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Essays on Unemployment and Labor Supply

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Understanding the determinants of individuals' participation in market-base production is the focus of the three essays presented here.

Chapter 1 attempts to address a fundamental question that has not been resolved by the existing literature: Does unemployment insurance (UI) induce a simple delay in job acceptance as the unemployed enjoy subsidized leisure? Or do the unemployed use additional benefits to actively improve their job opportunities, so that subsidizing a longer search results in a better job? These questions have significant implications for our understanding of unemployment and the design of unemployment insurance.

Contrary to standard search model predictions, prior studies fail to estimate a positive effect of UI on reemployment wages. Chapter 1, coauthored with Andrea Weber, addresses this puzzle in two steps. First, it estimates a positive UI wage effect by exploiting an age-based regression discontinuity in Austrian administrative data. Second, it shows that these empirical estimates can be reconciled with search theory once our model incorporates duration dependence. In fact, in such a setting, the UI wage effect is determined as the balance between two offsetting forces: UI causes agents to seek higher-wage jobs but also reduces wages by lengthening unemployment. This implies a negative relationship between the UI unemployment-duration and wage effects, which holds empirically both in our sample and across studies, reconciling disparate wage-effect estimates.

Connecting these results to a normative model of UI points to an overlooked welfare benefit: UI increases future tax revenue through higher wages. We show that this positive fiscal externality is of the same order of magnitude as the traditional negative moral-hazard externality emphasized in prior work. These results suggest that taking into account gains in job quality could significantly change the optimal generosity of UI.

Chapter 2 offers a dynamic view of unemployment, which allows us to study the separation of workers from firms as well as their hiring. In my framework, layoffs stem from temporary wage rigidity and noncontactable productivity shocks. Using an optimal allocation approach, I show that the optimum allocation is realized when employers internalize not only the direct cost of layoff, i.e., expected UI benefits, but also two additional costs: 1) the uninsured cost of layoff due to moral hazard, which takes the form of a Pigovian tax; and 2) the increase in the unemployment rate due to lower effort from workers. These results shed some light on our understanding of UI tax design.

Chapter 3 offers a close look at the household labor supply decisions, in particular, how price shocks can affect the labor supply of its members. The chapter examines this question by exploiting exchange rate variations as exogenous price shocks to immigrants' budget constraints. This helps to answer the following question: Are an immigrant's decisions affected in real time by her home country's economy? I find that in response to a 10 percent dollar appreciation, an immigrant decreases her earnings by 0.92 percent, mainly by reducing hours worked. The exchange rate effect is greater for recent immigrants, married immigrants with absent spouses, Mexicans close to the border, and immigrants from countries with higher remittance flows. A neoclassical interpretation of these findings suggests that the income effect exceeds the cross-substitution effect. Remittance targets offer an alternative explanation.

Chapter 1

Do Unemployment Benefits Improve Job-Match Quality?

(coauthored with Andrea Weber)

The great recession, accompanied by soaring unemployment rates, has brought UI back to the center of public attention. The debate rages on about whether generous UI programs provide a remedy or exacerbate the problem. Program proponents point out the value of insurance against income loss from layoff and long-term unemployment, while opponents cite a robust empirical finding in labor economics: UI reduces the incentives for job search and increases jobless durations.

A key factor missing from the current debate has been the effect of UI on job-match quality. According to the theory of job search, UI prolongs jobless durations for two reasons: 1) agents spend less time and effort looking for a job, and 2) agents become more selective in the type of job they seek. The latter channel implies that access to unemployment benefits may help job seekers find better jobs. In the past, however, UI proponents were cautious to make the case for a positive effect on job quality, since "the evidence here is very thin" (Layard, Nickell, and Jackman 2005, p. 211).[1] In fact, until very recently, most of the available estimates of the unemployment benefit effect on job quality, mainly measured by wages, were not significantly different from zero (Card, Chetty, and Weber 2007; Lalive 2007; Van Ours and Vodopivec 2008).

Evidence for Positive Effects of UI on Job Quality

Chapter 1 demonstrates empirically that access to more generous UI does indeed lead to agents finding better jobs. Moreover, it explains why previous studies had a hard time

identifying this effect. In particular, it exploits a quasi-experimental design to study the effects of an extension of the potential unemployment benefit duration on job search outcomes, using 19 million job separations recorded in Austrian administrative data.

Consistent with prior research, Chapter 1 estimates that an increase in potential benefit duration causes workers to stay jobless longer. But in contrast with previous studies, we find that the benefit extension also causes workers to find jobs that pay, on average, 0.5 percent higher wages. Moreover, the positive wage effect persists over time and does not substitute any other desirable job characteristics.

Investigating the mechanisms driving the positive effect of UI on wages, we find that it results from an attenuation of wage declines between pre- and postunemployment jobs. In particular, access to more generous benefits reduces the likelihood of experiencing a wage loss that is larger than 40 percent and increases the likelihood of achieving a wage increase between 0 and 10 percent.

Exploiting the matched employer-employee component of the Austrian data, we also investigate whether unemployed workers benefitting from UI either find jobs in higher-paying firms or find better-paying jobs in an average firm. Our results show that UI helps job-seekers move toward "better" firms: they find jobs in larger firms with higher proportions of male and older employees, which typically proxy for a higher bargaining power of workers. Most importantly, we document that these unemployed workers are moving to firms that, on average, pay higher wages to their other employees.

Folk Wisdom

Consider two popular explanations for unemployment. According to the first explanation, unemployment is due to randomness in job search.[2] The second one argues that randomness is not an issue, but that the mismatch between workers' skills and firms' demand for skills creates unemployment. In this world, unemployed workers have to wait for a suitable vacancy to open or acquire necessary skills for available vacancies.

UI subsidizes job search in either scenario because it gives unemployed individuals more time to sample job offers or prepare for the right vacancy. Following this argument, UI should raise jobless durations and, at the same time, increase job quality. Additionally, it also subsidizes leisure so that agents may delay starting an accepted offer, which would lead to agents lowering their effort with no effect on job quality. Folk wisdom can thus explain positive or zero effects of UI on job quality.

Folk Wisdom is Incomplete

Contrary to folk wisdom, the effect of UI on subsequent job-match quality is not necessarily positive, as it is determined by two offsetting forces. On the one hand, UI increases agents' selectivity, which in turn has a positive effect on job quality. On the other hand, UI raises jobless durations and may thus reduce job quality, as job opportunities decline over the jobless spell. This decline in job opportunity over time can be caused by multiple factors, such as loss of human capital, stigma, screening by employers, or diminished savings.[3]

If we assume that job seekers are rational and forward looking in their decisions, how can a more generous unemployment benefit lead to a lower subsequent job quality? This is theoretically possible, as agents care about well-being or consumption rather than just the earnings when they are employed. It can be shown that UI creates a wedge between the two and can thus reduce wages, although it always increases consumption.

A Reconciliation of Empirical Findings

A large body of existing empirical work has not found any effect of UI on job quality. For instance, three prominent papers that use quasi-experimental designs and administrative data provide estimates of UI effects on wages that are not significantly different from zero (Card 2007; Lalive 2007; Ours 2008). Moreover, there is recent evidence of a statistically significant negative wage effect for Germany (Schmeider, von Wachter, and Bender 2013), while the evidence discussed above finds a positive effect for Austria.

These different empirical findings do not contradict theory once we take into account duration dependence, meaning that the job seeker's opportunities and skills deteriorate the longer she remains out of a job, while at the same time unemployment benefits decrease. We show that a job search model incorporating duration dependence can reconcile the contrasting empirical estimates of the effect of UI on job quality.

Moreover, the model highlights a potential source of heterogeneity that drives empirical estimates, namely, the relative importance of search effort vs. selectiveness in determining the job finding rate. This heterogeneity is reflected in a negative correlation between the effect of UI on jobless durations and its effect on job quality. We show that the negative correlation holds in a meta-analysis of existing estimates: studies that estimate stronger effects of unemployment benefits on jobless durations also tend to find smaller effects of benefits on job quality and vice versa.

Policy Implications

As the UI system is designed to balance the value of insurance against job loss with the cost of extra taxes, an important policy question is, what is the optimal level of generosity of unemployment insurance? The conventional answer to this question has focused on the effect of unem-

ployment benefits on unemployment durations. As insurance reduces the incentives of jobless agents to find a job, it raises aggregate benefit payments and creates higher taxes for the rest of the population. In the conventional model, this negative fiscal externality is balanced against the insurance or consumption-smoothing value of UI to determine the optimal benefit generosity.

However, if UI also affects job quality, it might change future tax revenues. The total fiscal externality of the program should thus be calculated as the sum of the traditional negative externality from increased unemployment durations, and the externality from job quality, the sign of which depends on the sign of the effect of UI on job quality (and is theoretically undetermined).[4]

In the Austrian case, the externality from job quality is positive and has the same order of magnitude as traditional duration externality, but with the opposite sign. Based on our theoretical insights and this empirical estimate, we conclude that the optimal generosity of UI varies depending on the relative importance of the effort versus selectivity margins in job search. These results suggest that taking into account gains in job quality could significantly change the policy recommendations regarding the optimal generosity of unemployment insurance.

Chapter 2

The Design of Unemployment Insurance: Benefits and Taxes

Unemployment benefits increase unemployment spells by reducing a laid-off worker's job search efforts or increasing her job selectiveness (e.g., reservation wage). Job search and selectiveness are both unobservable by the government. The resulting moral hazard creates a fiscal externality that should be balanced against the insurance of unemployment benefit. This trade-off has been the basis for the estimation of optimal unemployment benefits.

However, the layoff decision itself is affected by UI taxes levied on firms. The common understanding is that perfect experience rating is the optimal policy in this regard. Perfect experience rating means that firms pay the full UI of worker layoffs through higher taxes. The argument in favor of perfect experience rating originates in Feldstein (1976). The general insight is that an incomplete experience-rated UI system creates a cross-subsidy between firms and makes employers more likely to lay off workers and employees more willing to work in layoff-prone firms.[5] This is due to the fact the firms and workers do not completely internalize the social cost of layoff.

In this chapter, we investigate this question and derive the condition under which such intuition holds. The main feature of the model is two asymmetry of information: unemployed agents' efforts are not observable by planner, and firms' layoff risks are not perfectly observable by agents.

In a simple static model, I show the trinity among full insurance, production efficiency, and perfect experience rating. Production efficiency is achieved with a Pigovian internalization such that a laying-off firm faces a marginal tax rate equal to the worker's cost of layoff. Moreover, full insurance put unemployment benefit equal to this cost. Therefore, full insurance and production efficiency together imply that the layoff tax should be equal to unemployment benefit, i.e., perfect experience rating.

However, this intuition breaks down once UI does not completely insure the agents due to assymetry of information (moral hazard problem) (Baily 1978). In this case, the employer needs to internalize not only the direct cost of layoff—that is, the expected unemployment benefit—but two extra costs: 1) the uninsured cost of layoff (a Pigovian tax), and 2) the increase in the unemployment rate due to lower effort from workers. The latter stems from the fact that the idea of optimality of perfect experience rating is based on the direct fiscal externality created by a layoff (higher taxes on others), whereas the indirect externality (higher layoff rate creates a behavioral response among unemployed workers) is ignored.

Furthermore, we show that the layoff tax depends on the degree of layoff-risk observability at the time of job search. For example, in a world with no insurance, if the layoff risk is unobservable, then layoff tax is positive due to uninsured layoff cost. However, optimal layoff tax is zero in the other extreme, where layoff risks are completely observable—as in this case, wages are fully compensating agents for layoff risks.

The main result of the chapter is the optimal unemployment benefit and taxation formula. I develop an optimal UI taxation formula that depends on the degree of insurance of unemployment benefit (moral hazard) as well as the degree of compensation of layoff risk by firms (which depends on the observability of layoff risks). Second, I show that the Baily-Chetty-type formula for optimal unemployment benefit level holds independently of UI taxes.

This chapter lies at the intersection of three research strands. First, there is a four-decades-old debate about the role of experience rating in the U.S. labor market. Feldstein (1976) focuses on the effect of experience rating on temporary layoffs. In his model, firms are facing demand shocks and have an exogenous number of attached employees, in the sense that they do not search jobs elsewhere when unemployed. The main result is that incomplete experience rating leads to an excess of temporary layoff. Albrecht and Vroman (1999) examines the consequences of experience rating in an efficiency wage model where layoff is caused by workers' heterogeneity. They find that, in the presence of experience rating, firms pay higher wages in order to avoid layoffs, and

thus some degree of experience rating is part of the optimal policy.

Several papers find empirical support for this prediction, and they generally attribute a substantial share of temporary layoffs to incomplete experience rating.[6] Anderson and Meyer (2000) analyze the reintroduction of experience rating in Washington State in 1984. Their findings suggest that industry average tax rates are largely passed on to workers, but much less of the difference between firm's tax rate and the industry average rate (see also Anderson and Meyer [1997]).

The second strand of literature is closely related to the first one but directly focuses on a layoff tax. Layard (2005) observes that an increase in layoff costs has an ambiguous impact on unemployment: it reduces both job creation and job destruction.[7] Mandatory firing costs can help employers to promise credibly not to cut wages in low-profitability periods if layoff risks are unobservable (Karabay and McLaren 2011).[8]

The third related strand of literature attempts to estimate the degree of compensating differentials for unemployment risk. Topel (1984) finds the first evidence of compensation for anticipated unemployment risk. The level of compensation decreases with UI generosity.[9] Specifically, he estimates a wage premium of about 1 percent for each point of unemployment when unemployment benefit replacement rate is 50 percent. More recently, several papers revisited this question (e.g., Magnani [2002] and Moretti [2000]). In particular, Ruf, Lalive, and Zweimuller (2006) estimate a firm-component of layoff risk in spirit of Abowd, Kramarz, and Margolis (1999). They then show that firms compensate workers for this component. However, the effect is quite small and confined to temporary layoffs. Del Bono and Weber (2008) use variation in the starting month of seasonal jobs as a predictor of anticipated unemployment. They find that employers pay, on average, 11 percent higher wages for seasonal jobs.

The closest paper to this work is Blanchard and Tirole (2008). They consider the design of a UI system with taxes and benefit. In a simple static framework, they offer intuitions on how several unrealistic assumptions are necessary for the perfect experience rating to be optimal. One of the unrealistic assumptions is the full insurance. This chapter addresses (to some extent) the "challenge" they suggest in this regard, which is "to extend the research on optimal UI, which focuses on the optimal size and timing of benefits . . . to a model where the destruction margin is endogenous" (p. 53). Furthermore, the assumption of complete unobservability of layoff risk in Blanchard and Tirole (2008) is relaxed, which becomes important in the design of the UI system.

Chapter 3

Immigrants' Labor Supply and Exchange Rate Volatility

Are an immigrant's decisions affected in real time by her home country's economy? We might expect this to be the case, given the substantial amount of remittances they transfer and their high rate of return. This chapter demonstrates this effect by showing that an immigrant changes her labor behavior based on the purchasing power of her income in her home country. In particular, immigrants consider both the current home-country value of remittances as well as the future home-country value of their savings. This means that an immigrant's intra- and intertemporal labor decisions are affected by her home country's economy, in addition to the factors that influence native workers.

Empirical Findings

This chapter explores exchange rate variation as exogenous price shocks to the purchasing power of immigrants' earnings. Using CPS March data for 1994–2011, I estimate the exchange rate elasticity of earnings to be −0.092, so that in response to a 10 percent appreciation of the U.S. dollar relative to a currency, an average immigrant from that country reduces her annual earnings by 0.92 percent. This implies that, for instance, a one-standard-deviation appreciation of the U.S. dollar relative to the peso reduces annual earnings of the average Mexican immigrant by 1 percent.

More than 60 percent of that earnings variation can be explained by changes in annual hours worked. Two-thirds of these changes (40 percent of all earnings variation) stem from changes in the number of weeks worked. For example, an average Mexican immigrant facing a one-standard-deviation depreciation of the peso relative to the dollar reduces her annual full-time weeks worked by 0.23 weeks, which are divided equally into part-time weeks and weeks off. All these exchange rate effects on labor supply do not differ significantly between female and male immigrants.

Consistently, the exchange rate effect is most pronounced for immigrants who are more likely to have close ties to their home countries. For instance, the effect is greatest for a married immigrant whose spouse is absent and least for an immigrant who lives with a spouse. Similarly, the effect is greater for immigrants from countries with higher remittance flow. Mexicans, the largest immigrant group, are as responsive to exchange rate variations as other immigrants. Additionally, for those Mexicans living close to the Mexican border, the exchange rate effect is doubled.

Intuitively, we would also expect that immigrants' ties to their home countries weaken over time; that is, an immigrant's amount of remittances and likelihood of return decrease as she spends longer time abroad. I define this concept as 'disintegration'—a natural counterpart to the process of assimilation à la Chiswick (1978). I offer suggestive evidence that an immigrant's exchange rate effect decreases as she spends more time in the United States. As such, disintegration seems indeed to occur. However, the slow speed of disintegration means that U.S. immigrants remain at least somewhat sensitive to their home countries' exchange rates throughout their lifetimes.

Theoretical Implications

The sign and magnitude of the estimated exchange rate elasticity of earnings also sheds light on the characteristics of individual preferences. In a neoclassical framework where remittances enter household utility, exchange rate plays the role of the price of remittances. In this case, the sign of this elasticity implies that the income effect of exchange rate on earnings exceeds the substitution effect—that is, leisure is a gross complement of remittances.

To better understand the mechanisms behind the empirical results presented, the exchange rate effect is analyzed using a collective model of the household. In such a setting, intrahousehold efficiency implies that exchange rate affects consumption and labor supply of immigrants only through its effect on remittances. Therefore, the negative exchange rate elasticity of earnings implies negative exchange rate elasticities of remittances and consumption. The combination of the empirical findings and these theoretical results implies that an appreciation of the dollar leads immigrants to work fewer hours per week and fewer weeks per year, earn less per hour, consume more, and send fewer dollars home.

The relatively large income effect of the exchange rate is also consistent with an alternative explanation. Similar to Camerer et al. (1997), it can be interpreted in the context of reference-dependent preferences (here either target remittances or target earnings). Given the persistent nature of the shocks in this setting, I argue that both neoclassical and reference-dependent preferences remain plausible explanations.

To interpret the magnitude of our estimate, I use a neoclassical model, as well as a model with reference-dependent preferences. Broadly speaking, the magnitude of the estimated elasticity is rather large relative to the existing literature. I argue that this may be due to the fact that this estimate is friction-free, as immigrants will choose relatively fewer labor and consumption commitments ex ante in expectation of frequent exchange rate shocks. In contrast, previous work has estimated frictionless elasticities using large, infrequent shocks that make it worthwhile for agents to pay the adjustment cost ex post to overcome friction. The difference in magnitude between my elasticity estimate and the elasticity estimates generated by the large shock method is a matter for further empirical analysis.

This chapter lies at the intersection of two research strands, the first of which studies the determinants of remittance flows. The existing literature has, for the most part, documented a set of correlations between various macroeconomic variables and remittance flows. In contrast, this chapter uses exchange rate variation as a set of exogenous shocks to the price of remittances, which affect the labor supply decisions of immigrants. This is closely related to Yang (2008), who exploits exchange rate variations to study the effect of changes in remittance flows on recipient families.

The second segment of related literature investigates the determinants of immigrants' economic decisions. In particular, Fox and Stark (1987) study a small group of temporary Mexican workers in the United States from 1982 to 1983. They estimate a positive correlation between immigrants' labor supply and the purchasing power of the dollar in Mexico. In comparison, the present study attempts to identify the causal relationship between the home-country economic situation and immigrants' labor supply by comparing similar immigrants from different countries.

Notes

1. For examples of such policy recommendations, see Chetty (2010) and Council of Economic Advisers (2013). For anecdotal evidence of such a channel, see Lowrey (2013).
2. Randomness stems from sampling vacancies due to either the lack of information about them (random search models) or the lack of coordination among applicants (directed search models).
3. Many papers offer theoretical reasons for a negative duration dependence, and some offer supportive empirical evidence; Chapter 1 offers a discussion of this literature.
4. Following the literature on optimal unemployment benefits design, we neglect potential general-equilibrium effects of benefits on nonrecipient workers. We provide supportive empirical evidence for this assumption in our setting in Chapter 1.
5. For empirical evidence for the latter, see Deere (1991).
6. For instance, Topel (1983) and Card and Levine (1994) use variation in experience rating across states, and Anderson and Meyer (1994) follow the same methodology, in addition to using variation in unemployment insurance tax at the firm level. Saffer (1983) provides an alternative approach using variation in marginal layoff tax across industry. Furthermore, the relative size of industries in a state seems to be affected by UI system, and in particular by the subsidies implicit in incomplete experience rating (Deere 1991; Testa 1989). For empirical evidence on cross-subsization through UI taxes, see Anderson and Meyer (1993), Becker (1972), and Munts and Asher (1981).
7. See also Mortensen and Pissarides (1994, 1999) and Millard and Mortensen (1997).
8. Several papers attempt to measure the effect of layoff taxes on permanent layoffs. The best examples are studies using the introduction of layoff tax for elderly workers in some European countries (Behaghel 2008; Hakola and Uusitalo 2005; Schnalzenberger 2009). Most importantly, Hakola and Uusitalo

(2005) study a reform in the Finnish pension system and find that an increase in the cost of laying off elderly workers by one year of earnings reduces the layoff probability by 1 percentage point.

9.   For prior work that found minor find negligible and often negative compensation for unemployment risk, see Abowd and Ashenfelter (1981, 1984); Bronars (1983); and Hamermesh and Wolfe (1990).

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