

Marketplace institutions related to the timing of transactions: Reply to Priest (2010)

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Abstract: In this reply I describe the unraveling of transaction dates in several markets, including the labor market for new lawyers hired by large law firms. This and other markets illustrate that unraveling can occur in markets with competitive prices, that it can result in substantial inefficiencies, and that marketplace institutions play a role in restoring efficiency. All of these contradict the conclusions of Priest (2010).

Priest's (2010) paper, "*Timing 'Disturbances' in Labor Market Contracting: Roth's Findings and the Effects of Labor Market Monopsony*" seeks to rebut what he describes as "The work of Alvin E. Roth and colleagues writing in what might be described as the *Roth tradition*"² about "a curious set of phenomena in some labor and product markets."

Briefly, the "tradition" Priest addresses has studied the timing of transactions, and observed that some markets go through episodes in which they *unravel* in time, with transactions becoming earlier and more diffuse in time from year to year, and with offers often coming to have very short durations ("exploding" offers). This has often led to changes in marketplace institutions, including rules and regulations to introduce a uniform time for market transactions, and restore thickness. Frequently this involves facilitating a marketplace at a later as well as a more uniform time. (For overviews, see Roth and Xing 1994, and Niederle and Roth 2009.)

1. Priest's claims about marketplace institutions and the timing of transactions

Priest claims timing problems arise only when prices cannot adjust freely, and that timing problems do not arise in markets with adjustable prices:

"Time-of-contracting "problems" could be eliminated—and in many other labor and product markets are eliminated--by removing the monopsony or monopoly conditions and allowing price to serve as the market clearing mechanism." (Priest, 2010, p450)

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² Emphasis added, but a search reveals that the name "Roth" shows up 78 times in Priest (2010), four times in the abstract alone.

Priest contrasts the market for law graduates who seek judicial clerkships, a market which has had serious timing problems and in which wages are set by Congress, with the market for law students seeking jobs with law firms, which he claims has not experienced timing problems. Specifically, Priest (2010, p453) says:

“...scholars in the Roth tradition have not explained why there is a troublesome acceleration of offers with respect to the market for medical residents and federal judicial clerks, but not apparently with regard to other postgraduate labor markets, say, for the markets for law students not choosing to clerk...”

Priest uses this latter market as his central example that unraveling can't happen in competitive markets, writing

“Given the large number of competing law firms within any state, it is implausible that law firm salaries are set oligopsonistically but instead represent competitive market salaries for new law graduates.” (Priest, 2010, p464)

So Priest's claim that there is no unraveling in the market for new hires by law firms provides what he counts as an important demonstration of his conclusion that unraveling doesn't occur in competitive markets, and that prices alone clear such markets without intervening marketplace institutions. But, as I will show, this characterization of the law labor market is incorrect: the market for entry level positions in large law firms has persistently experienced episodes of unraveling, and over several decades the legal community has attempted to establish marketplace institutions and rules to control this unraveling, with only limited success.³

Finally, Priest claims that unraveling restores efficiency, and that market institutions that prevent unraveling cause inefficiencies to persist:

“the proposals of those in the Roth tradition to introduce engineered matching programs to solve the purported ‘market failure’ serve, in fact, to shore up the monopsonies or monopolies that generate the problem.” (Priest, 2010, p450)

In this reply I will argue that Priest's theoretical model lends no support to his position, and that the empirical claims he makes are simply false. Space limitations make my description of empirical matters necessarily brief, but I will include copious references, often from the “tradition” Priest criticizes.

³ For an early account of unraveling in the non-clerk law market, see Roth and Xing (1994), which is brought up to date below. For an account of unraveling in the clerkship markets, see Roth and Xing (1994) and Avery, Jolls, Posner and Roth (2001, 2007)).

2. Priest's empirical argument

Because Priest's claim that there is no unraveling in the law firm market is so central to his argument, I discuss that first and in the most detail, after which I will more briefly discuss his other claims, about medical labor markets and about whether unraveling restores efficiency.

Hiring by large law firms:

Priest asserts that there is no unraveling in the market for new hires by law firms, and that no marketplace institutions to regulate the timing of transactions are needed in that market because transactions are determined entirely by price.

However, a July 2010 announcement from Northwestern University School of Law gives a clue that there presently *is* unraveling in the market for new lawyers seeking employment in law firms, and that marketplace institutions are being adjusted to resist it (see also Rampell 2010). The announcement begins:

"Northwestern University School of Law and the global law firm Jones Day announced today July 26 that the firm will conduct its on-campus interviews for 2011 summer associates in September instead of during the law school's official on-campus interviewing (OCI) program, which begins Aug. 11. ...

*"Jones Day joins Northwestern Law in the belief that the current recruitment system has created a competitive race among law schools and law firms to conduct on-campus interviews earlier. The result is an inefficient system that does not serve employers or student applicants well, according to the law school and law firm."*⁴ (emphasis added)

The announcement refers to the 2010 interviewing and hiring of *summer associates* for the summer of 2011, after they will have finished only their second year of law school. That is, the competition to find employment and employees for the summer after the second year of law school has now moved a year in advance, to the summer after the first year. This unraveling of interview dates is what Northwestern and Jones Day were trying to halt or reverse by delaying interviewing until September. However they were apparently unsuccessful, as hiring in the summer of 2011 for 2012 summer associates continued to unravel. O'Connell (2011) for example reports that "In 2000, for instance, seven law schools held their interviewing weeks in August. By 2009, the number had increased to more than 70, and this year, the figure will top 100..."

Why are summer hires important? Because at the biggest law firms, much of the hiring of full time associates, who join the firm after the completion of their third year of law school, has

⁴ <http://www.northwestern.edu/newscenter/stories/2010/07/law-school-on-campus-recruitment.html>

unraveled into the summer associate market; i.e. the competition for summer associates is fierce because summer associates largely become full time employees. According to the NALP (formerly known as the National Association for Law Placement), this has been only somewhat eroded by the recent financial crisis: in 2009, large firms offered 69% of summer interns a full-time job, down from about 90% in 2004-8, but with a corresponding increase of acceptances to about 85%, up from the high 70's (NALP, 2010a). With the unraveling of interviews for summer associate positions, much of the hiring of law school graduates by big law firms has moved to the summer after their first year of law school, two years before they will begin full time employment.

Why might this possibly be inefficient? One reason, made clear by the recent economic crisis (which reduced corporate demand for outside legal services) is that hiring more than a year before the start of employment makes it difficult for law firms to forecast their demand. Thousands of summer associates at large firms who accepted permanent offers shortly after their second year summer associateships in August 2008 (for permanent jobs in 2009), had them rescinded or deferred. The NALP reports:

“From the employer perspective, over half of the summer 2008 associates (class of 2009 graduates) accounted for in the survey were deferred beyond December 1, 2009. While it is impossible to determine the exact number of associates whose start dates were deferred, analyses of the survey data from law schools and law firms suggests that the number was at least 3,200 and could be as high as 3,700.” NALP (2010b).

That is, after being recruited two years in advance of employment, and accepting a position one year in advance of employment, and therefore declining or not searching for other opportunities, thousands of lawyers graduated in June 2009 only to be told that the position they had accepted was not available. And some of the law firms, to maintain their reputation and their relationships, paid the deferred employees a part of what would have been their starting salary and encouraged them to spend a year doing *pro bono* work (see e.g. Petak, 2010).

Roth and Xing (1994) note that firms similarly withdrew positions from law graduates in 1991, following unraveling in the 1980's that sometimes resulted in hiring as much as a year earlier than we are presently seeing:

“by the middle of the 1980's the unraveling of recruiting had proceeded to such an extent that some students were being offered summer associate positions before they had matriculated at law school.” (Roth and Xing 1994, p1005).

Then, as now, there was considerable concern that many of these early offers were also

exploding offers. In an attempt to regulate the market, the NALP, formed in 1971, issued regulations intended to govern the timing and duration of offers by law firms.⁵ For instance, one of the regulations adopted in 1988 specified that offers should remain open for at least two weeks, and others specified dates until which offers should remain open. But Roth and Xing (1994, p1007) note that

“some law firms began to give offers which met the letter of [these regulations], but which structured the compensation so that the offer was competitive because it included a ‘signing bonus’ which could only be collected if the offer was accepted much more promptly.”

In response to such strategic behavior, the NALP rules have been modified repeatedly. The 2010 rules (NALP 2010c), in the section “General Standards for the Timing of Offers and Decisions” include several variations on the following (some of which specify 28 days instead of two weeks, for different categories of candidates, e.g. first year students).

“All offers to law student candidates (“candidates”) should remain open for at least two weeks after the date of the offer letter...”

Other regulations specify times before which offers should not be made:

“Prospective employers and first year law students should not initiate contact with one another and employers should not interview or make offers to first year students before December 1.”

An accompanying document called “Interpretations” (NALP 2010d) includes

Q. May employers offer signing bonuses that decline or evaporate according to the date of acceptance of the offer of employment?

A. This type of signing bonus violates the letter and spirit of the Principles & Standards.... Signing bonuses or other benefits that require a decision in advance of the dates in Part V or that vary according to the date of acceptance are considered special inducements and violate this provision.

In summary, both local (campus recruiting) and national (NALP) marketplace institutions have developed rules to try to coordinate the market, and regulate and contain unraveling of the market for law graduates going to law firms. However, the conclusions of Roth and Xing (1994, p1007) about this market still seem timely (emphasis added):

⁵ The preamble to the NALP rules includes the following (<http://www.nalp.org/principles>, emphasis added):

“NALP’s Principles & Standards are guidelines that offer an ethical framework for all participants in law student recruiting. They guide *the timing of responses to offers* and set forth the obligations of all participants in the recruiting process. Compliance with the Principles is voluntary, yet virtually all ABA-accredited law schools and many of the nation’s legal employers subscribe to these guidelines.

“NALP also offers interpretations of the Principles that provide guidance for dealing with specific difficult recruiting situations, such as *signing bonuses, exploding offers*, establishing a waiting list, and first year recruiting.”

“Thus in the market for new associates, particularly new associates in the largest law firms, attempts to halt the unraveling of recruiting and of appointment dates have been unsuccessful, as have attempts to establish uniform dates (however early) for recruiting and hiring. *Thus the problems of unraveling are not confined to markets in which salaries cannot be easily adjusted to help clear the market.*”

In fact, not only does the free adjustability of wages in this market not *prevent* unraveling, it has even been deployed as time-dependent signing bonuses for summer associates who accept early offers, to circumvent rules against exploding offers.

Markets for new doctors:

In addition to asserting incorrectly that unraveling does not occur in markets with readily adjustable prices like the market for new hires by law firms, Priest (2010) also describes at some length the unraveling in the market for medical residents. I will simply note that, in places critical to his argument, this description also is incorrect.

For example, Priest (2010, p449) describes the resident match introduced in the 1950’s as “a *mandatory* matching program” (emphasis added). A more accurate one-word description would be “voluntary.” (E.g. at the beginning of the medical match Mullen (1950) spoke of trying to establish a “moral commitment” to participate, saying: “It would be impossible, as well as undesirable, to set up a central office with legal authority to assign interns to hospitals. It is not at all within the compass of this plan to force such developments.”) In more recent years, as participation in medical labor market clearinghouses has become well established, rules have been written that have a more “mandatory” tone to them. But this tone is largely an illusion, in the sense that when participants wish to transact outside of a match they can.

A market that illustrates this clearly is the labor market for gastroenterology fellows. After experiencing unraveling similar to that for other entry-level medical positions (cf. Roth 1984, 2003, Harner et al. 2008), the market for gastroenterology fellows employed a centralized labor market clearinghouse, a “match,” starting in 1986. But starting after a shock to the market in 1996 (see McKinney, Niederle and Roth 2005), fellowship directors and potential fellows started to reach agreements before the match, and over the next few years the market unraveled.

The distinction between voluntary and mandatory market mechanisms is important to Priest’s argument, since he asserts that any voluntary arrangements that are observed (such as

unraveling) must be optimal.⁶ Of course this is not correct: one need only think of the prisoner's dilemma, or the general problems of efficiently providing public goods.⁷

Voluntary participation in medical labor market clearinghouses has occurred without visibly changing wages. (Niederle and Roth 2003 compare wages of specialties that use a match with similar specialties that don't.) So the success of these clearinghouses at halting and reversing unraveling shows that the question of whether a market unravels is more complicated than how its wages adjust. The market for gastroenterologists unraveled despite having a clearinghouse, while other internal medicine specialties continued to use centralized clearinghouses. So, even if wages play a role in unraveling, they interact with other aspects of the market, and with marketplace institutions.

Priest also claims (p467) that the matching program "eliminates the possibility" for hospitals to offer higher wages. This is incorrect, the matching program leaves it up to hospitals to set their wages. There is a different reason why e.g. rural hospitals that have difficulty hiring residents (Roth, 1986) don't hire away the residents of more attractive hospitals by offering them higher wages. It may be easier for these hospitals to hire licensed physicians, in much the same way that a college without a graduate program hires assistant professors rather than trying to compete with Yale for graduate students by offering higher graduate stipends—the long term career benefits of being at a top hospital or graduate program make it cheaper for employers who can't compete on those dimensions to hire people at a later stage in their careers.

Priest also devotes considerable space to making comparable-worth arguments about doctors and lawyers (without noting that doctors are not eligible for licensing immediately after graduation, or other differences between the two markets such as the considerable barriers to entry to medicine and medical specialties). And Priest's claim that lawyer salaries are much more widely dispersed than resident salaries seems disingenuous in view of the very narrow range of salaries paid to new hires by the largest law firms, who also most often pay all new associates the same wage. (Recent NALP salary reports note that, for the Class of 2009, "salaries of \$160,000 accounted for 25% of reported salaries.")⁸

⁶ E.g. Priest, p454: "the only market test of the optimal acquisition of information is when the information available is sufficient to lead the parties to enter the transaction."

⁷ Another point on which one could question Priest's description is that the medical market, with its thousands of employers, is monopsonistic. (Priest addresses that issue this way (p450): "Because some of the examples given include multiple employers, one might describe these markets as oligopsonies though, as we shall see, their operation differs very little from pure monopsony." As it happens, a medical market that more closely resembles the market for law clerks in having centrally administered prices is found in the U.K., see e.g. Roth (1990, 1991) and Unver (2001).

⁸ See <http://www.nalp.org/salarydistrib>. And Roth and Xing (1994) noted "The very highest salaries of all are paid by the largest New York firms, which in 1990 paid a median starting salary to new graduates of \$83,000. And the

Finally, Priest claims that unraveling restores efficiency, but there is no evidence of this, and considerable evidence that unraveling has persisted in markets in which it is inefficient.

This is clearest in markets in which output can be directly measured. Fréchette, Roth, and Ünver (2007) look at the market for post-season college football games. They point out that, if television viewership is a reasonable proxy for what this industry produces, unraveling produced inefficient matches compared to those achieved when the market was thicker and later. But even in markets in which inefficiencies can't be directly observed, we can often see patterns that suggest that unraveling introduces inefficiency. For example, when the market for gastroenterology fellows unraveled, what had previously been a national market broke apart into much more regional markets (Niederle and Roth, 2003).⁹

Efficiency can also be examined in the laboratory, and numerous experiments show that unraveling can occur even when it is inefficient (see e.g. Kagel and Roth 2001, McKinney et al. 2005, Haruvy, Roth and Ünver 2006, and Niederle and Roth 2009). This is not to say that unraveling may not be more efficient than some alternatives: Kagel and Roth (2001) look at a congested matching environment in which unraveling improves efficiency, but not as much as a clearinghouse.

These examples show that unraveling occurs even in markets with adjustable prices, and it happens even in cases when unraveling is inefficient.

3. Priest's theoretical argument

Priest's basic model is a set of intersecting supply and demand curves to illustrate that if prices aren't personal (e.g. if, as in the market for judicial clerks, all clerks for all judges receive the same wage), but if workers and employers are heterogeneous, then the fixed prices won't clear the market in the sense that they don't make workers indifferent between different employers or employers indifferent between different workers.

From this observation, he makes a verbal leap to conclude that judges will make early offers, unraveling will result, and that this will restore efficiency.¹⁰ I call this a "verbal" leap because *time* nowhere enters into Priest's static model. Why will early contracting and not late

competitiveness of this market is reflected in the fact that the interquartile range (25th to 75th percentiles) of these salaries was only \$1,000 (NALP, 1991, p52)."

⁹ Since 2006, the gastroenterology fellowship market has successfully reinstated a match, which required an intervention to make exploding offers less common, see Niederle and Roth (2004, 2005a,b, 2009a,b), and Niederle, Proctor and Roth (2006, 2008).

¹⁰ E.g. Priest, p459: "Figure 3 also explains why judges and students accelerate the hiring process. As drawn, some students with ability represented on the $MRPL_1$ curve would accept an offer from a judge whose nonwage benefits equaled only w_b but of course would prefer an offer from a w_a judge."

contracting be the response to this inefficiency?¹¹ Or why wouldn't judges simply make offers to the applicants they like best? Or to those who like them best? And why do they insist on making exploding offers (Avery et al. 2001, 2007)? Priest's model is completely silent on how agents might respond to inefficiencies caused by fixed prices, because his model *doesn't include actions of any kind*. Neither does it include time in *any* way, neither as an action (e.g. to hire earlier or later), nor as a factor in when information is revealed, etc.¹²

Note that the literature contains a number of models of early contracting. Priest cites one, by Li and Rosen (1998), but in fact the conclusions of that model contradict his own conclusions. Li and Rosen study early contracting that arises as insurance against future states of the world, at equilibrium *in a fully competitive model, with freely adjustable prices*. (Their model, of course, unlike Priest's, includes both an early and a late period, and allows employers to decide when to make offers, and workers to decide whether to accept them, and considers an equilibrium of the resulting game.) There are a variety of illuminating models of early contracting and unraveling, with and without adjustable prices.¹³ These models reflect some of the diversity of the causes of unraveling and early contracting that we also see in the world. See for example Damiano and Suen (2005), Fainmesser (2010), Halaburda (2010), and Li and Suen (2000, 2004).¹⁴

There is no reason to expect that a single model can explain all observed unraveling. Unraveling can have many causes, because markets are highly multidimensional and time is only one dimensional and so transactions can only move in two directions in time, earlier or later.¹⁵ So there can be many different reasons that make it advantageous for a market participant to try to make transactions earlier.¹⁶ And since unraveling typically involves offers that are not only early, but are dispersed in time and short in duration (exploding), even when

¹¹ Indeed, while most judges seem to be trying to hire law students earlier, there is a still small but growing number of judges who are hiring later, by hiring law graduates instead of current law students (see Sloan, 2010).

¹² Priest implicitly assumes that impersonal wages distinguish markets with inflexible wages from those with flexible wages, but recall that in the market for new associates at large law firms, we also see impersonal wages.

¹³ The distinction between models of simple early contracting versus unraveling is a useful one, since models such as Li and Rosen look at early and late markets that are both thick and competitive, i.e. without exploding offers or diffuse timing that could force some decisions to occur in thin markets.

¹⁴ There are also models of price compression due to impersonal prices; see Kamecke (1998) and Bulow and Levin (2006), both proposed as models of the resident match, although Kojima (2007) and Niederle (2007) subsequently point out that Bulow and Levin's conclusions are tied to parts of their model (one resident per hospital and no possibility of personal prices, respectively) that do not fit the actual medical match, which presently uses a clearinghouse algorithm designed by Roth and Peranson (1999). See also Azevedo (2010) for a different approach.

¹⁵ After discussing several different causes of unraveling, Roth and Xing (1994, p1038) put it this way: "We do not claim that these are the only causes of unraveling. On the contrary, unraveling seems to occur in a sufficiently wide range of markets so that it is likely that there are many causes."

¹⁶ There can also be strategic reasons to *delay* transactions; see e.g. Roth and Ockenfels (2002) and Ockenfels and Roth (2006) on late bidding in internet auctions, and the experiment of Ariely, Ockenfels and Roth (2005).

prices can move freely, unraveling can be a way for employers to create a small amount of monopoly power by forcing workers to consider only one offer at a time.¹⁷

Note also that while centralized clearinghouses of the kind that now organize many entry level medical labor markets largely arose in response to unraveling,¹⁸ clearinghouses have also been designed to fix different kinds of market failure.¹⁹ And other kinds of market institutions than clearinghouses have developed in response to unraveling (such as the application of rules and procedures to decentralized markets like the market for new hires by law firms).²⁰

4. Conclusion:

To summarize, the point of Roth and Xing (1994) was that, while we explicitly recognized the already then familiar view that markets might unravel in part because price competition is suppressed, the variety of unraveled markets was too broad and diverse to be well accounted for only in this way. Priest is certainly correct that, in some of the markets that have experienced unraveling, there isn't a price adjustment mechanism.²¹ However it is incorrect to conclude from this, as Priest does, that rigid prices are the only cause of unraveling, or that unraveling is efficient, or that it doesn't occur in markets with adjustable prices, or that such markets don't make use of marketplace institutions. In fact, there are markets with freely adjustable wages (like the market for new hires by large law firms) that have experienced persistent unraveling and developed institutions to combat it, and markets with relatively inflexible wages in which unraveling does not occur (like the labor markets for new doctors that employ clearinghouses that produce stable matchings, cf. Roth 2008b). Thus all of Priest's novel claims about unraveling are falsified by the evidence.

¹⁷ Whether this strategy will be successful depends in part on the "market culture" regarding how binding early offers are, e.g. on whether someone who has accepted an early exploding offer can later change his mind (Niederle and Roth 2009).

¹⁸ The successful clearinghouses have primarily been those that produce *stable* matchings in the sense of Gale and Shapley (1962). Related work explores how decentralized markets succeed or fail in producing stable matchings, and the relationship of stable matchings to market clearing prices (cf. Kelso and Crawford 1982, Niederle and Yariv, 2010; Hatfield and Milgrom 2005; Kominers et al. 2010).

¹⁹ Kidney exchange is a case where making a thick market (and then dealing with subsequent congestion) were the initial impetuses behind the development of clearinghouses, see Roth, Sonmez, and Unver (2004, 2005a,b, 2007) and Saidman et al. 2006, Roth et al. 2006, Rees et al. 2009 and Ashlagi et al. 2011a,b. School choice for high schools in NYC adopted a centralized clearinghouse to deal with congestion (Abdulkadiroglu et al. (2005, 2009), while in Boston the concern was making the marketplace safe to participate in (Abdulkadiroglu and Sonmez 2003, Abdulkadiroglu et al. 2005).

²⁰ Signaling mechanisms are another example of an institution adopted to ease congestion in decentralized markets (such as the mechanism recently instituted by the American Economic Association to ease congestion in the annual marketplace for interviewing new Ph.D. economists, see Coles et al. 2010). For more on signaling see Coles, Kushnir and Niederle (2010), or Lee and Niederle 2010, or Avery and Levin (2010) who analyze the signaling properties of early decision mechanisms in college admissions.

²¹ In addition to law clerks, he might have added the recruiting activities of American college fraternities and sororities, which are called *rush*, in an etymology that comes from unraveling; see Mongell and Roth (1991).

Smoothly functioning, efficient markets provide a kind of public good, so we shouldn't be surprised if there is some free riding, for example by people who would like to transact just before the market opens. And *marketplaces* facilitate market transactions, in ways that involve more than just prices. To help markets be competitive, marketplaces need to be safe enough to participate in so that the market becomes thick, and they need to be able to deal with the resulting congestion. There is a lot still to be understood about what makes marketplaces work well, to allow us to better design new marketplaces where they are missing or broken. This calls for an empirically based research agenda—to make progress we'll need to know a great deal about many different marketplace institutions and how they function in particular markets. The emerging research tradition that seeks to understand how marketplaces deal with these issues is called *market design* (cf. Roth 2002a, 2008a).

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