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What do labor market institutions do?

Bertil Holmlund

Uppsala Center for Labor Studies
Department of Economics
Uppsala University
P.O. Box 513
SE-751 20 Uppsala
Sweden
Fax: +46 18 471 14 78

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Bertil Holmlund**

Department of Economics, Uppsala University

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Abstract

The past couple of decades have seen a huge increase in research on various labor market institutions. This paper offers a brief overview and discussion of research on the labor market impacts of minimum wages (MW), unemployment insurance (UI), and employment protection legislation (EPL). It is argued that research on UI is largely a success story, involving a fruitful interplay between search theory and empirical work. This research has established that UI matters for labor market behavior, in particular the duration of unemployment, although there remains substantial uncertainty about the magnitudes of the effects. The research on MW should have shaken economists' belief in the competitive labor market model as a result of frequent failures to find noticeable employment effects despite considerable effects on wages. EPL research has established that employment protection reduces labor and job turnover but the jury is still out regarding the impact on overall employment and productivity.

Keywords: minimum wages, unemployment insurance, employment protection
JEL codes: J01, J08

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** Department of Economics, Uppsala University, CESifo, IZA, and UCLS. E-mail: Bertil.Holmlund@nek.uu.se

1. Introduction

The impact of labor market institutions on labor market outcomes has been the topic of recurrent policy discussions and much research in recent decades. Labor market institutions are usually thought of as policy interventions or collective organizations that interfere with wage and employment determination. Examples include labor unions, legislation on minimum wages and employment protection, unemployment insurance and active labor market policies. Labor market institutions have received much blame for having contributed to high unemployment in Europe and elsewhere and policy discussions have often centered on the virtues of labor market reforms that weaken or offset the impact of these institutions.

This paper presents a brief and selective overview of research on how three types of labor market institutions shape labor market outcomes. The three institutions of interest are minimum wages (MW), unemployment insurance (UI), and employment protection legislation (EPL). In policy discussions, these institutions are motivated by a variety of arguments, often centered on social protection reasons. MW may protect workers with little bargaining power from being exploited by employers; UI provides insurance against income loss during unemployment; and EPL may prevent arbitrary dismissals.

The fact that labor market institutions exist in democratic societies suggests that they receive public support and that they are perceived as welfare-improving for most voters. Yet the welfare rationale for the institutions is not clear-cut from the perspective of economic analysis. Indeed, a conventional and influential view is that minimum wages are bound to reduce economic efficiency by increasing labor costs and thereby creating involuntary unemployment. Similar arguments are frequently voiced when it comes to the impact of labor unions on wages and unemployment. Some analyses of EPL have much in common with the economic analysis of labor unions, emphasizing the wage setting power of insiders. The analyses of UI have mainly emphasized moral hazard issues driven by job search responses; however, the possible impact on wage outcomes has also been noted.

MW and UI have been debated for a century or so; in fact, these discussions can be traced all the way back to the early 1900s. More recent debates and research have been inspired by advances in empirical methodologies and, at least as far as UI is concerned, from new theoretical perspectives (search theory in particular). EPL is more of a newcomer in policy debates and research. The interest in the impact of EPL took off in the 1980s and seems to

have been largely driven by efforts to understand high and persistent European unemployment.

The number of journal articles on labor market institutions has increased hugely over the recent decades. Table 1 gives some quantitative information on the magnitudes of research on MW, UI and EPL measured relative to research on unemployment. The sharp increase in minimum wage research since the 1980s is striking. Research on EPL has also been on the rise since the 1980s.

Table 1. Research on labor market institutions relative to research on unemployment, 1960–2012.

	MW	UI	EPL
1960–1969	.12	.22	.05
1970–1979	.09	.19	.02
1980–1989	.05	.13	.02
1990–1999	.11	.14	.02
2000–2009	.17	.14	.06
2010–2012	.17	.15	.06

Notes: The table is based on a Google scholar search for words in article titles in journals. UI refers to papers on unemployment insurance, unemployment compensation, or unemployment benefit(s); EPL to papers on employment protection or employment security; and MW to papers with minimum wage(s) in the title. The number of articles on institutions is measured relative to the number of articles with unemployment in the title. Citations are excluded.

The research on labor market institutions that has emerged over recent decades has involved interplay between theory and empirical work. This is perhaps most obvious in the case of UI, where the breakthrough of search theory from the early 1970s and onwards has been a major impulse for empirical studies of unemployment, and the duration of unemployment in particular. The research on minimum wages has been less dependent on theoretical developments; much of the empirical work has implicitly or explicitly taken the standard competitive model of the labor market as the basic theoretical framework. Overall, however, it is clear that the overwhelming volume of research in these areas has been empirical. The typical empirical study makes use of some theory as a guide for empirical specification but there are few studies that take theory very seriously and attempt to identify “deep” structural parameters.

The empirical research on labor market institutions has made use of a wide variety of data sources such as aggregate time series for individual countries, cross-country panel data, cross-section and panel data on individuals and/or firms, and longitudinal (event history) data on individuals. Some of these data are generated by natural experiments; some by experiments in labs. Over recent decades, the use of micro data has risen substantially relative to the use of macro data. The research has also benefited from advances in empirical methodology.

Most research on the three labor market institutions has focused on the impacts on measures of employment and unemployment. More recently, economists have examined many other potential effects. In what follows, I give a brief overview of this research. The paper is *not* an extended survey of the above-mentioned institutions; such surveys are available elsewhere.[1] The purpose is rather to offer some observations of how this research has evolved, to discuss methodological aspects, the interplay between theory and empirical work, sources of disagreements, and what we know and don't know. The paper concludes with a discussion of scientific progress in these areas of research.

2. Minimum wages

Minimum wage legislation has a long history in Anglo-Saxon countries. It was introduced in New Zealand in 1894 followed by Australia in 1896, the UK in 1909 and some states in the US from 1912 and onwards. A federal US minimum wage was enacted in 1938. Minimum wages in European countries are sometimes determined via collective bargaining agreements whereas other countries have minimum wages set by law.

The literature on minimum wages is by now enormous. The survey by Brown et al. (1999) includes over 100 references and the minimum wage monograph by Neumark and Wascher (2008) has almost 400 references. As noted from Table 1 above, since the 1980s, there has been a sharp increase in research on minimum wages relative to research on unemployment. It seems doubtful that this development of research priorities is driven by a rise in the social relevance of minimum wages, relative to the importance of unemployment.

The overwhelming part of minimum wage research has been empirical with only limited connection to theory. The benchmark theory implicitly used has typically been a model of a

[1] See Blau and Kahn (1999) on institutions and laws in general and Betcherman (2013) for a review with an emphasis on results from developing countries. OECD (2013) and Skedinger (2010) offer surveys on EPL; Brown (1999) and Neumark and Wascher (2010) discuss MW; Holmlund (1998), Fredriksson and Holmlund (2006) and Tatsiramos and van Ours (2012) survey literatures on UI.

perfectly competitive labor market. With this benchmark, the prediction is clear: a rise in the minimum wage reduces employment as firms move up on their labor demand schedules. However, many recent empirical studies have failed to corroborate this prediction and this has inspired theoretical work on alternatives to the perfectly competitive framework. Models of monopsony are natural candidates here since it has been known at least since Stigler (1946) that a minimum wage can actually increase employment in a monopsonistic labor market. Stigler's model is based on a "company town" where workers have few alternative job opportunities, a model typically viewed as irrelevant for most modern labor markets. But it turns out that "perverse" employment responses to minimum wages can be explained by other models of labor markets with frictions, such as some search models with monopsony-like features (Burdett and Mortensen, 1998; Manning, 2003).

Impact on employment

Most empirical research on the effects of minimum wages has been based on US data. This research took off in the 1960s and the 1970s and focused mostly on the impact on teenage employment. This research was summarized in an influential survey by Brown et al. (1982) which concluded that "a 10 percent increase in the minimum wage reduces teenage employment by one to three percent." This would imply a decline in the employment-population ratio by 0.5 to 1.5 percentage points. Brown et al. cautioned, however, that the lower part of the range was most plausible, especially if the most recent estimates were given a larger weight than earlier results. The brief survey by Brown (1988) reaffirmed the previous findings and added that "there is a reasonably high degree of agreement in studies of the impact of the minimum wage".

Brown's consensus characterization of this research area may have been accurate in the 1980s but it did not survive the 1990s. The "first generation" studies discussed by Brown were mainly based on time series analyses where measures of teenage employment were regressed on a minimum wage variable and a few other variables, such as controls for the state of the business cycle.

A "second generation" of MW studies emerged through four papers published in the October 1992 special issue of the *Industrial and Labor Relations Review*. Neumark and Wascher (1992) introduced the use of panel data on state minimum wages and focused on employment outcomes for teenagers and young adults. They found that the results from the time series studies basically survived; a 10 percent increase in the minimum wage would cause a decline

in teenage employment by one to two percent. The other three papers reached rather different conclusions using cross-state variation in the "bite" of the minimum wage. Card (1992a) exploited regional variation in wages to measure the effects of the federal minimum wage, recognizing that the "treatment effect" varied across states, depending on the fraction of workers initially earning less than the new minimum. The study found that the minimum wage hikes did increase teenagers' wages but found no evidence of falling teenage employment. Card (1992b) offered a case study of the 1988 rise in the minimum wage in California, comparing wage and employment outcomes in California with outcomes in states with no increase in the minimum wage. Again, the results were unconventional; wages increased among low-wage workers but there was no evidence of decreases in employment. The fourth study, Katz and Krueger (1992), studied the impact of increases in the federal minimum wage by means of a longitudinal survey of fast-food restaurants in Texas. The results were surprising: employment increased more in firms likely to have been most affected by the minimum wage hike.

The perhaps most influential and controversial study was Card and Krueger (1994). The authors studied wages and employment in fast-food restaurants in New Jersey and eastern Pennsylvania before and after the 1992 increase in the New Jersey minimum wage. Their "natural experiments" approach involved comparing the outcome in New Jersey (the treatment group) to the outcome in Pennsylvania where no increase in the minimum wage had occurred (the control group). The results were similar to those reported in Katz and Krueger (1992): employment increased in New Jersey relative to Pennsylvania, where the minimum wage was constant. Card and Krueger summarized and extended their research in the 1995 monograph with the title *Myth and Measurement: The New Economics of the Minimum Wage*, a book that intensified the controversies. The authors concluded (p. 383) that "on the basis of our research…we believe that, on average, the employment effects of a minimum-wage increase are close to zero."[2]

Why were the Card and Krueger results so controversial? Some economists' belief in the competitive labor market model was apparently on par with their belief in the theory of

[2] Card and Krueger (1994) were critically discussed by Neumark and Wascher (2000). The response was given in Card and Krueger (2000). An important element in the debate concerned the appropriateness of the data used. The controversy may also have been triggered by (provocative?) wording details in the Card and Krueger presentation. Although Card and Krueger emphasize their near-zero employment effects, they sometimes also claim that "employment in New Jersey actually *expanded* with the increase in the minimum wage" (Card and Krueger, 1995, p. 1, their italics).

gravity.[3] Yet the monopsony model had been known for decades so "perverse" empirical results regarding minimum wages and employment should not come as a complete shock. Moreover, models of frictional labor markets, and search theory in particular, had become increasingly popular and the possibility that such models could produce non-standard results was discussed in some detail by Card and Krueger (1995). Early versions of the canonical wage-posting monopsony-like model of Burdett and Mortensen (1998) had been around since the late 1980s. Rebitzer and Taylor (1995) showed in an efficiency-wage model that a minimum wage might increase employment. The case for monopsony-like outcomes is perhaps most easily seen in a simple dynamic monopsony model where firms set wages so as to influence the flow of new hires as well as the quit rate. The supply of workers to the firm is less than infinitely wage-elastic as long as the elasticities of hires and quits are less than infinitely elastic, something that is plausible and consistent with the empirical studies.[4]

Search theory has now become part of the mainstream so perhaps minimum wage issues can be discussed less acrimoniously today than in the past. But search theory was the standard framework for microeconomic studies of unemployment already two decades ago. It remains somewhat mysterious why models with labor market frictions should be regarded as perfectly acceptable in some contexts – studies of unemployment duration, say – but outlandish in studies of minimum wages. Perhaps there is an ideology-driven fear that acceptance of the idea that minimum wages may sometimes do "good" things would open the doors to the barbarians at the gate who will excessively regulate the economy.

The academic controversies over the employment effects of minimum wages have not disappeared. A notable recent contribution is Dube et al. (2010), where the authors propose a methodological innovation that might be viewed as a generalization of the natural experiment approach in Card and Krueger (1994). The idea is to compare employment differences across

[3] A remarkable example is the article by Nobel laureate James Buchanan in *Wall Street Journal* (April 25, 1996): "Just as no physicist would claim that water runs uphill, no self-respecting economist would claim that increases in the minimum wage increase employment. Such a claim, if seriously advanced, becomes equivalent to a denial that there is even minimal scientific content in economics, and that, in consequence, economists can do nothing but write as advocates for ideological interests. Fortunately, only a handful of economists are willing to throw over the teaching of two centuries; we have not yet become a bevy of camp-following whores."

[4] Let the flow of new hires be given by $H(w)$ and the quit rate by $q(w)$ where w is the wage. Assume that $H'(w) > 0$ and $q'(w) \leq 0$. A steady-state work force requires $H(w)=q(w)N$, where N is the size of the work force. The slope of the labor supply schedule to the firm is then given by the elasticity $d \ln w / d \ln N = 1/(\eta_H - \eta_q)$, where η_H is the wage elasticity of new hires and η_q the wage elasticity of the quit rate.

all contiguous US counties with different minimum wages. It is argued that contiguous border counties represent good control groups if a county is more similar to its cross-state counterpart than to a randomly chosen county, and if there are substantial differences in treatment intensity within county pairs. The authors find strong earnings effects but no employment effects of minimum wage increases. The paper is critically discussed in Neumark et al. (2013) and Allegretto et al. (2013) include further analyses of the issues involved and responses to the Neumark et al. critique. Other recent studies include Addison and Blackburn (2012) which basically adopts the Neumark and Wascher (1992) approach but applies it to county level US data on the restaurant industry. The study fails to find support for adverse employment effects. Addison et al. (2013) focus on the most recent minimum wage hikes in the US and find some weak support for adverse employment effects among some workers in high-unemployment regions. It seems as a safe prediction that research on minimum wages will remain controversial for years to come.

It should be noted that the disagreements in this area are over small employment losses or no losses for intensely treated groups; few studies find large job losses. Meta studies that compare estimates across studies tend to find a heavy clustering of estimates at or near zero employment effects; see Doucouliagos and Stanley (2009).[5]

There is little reason to expect that the employment effects of minimum wages should be uniform across countries. The evidence for the US may thus not be relevant for other countries. Most studies outside the US have dealt with the UK experience, exploiting relatively sharp policy changes (the abolishment of the Wages Councils in 1993 and the introduction of a national minimum wage in 1999). The results for the UK are somewhat mixed; some studies suggest no or even positive employment effects whereas others find negative employment effects. Neumark and Wascher (2008) argue that the weight of the UK evidence points toward adverse employment effects but this interpretation does not seem to square well with what some of the UK researchers themselves claim.[6]

Other outcomes

[5] These authors examine 1,474 estimates from 64 studies and also find evidence of a publication selection bias, i.e., a tendency that studies that confirm the conventional predictions are more likely to get published.
[6] The recent review by Butcher (2012) concludes that "the consensus of the research findings of the impact of the minimum wage in the UK is that it has not significantly adversely affected employment."

Although most research on minimum wages has focused on employment effects, other outcomes have also been considered. These include the effects on wage and income inequality, prices, profits and productivity. It seems well established that minimum wages may have had substantial effects on wage inequality, at least in the US and the UK. Higher minimum wages tend to compress wages at the lower end of the distribution. (DiNardo et al., 1996; Lee, 1999; Dickens et al., 1999; Butcher et al., 2012.)

The impact of minimum wages on the distribution of family incomes is not clear-cut a priori and the empirical studies do not tell consistent stories. Not all low-wage workers affected by minimum wage hikes live in low-income families and it is therefore possible that a minimum wage may be rather ineffective as a tool to reduce income inequality and poverty. Neumark and Wascher (2008, p. 189) argue that "there is essentially no empirical evidence indicating that minimum wages have beneficial distributional effects". This is perhaps an overstatement if one gives some weight to other studies, such as Card and Krueger (1995) or Addison and Blackburn (1999). In any event, the evidence does not seem particularly robust.

As noted, most research in this area has not involved much theory and the studies do not allow any conclusions about welfare outcomes. There is at least one notable exception to this characterization, namely Christopher Flinn's 2010 monograph *The Minimum Wage and Labor Market Outcomes*. Flinn makes use of a fairly standard search and matching model with Nash bargaining over wages. The minimum wage influences the bargaining outcome and thereby the value of search. The model is structurally estimated on US data. By means of the estimated model, it becomes possible to evaluate welfare effects of minimum wage policies and to compute optimal minimum wages. Although the approach is potentially very informative about the effects of minimum wages, the empirical results are somewhat weak.[7]

Summing up

Brown (1999) surveyed the research on minimum wages up to the late 1990s and suggested, based on this literature, that "the monopsony model will not replace the competitive diagram in the souls of labor economists" (Brown 1999, p. 2156). Perhaps this largely remains true today but it would be surprising (and disturbing) if the research over the past 20 years or so hadn't shaken economists' beliefs in the competitive model and made their souls more open to consider alternative models. The fact that so many studies find that minimum wages have

[7] Van den Berg and Ridder (1998) is a related paper. The authors estimate an equilibrium search model where wages are set by firms, as in Burdett and Mortensen (1998), and examine the impact of a minimum wage in that framework.

negligible employment effects despite having substantial effects on wages cannot easily be explained in the competitive framework. Alternative models embracing frictional labor markets – search, dynamic monopsony and efficiency wages – are promising alternatives to the standard competitive paradigm. Indeed, the empirical findings of near-zero employment effects of minimum wages have been a source of inspiration for new theoretical ideas and models.[8]

3. Unemployment insurance

Most developed countries have established public unemployment insurance as a key part of their welfare institutions. In many countries, this institution dates back to the early twentieth century. Many economists who were active in the interwar period discussed UI with arguments remarkably similar to those voiced and formalized in current debates, such as concerns about adverse incentive effects via job search and wage behavior. Traditional Keynesian macroeconomics, as it was taught and practiced in the post WW2 period, had little to say about UI; it was recognized, however, that UI may dampen cyclical changes in unemployment by acting as an automatic stabilizer. The development of search theory from the early 1970s provided a theoretical framework that turned out to be very useful for analyses of UI. Empirical work, largely nonexistent before the 1970s, has shown an enormous increase over recent decades, a development probably partly driven by new theoretical ideas.

Some theory

Although UI can be studied from several theoretical perspectives, search theory has become the dominant approach. Most of the theory has focused on job finding among unemployed individuals, i.e., the duration of unemployment; much less theory has dealt with the inflow to unemployment. The early paper by Mortensen (1977) stands out as a seminal contribution that captures the key mechanisms of how UI affects search behavior.

Consider an unemployed worker in an environment with a fixed potential duration of benefit payments and eligibility requirements such that some work must precede insured unemployment. Employment is subject to an exogenous layoff risk and the worker can influence job finding via the search effort and the reservation wage (assuming a given wage offer distribution). It follows that an increase in the potential duration of benefits causes a fall in the job finding rate, i.e., an increase in the expected duration of unemployment. It can also

[8] Cf. Freeman (2005, p. 130): "Progress in economics comes not from maintaining priors in the fact of weak evidence but from obtaining new evidence and adjusting priors to new knowledge."

be shown that the worker's optimal search behavior involves choosing search effort and reservation wages such that the job finding rate increases over the spell of (insured) unemployment. The job finding rate increases as a result of increasing search effort and decreasing reservation wages over the unemployment spell.

The model also predicts that an increase in the benefit level makes it more attractive for presently not insured workers to accept jobs and thereby become qualified for benefits in the future; the result thus implies an *increase* in the exit rate from unemployment to employment among workers who are not qualified for benefits, a response known as the "entitlement effect". Another prediction is that a rise in the benefit level will make a newly unemployed and insured worker increase her reservation wage but induce an insured worker close to benefit exhaustion to *reduce* her reservation wage. The exit rate thus falls for newly unemployed and insured workers but increases for workers who are close to benefit exhaustion. The last result follows from the fact that a higher benefit level increases both the value of continued search as unemployed and the value of accepting an offer. The immediate value of higher benefits is small for workers close to benefit exhaustion, as they are almost in the same situation as workers not qualified for UI.

Job search theory has been developed in several directions in order to shed some light on other effects of UI. It is, for example, relatively straightforward to introduce monitoring of job search; search activity is typically subject to some monitoring by the public employment service and some risk of being exposed to a benefit sanction if the search requirements are not met. There has also been some work on the linkages between job search and labor supply. A rise in UI benefits increases the relative earnings from labor force participation compared to nonparticipation, thus most likely inducing higher participation. And the fact that UI benefits are typically tied to previous earnings implies that the employed worker can influence her future benefit level by her choice of work hours. Higher UI benefits may therefore increase the labor supply among employed workers.

The discussion so far concerns partial equilibrium effects, thus ignoring that UI policies may influence labor market outcomes via other mechanisms than individual search, such as wage setting behavior. Models of equilibrium search account for such wage responses. If wages are set by worker-firm bargaining, higher benefits imply higher wages which, in turn, reduce employment (Pissarides, 2000). In these models, the impact of higher benefits on search incentives is reinforced by the increase in wage pressure. The literature on equilibrium search

has grown tremendously since the 1980s and has become a standard workhorse model for studies of unemployment and other labor market outcomes.

Empirics

The development of job search theory has inspired an empirical literature that has, by now, become voluminous. This research has exploited new types of data with information on the length of individual workers' unemployment spells. The early literature was typically based on cross-sectional data in the sense that it exploited differences in unemployment duration among unemployed individuals. A more recent literature has made use of quasi-experimental designs and exploited data from policy changes in order to identify causal effects.

The review in Layard et al. (1991, p. 255) concluded that the "basic result is that the elasticity of expected duration with respect to benefits is generally in the range 0.2–0.9 depending on the state of the labour market and the country concerned." The elasticity of duration with respect to benefits (the benefit elasticity) is, however, not a "deep" structural parameter and there is little reason to expect it to be constant over time and across countries. Yet it seems as if the older as well as the more recent literature typically produces estimates of benefit elasticities in the range suggested by Layard et al. (1991), despite different identification approaches. Examples include Katz and Meyer (1990) using US data; Roed et al. (2008) using data on Norway and Sweden; Roed and Zhang (2003) using data on Norway; Lalive et al. (2006) using data on Austria; and Landais (2013) using US data.

There is strong support for the hypothesis that job finding increases as the insured unemployed worker approaches the date of benefit expiration. Filge et al. (2013) present a meta-study covering research from the US, Canada and several European countries. The authors conclude that they "have found clear evidence that the prospect of exhaustion of benefits results in a significantly increased incentive for finding work but only shortly (one or two months) prior to exhaustion and at the time of exhaustion." Consistent with these results, and with Mortensen's 1977 model, a recent study by Krueger and Mueller (2010) finds that the job search effort increases sharply over the spell of insured unemployment.

One intriguing result in Mortensen's theory is its prediction that unemployed workers close to benefit exhaustion should respond by *lowering* the reservation wage when benefits are increased. This prediction has typically been ignored in empirical research. In the empirical studies, it has been common to include measures of benefits without allowing for different effects depending

on the distance to benefit exhaustion. Katz and Meyer (1990) report unsuccessful attempts to test for this effect on exit rates.

Summing up

There is little doubt that the microeconomic analysis of unemployment has been substantially enriched by the entrance of job search theory into labor economics. It is hard to imagine that the same amount of empirical work would have been produced if the theory had not been developed. It would be wrong, however, to characterize the empirical application of search theory as an overwhelming success story. There is a fair amount of support for the theory, but the "benefit effect" is hardly a firmly established parameter. There are some implications of the theory that have rarely been tested, such as the role of the entitlement effect among workers close to benefit exhaustion. For policy conclusions, the most severe limitation of the microeconometric studies on unemployment duration is their partial equilibrium nature. This is, of course, not a criticism of the theory as such, since microeconomics naturally precedes macroeconomics. But we need to consider whether the partial equilibrium results necessarily carry over to the general equilibrium. This may or may not be the case; the precise effects are sensitive to the details of general equilibrium modeling (and assumptions about wage setting in particular).

The research remains active: new issues are addressed and old issues are readdressed with new empirical tools or refined theoretical models. Among old issues readdressed in recent research, one issue concerns how UI benefits affect post-unemployment outcomes. The basic microeconomic search model predicts that higher benefits raise expected reemployment wages via higher reservation wages. More generally, it is plausible that more generous UI may improve the quality of job matches by allowing for more investment in search, thus resulting in higher wages and longer employment spells. There are studies that find some empirical support for such effects but the overall evidence is mixed; see Tatsiramos and van Ours (2012).

Another issue concerns the role of liquidity constraints. The impact of UI on unemployment duration has typically been interpreted as a moral hazard effect. However, as noted by Chetty (2008), it could also reflect liquidity constraints and several recent studies have attempted to decompose the response to higher benefits into a moral hazard effect and a liquidity effect. The empirical literature suggests a nontrivial role for liquidity effects but so far there are relatively few studies.

The welfare economics of UI has become an active research area. The issues discussed include the optimal time profile of benefits over the unemployment spell and the role of monitoring, sanctions, workfare, and private savings. Several recent studies have examined whether there is a case for business cycle dependent benefits, with more generous benefits in slumps than in booms. Normative issues pertaining to UI will almost certainly remain an active research field. An important recent development in this regard is the "sufficient statistics" approach to welfare analysis introduced by Chetty (2008). The approach provides a bridge between structural models and reduced-form strategies by showing how the welfare implications of policies can be expressed as functions of reduced-form elasticites rather than "deep" structural parameters.

4. Employment protection legislation

Employment protection legislation (EPL) has been hotly debated over the past couple of decades. These debates have initiated much new research, most of it empirical and of a relatively recent origin. This research took off in the late 1980s and seems to have been largely driven by attempts to explain high and persistent European unemployment. A recent survey of EPL research by OECD (2013) includes 149 references, 130 of which are published during the current century. The survey by Skedinger (2010) including 146 references shows a similar picture.

What is EPL?

EPL has many dimensions. It includes laws pertaining to severance pay and advance notification of layoffs, restrictions on valid reasons for worker dismissals, restrictions pertaining to the selection of whom to layoff in case of collective dismissal, rules governing the use of fixed-term contracts, and restrictions concerning temporary work agencies. EPL rules are typically motivated by a desire to protect employed workers from job losses, or the costs of job losses. EPL may affect labor costs either directly (such as mandated severance pay) or indirectly via red tape costs associated with procedural inconveniences or induced wage hikes.

Employment protection rules mainly evolved during the 1960s and the 1970s. In addition to legislation, those rules were sometimes established through court rulings or collective agreements. OECD (2013) characterizes the 1980s as a period of "relative regulatory stability". During the1990s, several countries introduced reforms that liberalized the rules governing temporary contracts, reforms that seem to have increased the share of workers

employed on fixed-term contracts (Kahn, 2010). Over the most recent years, a tendency to also liberalize the rules pertaining to regular open-ended "permanent" contracts is evident, a clear policy reversal relative to earlier decades.

Researchers at OECD and elsewhere have constructed indexes of EPL strictness in various countries. The procedure involves mapping the various EPL rules into discrete indicators ranging from the least to the most costly to employers.[9] The indicators range from 0 to 6 and are aggregated across the relevant dimensions of EPL. In the past, OECD used to aggregate over all dimensions in order to produce an overall summary score, including regulations pertaining to regular open-ended contracts as well as temporary contracts. Countries could then be ranked according to their overall EPL strictness. In the most recent OECD ranking from 2013, there is no explicit calculation of overall summary measures of strictness. It is argued that it is inappropriate to treat a relaxation of firing restrictions regarding permanent contracts as comparable to reductions of hiring restrictions pertaining to temporary contracts. OECD does, however, present summary scores for for each of the two main types of contracts.

According to the regulations in place 2013, the most stringent restrictions for the dismissal of "permanent" workers are found in Germany followed by Belgium, the Netherlands, France and Italy. The least stringent regulations are found in New Zealand followed by the US, Canada and the UK. Concerning restrictions on temporary work – fixed-term contracts as well as temporary work agencies – the most severe restrictions are found in Turkey followed by Luxembourg, France, Norway and Spain whereas the least strict regulations exist in Canada, the US, the UK, New Zealand and Australia.

Some theory

Most theoretical analyses of EPL have focused on the dynamics of labor demand under labor adjustment costs, i.e., costs of hiring and firing workers. Early theoretical work in this area includes work by Oi (1962) on labor as a quasi-fixed factor of production. Other significant works include Nickell (1978, 1986) and the survey in Hamermesh and Pfann (1996). A new generation of labor demand studies took off around 1990 with papers that focused on stochastic models, such as Bertola (1990, 1992) and Bentolila and Bertola (1990). Rational forward-looking firms recognize the interdependencies between hiring and firing. Firing costs

[9] As noted by OECD (2013), these indicators pertaining to costs for employers do not necessarily capture how well workers are protected.

do not only affect firing but also hiring as firms realize that adverse future demand conditions may require future layoffs and thus involve layoff costs. The theory predicts that higher firing costs reduce both firing and hiring but the impact on the average level of employment is ambiguous.

The presence of labor turnover costs may also have implications for wage determination. Lazear (1990) noted that the impact on labor costs may be offset through bargaining, which could weaken or eliminate the adverse effect on employment. A very different mechanism is emphasized in the so-called insider-outsider models of employment and unemployment (Lindbeck and Snower, 1988). Here, high turnover costs strengthen the bargaining power of currently employed insiders relative to unemployed outsiders. This raises the wage pressure and overall employment may fall.

EPL may affect productivity via different mechanisms. These mechanisms do not seem to have been analyzed in much formal detail, but some key possibilities are fairly obvious. On the one hand, EPL may reduce productivity to the extent that workers become more inclined to shirk when the risk of job loss declines. On the other hand, EPL may increase productivity by strengthening the workers' incentives to invest in firm-specific human capital. EPL may also affect incentives on the side of the firm. With strict EPL, the firm may have stronger incentives to invest in the worker's skills, thereby avoiding costly layoffs. Strict EPL may also have adverse effects on aggregate productivity to the extent that it reduces labor mobility between low-productivity and high-productivity firms.

Relatively little work has been done on the normative aspects of EPL. Few papers have asked questions about the optimal degree of employment protection. Two exceptions are the papers by Belot et al. (2007) and Blanchard and Tirole (2008). Belot et al. develop a model where EPL encourages workers to invest in match-specific human capital and characterizes the optimal level of protection.[10] Blanchard and Tirole study optimal unemployment insurance in conjunction with optimal EPL (as represented by layoff taxes). The authors argue that unemployment benefits should be financed by layoff taxes so as to induce firms to internalize the social costs of layoffs.

[10] Booth and Zoega (2003) is a related paper.

Empirics

Most of the empirical literature on EPL has had relatively weak links to formal theoretical models. The theory has been used as a rough guide for empirical specifications. The early literature focused mostly on aggregate outcomes, such as employment and unemployment, using summary indicators of EPL strictness. The evidence from the early cross-section cross-country literature is perhaps best viewed as correlational rather than causal. More recent studies have exploited cross-country data to examine more disaggregate outcomes, such as (un)employment for various demographic groups. Recent years have also seen studies of how EPL affects other outcomes, such as absenteeism and productivity, by means of panel data and natural experiments from various countries. A brief and broad-brushed summary reads as follows: EPL reduces gross employment flows but there is no robust evidence that the levels of employment or unemployment are much affected. EPL also reduces job turnover. EPL increases youth unemployment relative to unemployment among adults. There is some evidence that EPL may have adverse effects on productivity but the precise mechanisms are not well understood.

Summing up

Theoretical and empirical work on EPL, essentially non-existing in the 1980s, has expanded markedly over the past couple of decades. Perhaps disappointing, though, is the fact that there are so many remaining ambiguities. The theoretical models yield few unambiguous predictions and the empirical studies often produce conflicting results.

EPL is a multifaceted concept and it is not clear that the various dimensions can be meaningfully aggregated into summary indicators. How should we, for example, compare an increase in severance pay with stricter notification rules or a stricter regulation of temporary work? One route forward might involve the use of more economic theory, as suggested by Heckman (2007). Heckman proposes to “quantify the effects of the entire edifice of labor institutions on demand and supply of labor through the effects on a single measure – the labor cost schedule.” Although the use of more economic theory would be welcome, it is probably not feasible to incorporate all the various EPL components into a single labor cost measure. A less ambitious route forward would be to study in detail the various components of EPL, thereby gradually learning about the mechanisms at work.

5. Discussion

There has been a huge increase in research on labor market institutions over the recent decades. Does this also mean that we now have much more solid knowledge of the impact of these institutions? Has the research brought about scientific progress?

Progress is a contestable concept in economics and other disciplines.[11] A useful characterization has been provided by the philosopher Imre Lakatos who suggested that scientific theories should not be appraised in isolation but as scientific research programs, which are sets of interconnected theories. A research program is viewed as theoretically progressive if it is able to predict novel facts and as empirically progressive if these predictions are corroborated by empirical studies. Theoretical progress may include the development of entirely new concepts as well as refinement of existing concepts and analytical tools. Empirical progress might comprise the introduction of new empirical (and statistical) methods as well as improved measurement techniques and investment in new types of data.

Arguably, the concept of scientific progress may also encompass the notion of cumulative growth of knowledge in the sense that new theories and empirical methods build on previous research. It would seem inappropriate to characterize research as progressive absent a degree of continuity; frequent and drastic revisions of theories or empirical findings may be a sign of scientific immaturity. In Lakatosian terms, revisions of a theory should be consistent with the "hard core" of the research program, i.e., assumptions that are treated as irrefutable as long as better alternatives are unavailable. Moreover, if empirical research should qualify as progressive, one would perhaps expect to see an increased consensus regarding the parameters of interest as more and better data become available.

A related criterion for scientific progress concerns expansion of the domain of a theory. A theory originally invented to explain a set of phenomena may be capable of also explaining other facts. The ideal is to seek explanatory unification, to explain much by little.

Search theory might be viewed as a scientific research program in the sense of Lakatos. It forms a set of interrelated models with numerous applications in many fields of economics. The hard core involves adherence to the standard assumption of optimizing agents. The original focus of the theory was mostly labor market issues but the domain has expanded to

[11] Progress in economics is discussed in Backhouse (1997) and Boehm et al. (2002).

include applications in many other areas, such as macroeconomics, public finance and urban economics. New predictions have been generated and these predictions have been scrutinized in a large empirical literature. At least some of the predictions have been corroborated beyond reasonable doubt. There has clearly been theoretical progress and some empirical progress.

Consider specifically research on *unemployment insurance*. Search theory provides a framework that delivers some sharp predictions of how changes of UI parameters affect the unemployed worker's behavior. With suitable extensions, the theory also offers predictions about overall labor market outcomes. The theoretical innovations have generated a huge empirical literature that includes the development of new econometric methods as well as the creation of new data sets. Some of the key predictions are well corroborated by empirical research. Search theory as applied to the analysis of UI has arguably been a success story.

That said, it is clear that we are far from certain about the magnitudes of the key parameters of interest. Indeed, there is little reason to expect that these parameters, such as the elasticity of unemployment duration with respect to benefits, should be constant over time or across nations. The benefit elasticity typically comes from reduced form estimation and is not a "deep" structural parameter. Although identification of deep parameters is feasible in principle, it is unlikely that the search for deep parameters, while commendable, will yield results that are viewed as more reliable than reduced form estimates. What one realistically can hope for is to learn more about plausible ranges of benefit elasticities and other parameters of interest, and why estimates vary between studies.

Research on *minimum wages* has generated much more heated controversies than research on UI. The conventional wisdom, based on the competitive model, came under attack in the 1990s. The attack was mainly empirical but the new findings could be explained by new theoretical models of frictional labor markets. The jury is still out regarding the impact of MW on employment. However, the remarkably small (if any) effects on employment despite substantial effects on wages cast doubt on the realism of the competitive labor market model. Of course, few economists doubt that sufficiently large increases in minimum wages are bound to reduce employment.

The MW controversies illustrate how difficult it is to definitely falsify theories in economics (and also in other disciplines). Failure to confirm the prediction that a minimum wage hike reduces employment may reflect that the competitive model is wrong. It may, however, also

be due to invalid auxiliary assumptions that the researcher invokes.[12] These assumptions involve the choice of which control variables to include and how to date them. One issue in the MW research has been whether or not one should control for school enrollment in the empirical models. As shown by Card and Krueger (2000), the results can also be very sensitive to how the business cycle variable is dated.

There has been much less research on *employment protection* than on minimum wages and unemployment insurance. Most of the EPL research has been published during the past 10–15 years. EPL is controversial in policy debates but these controversies have not translated into heated academic disagreements. We have learned that EPL matters for labor market flows but also that it probably doesn't matter much for overall levels of employment and unemployment. EPL probably increases youth unemployment relative to adult unemployment whereas the jury is still out regarding the impact on productivity. EPL is a multidimensional concept and we need to learn more about the impact of specific components of EPL.

Final remarks

The theoretical ideas and empirical research discussed in this paper have not popped up from nowhere. Inspiration has come from real-world events as well as from previous research. The expansion of EPL research was most likely triggered by high and persistent European unemployment. The new theoretical contributions on stochastic labor demand were extensions of previous models of adjustment costs in labor demand. The growth of search theory in the early 1970s was related to a new interest in the determinants of frictional (natural) unemployment as previously held beliefs in inflation-unemployment tradeoffs faded away. An important stimulus in this regard was the "Phelps volume" on microeconomic foundations of employment and inflation theory (Phelps et al., 1970). Search theory also played an important role in the new theoretical models that were developed to understand the employment effects of minimum wages.

There is little tendency that the research lines discussed will fade away. Some issues have perhaps been given more time and effort than what is motivated by their social importance; minimum wage research may be an example. However, as long as there are disagreements about the effects of key policy instruments, we should expect (and welcome) continued research also on old topics. It seems likely, though, that the academic returns (in terms of

[12] The issues that arise from the fact that theories are not tested in isolation but in conjunction with various auxiliary assumptions (including data and specification) are usually referred to as the "Duhemian problem" in the methodology literature.

publications) to studies of old topics will decline unless there are innovations regarding data or empirical methodology.

The research on labor market institutions, and MW, UI and EPL in particular, has identified a number of new topics. A common strand is the broadening of outcomes of interest, such as impacts on productivity. Regarding UI research, the new focus on liquidity constraints will most likely remain on the research agenda for years to come. The "sufficient statistics" approach to welfare analysis, introduced by Chetty (2008), will probably become increasingly applied to examine the welfare effects of various policies.

Has the research solidified key parameter estimates so that we have become more certain about, say, the quantitative impacts of minimum wages or UI benefits on employment and unemployment? We have arguably become more certain about some *qualitative* impacts of UI and EPL but we are far from having achieved a solidification of the key parameters. In general, the impacts are bound to be context-dependent and therefore differ across time and space. For example, the effect of a minimum wage hike depends on the initial minimum wage level and the direction of the effect may well differ between modest and large hikes. The impact of an increase in the UI benefit level depends on various other ingredients of the UI system, such as the strictness of job search requirements and the potential duration of benefit receipt. EPL policies include, like UI, numerous dimensions and we have only recently started to learn about the impact of specific EPL components. Searching for universal constants in these areas will almost certainly be a futile exercise, maybe an example of what Elster (2009) refers to as excessive ambitions in social science. The best we can hope for is to narrow down the range of estimates of parameters of interest and learn more about why estimates typically differ across studies.

All in all, the research on labor market institutions over the recent decades has undoubtedly improved our understanding of the functioning of labor markets. Whether or not it has also improved the working of real-life labor markets is debatable and assessments are bound to be sensitive to how one specifies the social welfare function. Economists can at best clarify – and sometimes quantify – tradeoffs between efficiency and equity but there is no reason to expect them to agree on preferred policy choices.

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