course, these stylized facts could be consistent with other theoretical explanations, but given the scarcity of data, it is difficult to disentangle the effect of stigma from the multitude of other confounding country-level characteristic. In this light, we now discuss potential alternative explanations of the available empirical evidence:

[Figure 9 about here]

¹⁷ Social assistance generally keeps beneficiaries below the poverty line (OECD, 2004).

¹⁸ There is a positive association between stigma and long-term unemployment also at the within-country level ($\rho=0.46$), although over time variation can be evaluated only for the six countries for which there is data on stigma for 2005. No data is available on long-term poverty for the year 2005. Note that long-term unemployment and poverty rates remain positively related to welfare stigma even when several variables accounting for institutional and labor market features are kept under control in multivariate analyses.

Reverse causation:

In principle, welfare stigma can be endogenous also at the macro-level. It could be that it is the level of unemployment that affects welfare stigma, rather than the opposite. Yet, the few existing theories on the determinants of welfare stigma (Besley and Coate, 1992) yield to the opposite predictions. The ‘statistical discrimination’ model implies a *negative* relation between unemployment and welfare stigma. According to this view, welfare participation is a signal of the individual's unobservable characteristics. In the low phases of the business cycle people are laid off beyond their will, hence the predictive power of the signal decreases, leading to lower stigma.¹⁹

Spurious correlation:

As argued above, stigma is likely to be related to the characteristics of the welfare system. As shown in Table 1, social disqualification is highest in the countries belonging to the Mediterranean-residual welfare regime, in particular in Italy and Greece (where no minimum income exists), while it is generally much lower in Social Democratic regime countries, and also in Germany, where the minimum income scheme has a long-standing tradition. Thus, there appears to be less stigma where benefits are more generous and the welfare system has a universalistic character, and more stigma where income support is low and benefit provision categorized (OECD 2004).²⁰ On the other hand, research unambiguously points to a negative relation between the level and duration of welfare benefits and unemployment; *ceteris paribus*, the more generous the system, the higher the level of unemployment.²¹ In this light, the characteristics of the welfare system should drive towards a *negative* relation between stigma and unemployment, while the observed relation is positive.

¹⁹ In a similar perspective, Clark (2003) and Hedstrom *et al.* (2003) show that the social and psychological costs of being unemployed diminish when unemployment rates are high. Thus, we should also expect welfare stigma to lessen with high unemployment. On the other hand, Besley and Coate's *taxpayer resentment* model has no clear-cut implications on the relation between unemployment or poverty and welfare stigma.

²⁰ This evidence is consistent with Saraceno (2002), who argues that universalistic and more generous welfare policies yield to lower welfare stigma. The empirical evidence is also in line with Lindbeck and Nyberg (2006): developing a theoretical model for work norm formation, they predict that more generous welfare arrangements provide weaker incentives for parents to instill work norms in their children, leading to lower stigma. On the other hand, it appears to contradict Besley and Coate (1992) who claim that a rise in the benefit increases welfare stigma, while targeting policies may contribute to keep it low (because only those perceived as deserving would receive assistance).

²¹ Nonetheless the raw correlation between unemployment and level of the benefits is positive at the cross-country level.

On the other hand, we cannot rule out civicness as a possible source of spurious dependence. Civic attitudes are shown to positively affect labor market performances (Algan and Cahuc, 2009). On the other hand, we expect little stigma to be attached to welfare participation where civic attitudes are strong; civicness should affect the behavior of welfare recipients by reducing the incentives to cheat or reduce job-search effort, contributing to support the view that income support is a citizen's right, thereby keeping stigma low.^{22,23}

8. Summary and conclusions

Low take-up rates of welfare benefits are a cause of concern for policy makers, as they reduce the probability that welfare programs attain their goal of reducing poverty. Take-up rates are negatively affected by welfare stigma. According to traditional job-search models, however, also non-employment tends to decrease with stigma. Hence, although from the former perspective stigma is considered 'a bad', from the point of view of non-employment reduction it may be considered 'a good'.

This mainstream conclusion no longer holds if the stigma attached to receiving the benefit, in addition to representing a fixed cost of welfare participation, also entails a reduction of job-search effectiveness. This reduction is related to a progressive loss of confidence and to a deterioration of the quality of the social networks that welfare recipients have access to; it might also be elicited by the negative attitudes of prospective employers, who get to know that a prospective employee lives off benefits and consider it a bad signal.

Under our more comprehensive model, non-employment rates are not-monotonically related to stigma, which may lead to *higher* non-employment and welfare participation rates. This result is

²² Algan and Cahuc (2009) measure civic attitudes referring to a WVS question regarding the justifiability of claiming government benefits without having the right to do so. Other items related to civic attitudes regard tax evasion. Across the countries of Table 1 the correlation coefficient between civic attitudes as measured by Algan and Cahuc and welfare stigma is -0.38; if using the items related to tax evasion, it varies between -0.08 and -0.51.

²³ However, there is some raw evidence that civic attitudes are not driving the observed statistical dependence between unemployment and stigma, as the partial correlation coefficients between stigma and long-term unemployment and poverty remain positive even after controlling for different measures of civic attitudes drawn from the WVS.

strengthened if individuals are not able to forecast the future loss of employability triggered by welfare stigma, or if they optimize only over a limited number of periods: incorrectly assuming too good cognitive skills leads to systematic underestimation of the negative effects of welfare stigma on non-employment and poverty.

In conclusion, our findings suggest that welfare stigma may actually foster non-employment and poverty. However, an empirically-based quantitative assessment of the effect of stigma on the labor market performances and welfare participation of potential social assistance clients, which are expected to vary between countries and welfare program designs, is left to future research and the availability of better data.

Appendix. Proof of Propositions 1 and 2

A.1 Proof of Proposition 1 (No reversal in the planning stage)

Although the intuition behind the result is simple, obtaining a formal proof that the optimal behavior does not allow for reversals (moving from no-search to search, or from assisted to not-assisted) is not straightforward. The proof is done by backward induction: first, we assess the optimal strategy for the last period of the planning horizon h , then we demonstrate that no reversal occurs in period $h-1$; finally, we demonstrate that, if no reversal occurs in period k , it will not occur in period $k-1$. Here we only show that no reversal occurs in periods h , $h-1$ and $h-2$. The proof of the generalization to any period k is available upon request.

A.1.1 Optimal planning in period h

Optimal planning is given by the option (s_h, a_h) maximizing

$$V_h = U(s_h, a_h) \tag{A.1}$$

Search is never optimal in the last period of the planning horizon, because the potential benefits over the subsequent period are not taken into consideration by the individual, thus there will be no advantage in reducing leisure time and no disadvantage in reducing employability.

In what follows, it is useful to distinguish three cases:

$$\mathbf{Case (a): } \phi > (C_B^\alpha - C_0^\alpha)(1-s)^\beta \quad \forall s \in \{0,1\}$$

The fixed effect of stigma ϕ is too high: current utility without income support is greater than utility with income support when searching and when not searching, hence the optimal behavior in period h is $(s=0, a=0)$. Since there is no future gain of being on welfare, being on welfare is *never* optimal.

$$\mathbf{Case (b): } \phi < (C_B^\alpha - C_0^\alpha)(1-s)^\beta \quad \forall s \in \{0,1\}$$

Current utility is maximized when on welfare, both with and without searching, hence the optimal behavior in period h is $(s=0, a=1)$.

$$\mathbf{Case (c): } C_B^\alpha - C_0^\alpha < \phi < (C_B^\alpha - C_0^\alpha)2^\beta$$

In this case, when the individual is searching it is better not to be on welfare, when she is not searching it is better to be on welfare. Current utility is maximized when $(s=0, a=1)$.

A.1.2 Optimal planning in period $h-1$, given optimal planning in period h

Let current utility corresponding to the optimal behavior in period h be U_h^* . Optimal behavior in period $h-1$ is given by the option (s_{h-1}, a_{h-1}) maximizing:

$$V_{h-1} = U_{h-1} + (p_{h-1}E + (1-p_{h-1})U_h^*)R \quad (\text{A.2})$$

where both U_{h-1} and p_{h-1} depend on behavior at time $h-1$. Let p the employment probability with no benefit provision: hence, the corresponding probability with assistance is $p(1-\theta_a)$, while the probability when no search is undertaken is 0.

The values associated with the four available options are:

- i) $V_{h-1}(s=0, a=1) = U(s=0, a=1) + U_h^*R$
- ii) $V_{h-1}(s=1, a=1) = U(s=1, a=1) + (p(1-\theta_a)E + (1-p(1-\theta_a))U_h^*)R \quad (\text{A.3})$
- iii) $V_{h-1}(s=0, a=0) = U(s=0, a=0) + U_h^*R$

$$\text{iv) } V_{h-1}(s=1, a=0) = U(s=1, a=0) + (pE + (1-p)U_h^*)R$$

Clearly, option iii) ($s=0, a=0$) is dominated by i) ($s=0, a=1$) in cases (b) and (c), while option i) ($s=0, a=1$) is dominated by iii) ($s=0, a=0$) in case (a). All other choices are possible in principle, the maximum of V depending on the specific values of the parameters. None of these choices invalidates the thesis, as no reversal occurs either for assistance or for job-search.

A.1.3 Optimal planning in period $h-2$, given optimal planning in periods $h-1$ and h

Optimal behavior in period $h-2$ is given by (s_{h-2}, a_{h-2}) maximizing:

$$V_{h-2} = U_{h-2} + (p_{h-2}E + (1-p_{h-2})U_{h-1}^*)R + \\ [(1 - (1-p_{h-2})(1-p_{h-1}))E + (1-p_{h-2})(1-p_{h-1})U_h^*]R^2 \quad (\text{A.4})$$

where U_{h-1}^* is the current utility of the optimal choice in period $h-1$. We refer here to case (b) since it is the most complex. Given that optimal behavior in period h is ($s=0, a=1$), there are 12 possible sequences, 5 of which exhibit a reversal on either search or welfare participation (see Fig.A.1). It is possible to demonstrate that none of them is optimal; since the proof is similar for all sequences, we report it only for one of them, namely that the sequence $(s=0, a=0)_{h-2}(s=1, a=1)_{h-1}(s=0, a=1)_h$ is not optimal.

[Figure A.1 about here]

Proof. We have to show that if ($s=1, a=1$) is optimal in period $h-1$, ($s=0, a=0$) cannot be optimal in period $h-2$. In particular, we demonstrate that if the option ($s=1, a=1$) is preferable to option ($s=0, a=0$) in period $h-1$, then it will also be preferable in period $h-2$.

The following holds for period $h-1$:

$$U(s=1, a=1) + (p_{h-1}(1-\theta_a)E + (1-p_{h-1}(1-\theta_a))U_h^*)R > U(s=0, a=0) + U_h^*R \quad (\text{A.5})$$

Thus:

$$U(s=0, a=0) - U(s=1, a=1) < p_{h-1}(1-\theta_a)(E - U_h^*)R \quad (\text{A.6})$$

implying that searching is rational when the employment probability is still high. We now demonstrate that the following also holds:

$$\begin{aligned} U(s=1, a=1) + (p_{h-2}(1-\theta_a)E + (1-p_{h-2}(1-\theta_a))U(s=1, a=1))R + \\ (1-(1-p_{h-2}(1-\theta_a))(1-p_{h-2}(1-\theta_a)^2(1-\theta_u)))ER^2 + \\ (1-p_{h-2}(1-\theta_a))(1-p_{h-2}(1-\theta_a)^2(1-\theta_u))U_h^*R^2 > \end{aligned} \quad (\text{A.7})$$

$$\begin{aligned} U(s=0, a=0) + U(s=1, a=1)R + p_{h-2}(1-\theta_a)(1-\theta_u)ER^2 + \\ (1-p_{h-2}(1-\theta_a)(1-\theta_u))U_h^*R^2 \end{aligned}$$

As before, p represents the employment probability with no assistance; the subscript refers to the period in the planning schedule, in this case $h-2$. The probability in period $h-1$ is multiplied by $(1-\theta_a)(1-\theta_u)$ because of the loss of employability due to welfare and unemployment assumed in the model. This relation implies that:

$$\begin{aligned} U(s=0, a=0) - U(s=1, a=1) < p_{h-2}(1-\theta_a)(E - U(s=1, a=1))R + \\ (termR^2(s=1, a=1) - termR^2(s=0, a=0)) \end{aligned} \quad (\text{A.8})$$

Relation (A.6) implies (A.8) because the right hand side in (A.8) is greater than in (A.6). In fact:

- $p_{h-2} \geq p_{h-1}$ since the employment probability is non-increasing in time;
- $E - U(s=1, a=1) > E - U_h^* = E - U(s=0, a=1)$ since $U(s=0, a=1) > U(s=1, a=1)$;
- $termR^2(s=1, a=1) - termR^2(s=0, a=0) > 0$. This is because each term represents a

weighted average of current utilities E and U_h^* ; for option $(s=1, a=1)$ the weight given to U_h^* is $(1-p_{h-2}(1-\theta_a))(1-p_{h-2}(1-\theta_a)^2(1-\theta_u))$ while for option $(s=0, a=0)$ the weight is $1-p_{h-2}(1-\theta_a)(1-\theta_u)$. Since the former value is smaller than $(1-p_{h-2}(1-\theta_a))$ while the latter is larger than $(1-p_{h-2}(1-\theta_a))$, the weight assigned to the smaller value is larger for $(s=0, a=0)$, implying that the difference above is positive.

B.2 Proof of Proposition 2 (no reversal in the re-evaluation stage)

Proposition 1 states that if at time t the individual plans not to search at a given time, she will not plan to search at a later time, and if she plans to be on welfare at a given time, she will not plan to exit afterwards. Given this optimal schedule, the individual will implement the action for the *first* period in the planning horizon; at time $t+1$ she will re-evaluate her behavior in the light the current employment probability.

By equation (3) $p_{t+1} \leq p_t$ (the employment probability remains constant between t and $t+1$ only if $\theta_u = 0$ and $\theta_a = 0$, the latter condition being required only if the individual is assisted). Quite trivially, if $p_{t+1} = p_t$, the decision problem in $t+1$ is identical to that in t , hence no reversal will occur. Therefore, we have to prove the following:

$$(p_{t+1} < p_t) \cap (s_t = 0) \Rightarrow (s_{t+1} = 0)$$

$$(p_{t+1} < p_t) \cap (a_t = 1) \Rightarrow (a_{t+1} = 1)$$

The case $h=1$ is trivial, since only current utility, which does not depend of p , is taken into consideration. Consider then a planning horizon with $h=2$. In the first period of the planning horizon ($h-1$) we have:

$$V_{h-1}(w_{h-1}) = U(w_{h-1}) + (p_{h-1}(w_{h-1})E + (1 - p_{h-1}(w_{h-1}))U(w_h^*))R \quad (\text{A.9})$$

Recall that individuals design their optimal planning by choosing the best option for period h , and then moving backwards to earlier periods. As in the previous section, w can be any of the available options, while w^* the optimal choice for the corresponding period.

$V_{h-1}(w)$ cannot increase from time t to $t+1$. Consider the term multiplied by R first. This term cannot increase, because: if the individual is not searching, it remains constant and equal to $U(w^*)R$; if she is searching, since the term is a weighted average of two values (E and U) with a higher weight given to the greater value (E) when p is higher, the term must decline over time. A change in behavior w_{h-1} (for instance if the individual stops searching in case she was searching, or

if she enters assistance if she was out) may partly offset this decrease; however, given that the new choice was available also at time t when p was higher, the overall variation has to be negative.

If $h = 3$, in the first period of the planning horizon ($h-2$) we have:

$$V_{h-2}(w_{h-2}) = U(w_{h-2}) + (p_{h-2}(w_{h-2})E + (1 - p_{h-2}(w_{h-2}))V_{h-1}(w_{h-1}^*, w_h^*))R \quad (\text{A.10})$$

which is also not increasing over time, because p declines and, as just shown, $V_{h-1}(w)$ does not increase. The same argument holds for $h > 3$.

Generalizing, we have:

$$V_1(w_1) = U(w_1) + (p_1(w_1)E + (1 - p_1(w_1))V_2(w_2^*, w_3^*, \dots))R \quad (\text{A.11})$$

where, again, V_2 is non-increasing over time. A reversal in behavior – return to search, or exit from assistance – entails a decline of current utility (recall the proof of Proposition 1) in exchange of an increase of the employment probability. Given that p decreases over time, if these options were not optimal in t , they cannot be optimal in $t+1$.

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