Carrots or Sticks? Short-Time Work vs. Lay-off Taxes

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Abstract

While unemployment insurance systems are widely used to insure workers against income losses after lay-offs, it is well known that they can increase separations in the labor market. There are two common policy instruments that can counter this known problem: lay-off taxes and short-time work schemes. This study provides a Search and Matching framework to evaluate which of the two is the better policy tool. We show, that if only few firms are financially constrained, lay-off taxes are better because they do not distort working hours in the economy. With a large share of financially constrained firms, short-time Work emerges as the superior tool, as lay-off taxes lose their bite. Additionally, short-time work can help provide insurance against income losses to risk-averse workers that constrained firms can no longer provide in their wage contracts.

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1 Introduction

It has long been understood that unemployment insurance systems can increase separations in the labor market. To counter this inefficiency, governments commonly have two main policy instruments at their disposal. On the one hand, there are lay-off taxes that, in effect, punish firms for firing workers. On the other, there is the short-time work system that rewards the retainment of endangered workers through subsidizing and enabling hours reductions¹.

This raises the natural question, which of the two governments should employ. Existing literature highlights that lay-off taxes have many desirable properties. Cahuc and Zylberberg (2008) and Blanchard and Tirole (2008) show in implicit contract frameworks that lay-off taxes can implement the planner solution. Stiepelmann (JMP, 2024) shows that lay-off taxes are superior in a Search-and-Matching (DMP) framework too because optimally set short-time work, while also welfare improving, introduces additional distortions in the number of working hours. However, these results crucially hinge on the absence of financial constraints for firms. This assumption is widespread in the search and matching literature but clearly is at odds with reality.

In this study, we relax this assumption in a rich but analytically tractable DMP framework and allow for a share of firms to be financially constraint. Using the Ramsey policy approach, we then determine the welfare consequences of optimally set short-time work benefits and optimally set lay-off taxes.

Our main result is that if this share is sufficiently large, short-time work emerges as the superior policy instrument. This is a consequence of two main channels. Firstly, as more firms become financially constrained, lay-off taxes lose their bite while short-time work can still operate as effectively as before. Secondly, with financial constraints, firms lose their ability to insure risk-averse workers against negative income shocks. Short-time work can then partially mitigate this and provide insurance against income shocks in the firms' stead.

¹Short-time work systems are pervasive e.g. in European countries where they were utilized during the Great Recession and the Covid period. Lay-off taxes are implemented e.g. in the U.S. through an experience-rated unemployment insurance system.

2 Model

The backbone of our model is a canonical DMP model with idiosyncratic productivity shocks (and thereby endogenous separations) and Nash-Bargaining between workers and firms. We augment the standard model with two realistic key extra ingredients: Risk aversion on the worker side and flexibly adjustable working hours. Workers and firms are randomly matched, form expectations over their match productivity and bargain over wages, working hours, and separation productivity thresholds. Productivity shocks are i.i.d. and realize after firms and workers complete bargaining.

In the presence of short-time work, government imposes an eligibility threshold on the maximum hours worked under which firms are eligible to go on short-time work. Firms and workers then additionally bargain over the number of working hours, once the worker is put on short-time work. Short-time work benefits manifest themselves as lump-sum transfer paid to the worker. This subsidy scheme is financed by taxes how exactly again? Government implements an unemployment insurance system under which unemployed workers are paid lump sum benefits b_t and potentially a lay-off tax system or a short-time work scheme. In the presence of lay-off taxes, firms have to pay lump-sum lay-off taxes once the worker-firm match breaks up after productivity falls below the separation threshold. Importantly firms pay no lay-off taxes if the worker exits the match even though productivity is still higher than this agreed-upon lower separation bound.

We assume that a share p of firms is financially constraint. Specifically, we assume that these firms cannot borrow more than the expected discounted value of the firm $\beta \mathbb{E}_t[J_{t+1}]$ at any given point in time t. These constraints have direct welfare implications. With riskaverse workers and risk-neutral firms, firms would like to offer workers insurance against low productivity shocks and commit to paying the worker a fixed wage, no matter how low or high productivity turns out to be. The worker is then willing to accept a slightly lower wage in return for the insurance. If the firm is financially constraint, however, once the borrowing constraint binds, shocks pass through to the worker's wage full. Workers are not committed to staying in the match and quit once they hit their participation constraint (i.e. once the value from quitting, becoming unemployed, and looking for a new job is greater than staying). Therefore, the welfare effect of financial constraints is twofold: Firstly, firms cannot provide as much insurance to workers as they would like and secondly, workers quit sooner.

3 Optimal Policy

For our policy analysis, we focus on the economy in steady state. Even when set optimally, the unemployment insurance system creates inefficiencies that operate through the following channels: There is the welfare loss from too few vacancies being posted (\tilde{LV}) , too many induced separations at both unconstrained firms (\tilde{LS}_u) and constrained firms (\tilde{LS}_c) as well as the welfare loss from firms reduced ability to provide insurance for the risk-averse workers (\tilde{LI}) . The planner trades off these inefficiencies against the welfare benefit of a more generous UI (higher b). Taking first-order conditions of the Ramsey planner problem we show after some steps that this trade-off leads to the optimality condition

$$MUIB(b) = \tilde{LV}(b) + \tilde{LS}_u(b) + \tilde{LS}_c(b) + \tilde{LI}(b)$$
(1)

where MUI(b) is the marginal welfare benefit from increasing b

First, we focus on the effectiveness of lay-off taxes. When lay-off taxes are introduced, we show that equation 1 becomes

$$MUIB(b) = \tilde{LV}(b) + \tilde{LS}_u(b, F) + \tilde{LS}_c(b) + \tilde{LI}(b)$$
⁽²⁾

where F is the lump-sum lay-off tax. Since lay-off taxes cannot provide insurance for the workers and are never paid by financially constrained firms, lay-off taxes only act on \tilde{LS}_u which can be set to 0 if F is set optimally.

Next, we turn to short-time work. When short-time work is introduced, equation 1, by contrast, becomes

$$MUIB(b) = LV(b) + LS_u(b, \tau_{stw}) + LS_c(b, \tau_{stw}) + LI(b, \tau_{stw})$$
(3)

where $\tau_{\rm stw}$ is the lump-sum short-time work benefit. Unlike lay-off taxes, short-time work can act not only on separations in unconstrained but also in constrained firms since the constrained firms do not have to pay anything. Additionally, short-time work can, as discussed, partially insure workers against earnings losses in bad productivity states because if productivity is low, the firm can go on short-time work and pay lower wages but the worker is paid $\tau_{\rm stw}$ on top.

In principle, through short-time work, the planner could set \tilde{LS}_u and \tilde{LS}_c to 0 and reduce \tilde{LI} as well. However, we show that raising τ_{stw} comes at a cost through distorting the

working hours that workers and firms will agree on. This welfare cost will keep the planner from absorbing these inefficiencies to the fullest possible extent.

In summary, lay-off taxes can only tackle one of the UI-induced inefficiencies, namely high levels of separations in unconstrained firms. This inefficiency, it can absorb fully. Short-time work on the other hand can counter high levels of separations in all firms and partially insure workers against bad productivity shocks. It cannot, however, absorb these inefficiencies fully as the planner needs to take the additional working-hours distortion it introduces into account.

It is therefore not immediately obvious which of the policy instruments are more effective. We proceed to show that the answer crucially depends on the share of constrained firms p. When p is large enough, short-time work dominates lay-off taxes and is the superior policy instrument.

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