The Ex-Middle Problem for Law-and-Economics

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Law-and-economics has an ex-middle problem. First, there is the problem of preserving law’s deterrent power, and its ability to influence later behavior, even when it is sensible to renegotiate incentives later on. The issue is hardly limited to contract renegotiation, and the ubiquity of this kind of ex-middle thinking is examined here. Second, there is the idea that the more our thinking is driven by an ex-ante perspective, the more it distances itself from common ethical intuitions that tend to involve ex-post observations, or simply results. Solving ex-middle problems by tinkering with incentives leads to increased objections from ethically oriented audiences, who find efficiency claims unattractive when they burden individuals in the interest of future unidentifiable beneficiaries. This conflict makes it hard for law-and-economics to have its deserved influence on lawmakers. When law renegotiates with positive incentives, it reduces its ex-ante impact; when it relies on negative incentives, either ex-post or ex-middle, accompanied by a readjustment of the optimal ex-ante rule, it runs the risk of offending ethical sentiments, and then it rarely takes hold. One aim here is to draw attention to ex-middle recalibrations, and the second aim is to suggest that a law-and-economics approach is most successful when it devises efficient rules that are not at odds with ethical sentiments. (JEL: K00)
1. The Ex-Middle Dilemma and the Challenge of Ethical Intuitions

Law-and-economics is driven by an *ex ante* perspective. Some of its best-known insights are counterintuitive, precisely because they take an analysis one step earlier in time than the reach of normal thinking about decision-making processes. Economists assume that some people and firms can plan far ahead, though much attention has been paid, especially in thinking about contracts and corporate matters, to the inability of parties to know the future and therefore the inevitability of incomplete contracts (Williamson, 1979; Hart and Moore, 1988). Nevertheless, most casual observers, judges, and legislators, as well as academics who are not attracted to law-and-economics, find *ex ante* calculations unrealistic, even with full information, and when evaluating a legal rule they look at outcomes rather than at imagined anticipatory behavior. They are drawn to an *ex post* viewpoint by their inclination to empathize with individuals who are seriously disadvantaged by a legal rule. This article addresses the conflict between *ex ante* economic analysis and the (practical as well as ethically driven) inclination to offer “second chances” or acknowledge changed circumstances mid-stream: what I refer to as the ex-middle problem. It also introduces, in Part III, the idea that the conflict between *ex ante* and *ex post* viewpoints inhibits the adoption of efficiency-based rules. Laws survive when efficiency considerations and ethical intuitions do not conflict.

Adherents of law-and-economics regularly say that parties could have bargained in advance, and both they and nonbelievers point to real and experimental examples (of bargains and failures to bargain) that support their beliefs. There is some room for agreement. For instance, voters generally accept the fact that a change in taxes will affect the future behavior of consumers and investors, even if they do not frame their acceptance in probabilistic terms. However, only law-and-economics scholars think that retroactively applied taxes might be superior to taxes that are directly aimed at future income or behavior (Levmore, 1993). More generally, the optimal tax literature has not worked its way into everyday thinking or actual tax systems. Law-and-economics scholars can almost be identified by their willingness to think that retroactive rules could often be efficient because they might bring about socially desirable planning and
precautions. Thus, we think that vehicle manufacturers were capable of anticipating the development of airbags, and should have developed this safety feature themselves; a rational actor approach suggests that tort law could encourage such efficient behavior—rather than subtly encouraging manufacturers to fight against safety requirements—by allowing a form of retroactive tort liability (Kaplow, 1986). Similarly, an ex ante rational actor approach would encourage firms, and perhaps consumers as well, to anticipate climate change and the crafting of regulatory and legislative reactions to it. Generally speaking, empirical work and practical suggestions made by adherents of law-and-economics are driven by incentives calculated in advance of an event, gain, or loss. Correspondingly, a common feature of natural experiments is to investigate how changes in rules produced changes in outcomes; the assumption is that these outcomes reveal ex ante changes in behavior long before the observed outcomes (Dezhbakhsh et al., 2003; Friehe and Micle, 2017; Liscow and Woolston, 2018). The more the mind works backward in its calculations, the more rational it is said to be. Ex ante is to law-and-economics as gravity is to science; experimental or even observed exceptions are interesting, but they are just that.

Meanwhile, other legal academics and especially constitutional scholars, as well as most voters and academic humanists, wince and sometimes regard law-and-economics scholars as clueless or offensive. They regard retroactively applied law as illiberal, and the idea that people should be expected to plan ahead for laws not yet announced as fanciful and objectionable. Even the basic ex ante focus of law-and-economics can be disturbing to the uninitiated. The frequent objection to an ex ante, incentive-based, approach is often connected to economists’ inclination to think about expectations rather than individual outcomes. Most people object to the well-known claim, associated with Gary Becker, that it might be just as good or even more efficient to spend less effort catching wrongdoers, but then imposing very large penalties on those who are caught (Becker, 1968). We can think of this as an ex ante/ex post difference, or as one about overall efficiency as opposed to fairness or individually optimal results.\footnote{An ethically minded or (perceived) fairness approach is not always identical to an ex post perspective, but inasmuch as the focus here is on something in between ex ante and ex post viewpoints, the discussion resists the urge to characterize all the conflicting...
meant to draw attention to the apparent fact that most people’s ethical sentiments focus on outcomes, particularly the desire to avoid painful ones. For example, most people agree that the state should feed hungry people, even if this encourages others not to take precautions or jobs. This sensibility often extends beyond hunger and life-threatening outcomes to emotional reactions. Most people think it is unfair for law to surprise people; they value legal certainty, though law-and-economics adherents often think of dabs of uncertainty as a useful tool in the quest for efficiency. Most people think that legal rules should be divulged, while the very idea that people deserve legal certainty is often antithetical to an efficiency-driven approach. Much of the hostility to efficiency arguments, and even to the idea that laws should be designed with \textit{ex ante} perspectives in mind, derives from ethical sensitivities and, in court cases, from a focus on the parties in sight, rather than from predictions about the impact on future behavior, or calculations regarding larger-scale efficiency. By and large, efficiency is an \textit{ex ante} game, while ethics and empathy take an \textit{ex post} perspective. Thus, economists tend to be comfortable with the idea of discouraging people from building on flood plains by letting some families suffer when their homes are washed away. Most citizens, on the other hand, are driven by \textit{ex post} sympathy. They are comfortable with government assistance to flood-plain-builders, especially where children are displaced, and they are less inclined to think about who bears the cost of relief, even though relief might lead to repeated building and later relief efforts.

But there is, almost necessarily, something in between the \textit{ex ante} and \textit{ex post} perspectives. Consider, for example, that an \textit{ex ante} approach argues for a penalty for one convicted of armed robbery in order to deter other potential criminals. \textit{Ex post}, an individualized orientation leads to support for shorter prison terms and for giving some perpetrators second chances. An approach that is driven by law-and-economics will relentlessly warn that this softer, \textit{ex post} sympathy necessarily reduces the deterrence value of law. People who observe \textit{ex post} forgiveness in the recent past might think that they, too, will be forgiven in the event that they are caught after approaches addressed in this article as involving a concern for individuals as opposed to a concern for large-scale efficiency. I am indebted to Tamar Kricheli-Katz for raising the distinction between the two perspectives.
committing a crime. In between these two well-known vantage points is the ex-middle period—and problem. Law will have good reason to influence the convicted criminal while he is in prison. Even the *ex ante* minded lawmaker (or academic) will want to reward good behavior in prison, despite the fact that this too might reduce the *ex ante* incentive that lies behind the promise of a prison sentence for the criminal. The optimal ex-middle rule, amounting to a kind of recalculation of the optimal rule originally announced, is hardly obvious. This uncertainty within the *ex ante* approach, as well as the conflict between *ex ante* and *ex post* considerations, suggests that the right legal rule is unclear.

To be sure, the *ex ante* style associated here with law-and-economics has never been blind to the problem of later turns of events, whether we call them ex-middle or something else.² Most importantly, some areas of economics are devoted to the problem of unforeseen events, and law-and-economics has paid particular attention to changed circumstances in the area of contractual relations, where it is possible for the parties to recalibrate as things move along.³ Nevertheless, the ubiquity of the problem seems unrecognized, as it is hardly limited to contracts, bankruptcy, and a few other fields in which it already plays a significant role.

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² Another way to think about the hostility to a purely *ex ante* perspective is to link the discussion here with the literature on acoustic separation and the tension, especially in criminal law, between decision rules and conduct rules. The distinction is at its best when it is sensitive to strategic behavior or simply to interactions. An awareness that officials “may take [conduct rules] into account in making decisions, and individuals may consider decision rules in shaping their conduct,” is itself a recognition of the ex-middle problem investigated here (Dan-Cohen, 2009). Noted scholars offer various objections to Dan-Cohen’s thesis, suggesting “that which Dan-Cohen presents as a ‘conflict between decision rules and conduct rules’ could more fittingly be portrayed as a conflict between potentially diverging behavioral consequences of true and false beliefs about the law,” and that “citizens need to know the rules that guide the behavior of the officials who govern them” so as to assess “how seriously society takes violations.” These objections are easily connected to those surrounding legal treatment based on *ex ante* reasoning.

³ There is also the reality of midstream delegation to arbitrators, now armed with what Andrew Verstein has called *ex tempore* information. As discussed presently in the text, the sophistication of the contracting parties allows us to anticipate that ethical concerns will not get in the way (Verstein, 2014). More generally, significant attention has been paid to parties’ ability to mix formal and informal measures in order to deal with the reality of imperfect information at the time of initial contracting (Gilson et al., 2010; Bozovic and Hadfield, 2016).
One aim here is to show that some ex-middle “problems” are easily solved, while others are not, either because they run into a conflict with law’s ability or willingness to deploy certain kinds of tools, usually in the form of penalties, or because they are beyond the reach of law. For example, while most of the discussion here is about ex-middle circumstances that are in the control of the parties, other ex-middle calculations—or what might be thought of as recalibrations from the ex ante optimum—come about because of external events, and especially events that are difficult to predict. The more the possibility of changed circumstances can be predicted, and the more they are not in control of the parties, the more they can be taken into account ex ante, in which case there is no ex-middle problem for law. For this reason, the very idea of an ex-middle “problem” for law-and-economics is jarring to scholars of contract law. If A contracts with B to construct a building, the parties can structure the contract between them to encourage timely performance. They can use a combination of penalties and rewards to encourage B to complete the building on time, and they can even guard against the danger that A will strategically interfere with B’s performance. Even if the ex-middle change is outside of the parties’ control, as when government actions, a nationwide labor strike, bad weather, or input costs surprise the parties, there are ways of planning ahead. More important for our purpose, the ingenious solutions to these midstream dangers do not often create the sort of problem addressed here, because ex ante arrangements between sophisticated parties do not normally trigger ethical concerns. When they do so, as is apparently the case for “excessive” penalty damages, parties can find a way around the problem (Levmore, 2009).

If the ex-middle problem extends to contractual arrangements, it does so where future circumstances are unforeseen. In the realm of contracts agreed upon by sophisticated parties, so that ethical sentiments rarely interfere with optimal solutions, we are familiar with insights about ex ante drafting and about institutional adaptation. Ex ante, when A enters into a contract with B, neither party can foresee all that can happen in the future. Complete contracts are impossible, and as a result there is a localized ex-middle problem in getting B to do what A wanted, or wished A had foreseen, ex ante. A’s planning becomes B’s problem, and often B will be concerned that the solutions A develops, whether in the form of carrots or sticks, will be strategically deployed. The parties can try to solve this by making
B a business partner, by deploying progress payments, by hiring B with incentive-sensitive compensation, and so forth. Some of these solutions are individualized and others are structural and therefore general, often relying on law (beyond the enforcement of contracts), as in the creation of partnerships, or relying on judges to fill in gaps or divide pies *ex post* (Grossman and Hart, 1986; Hart, 1988; Hadfield, 1994). The common goal is to make people comfortable about aggregating resources or delegating responsibilities. The parties cannot anticipate all future events, but they *can* see that they cannot perfectly anticipate, and that renegotiation ex-middle will have its own problems. An optimist would say that one can know that there will be unknown unknowns, so that this last expression, though popular, is misleading.

One might also connect the ex-middle problem to the rich literature on principal-agent problems. Identification of these problems, and observed solutions, can be seen as extensions of the work done by Oliver Hart and others, and draws attention to hold-out and other problems associated with attempts to deal with unforeseen future circumstances (Shavell, 2007; Hart and Moore, 2008; Baumann and Friehe, 2015). We might separate questions about contract renegotiation from those concerning matters that can be negotiated up-front, but it is important not to lose sight of the larger aim here, which is to draw attention to areas where commonly held ethical sentiments interfere with solutions that are appealing to the law-and-economics mindset, and therefore require legal attention.

The ex-middle problem is more dramatic, and quite different, where large-scale public choice considerations come into play. A peaceful bargain brought about the end of apartheid in South Africa, for example, but it did so with an *ex ante* promise to honor existing property rights. Ex-middle, the bargain may now be collapsing, as it is apparent that the earlier bargain, or series of laws, left large groups without property and with a sense that the earlier bargain, though celebrated at the time, was itself unjust or coerced (Mamdani, 2019). The same is true for most reparations claims. A bargain often requires some promise that there will not be an ex-middle renegotiation, but this is impossible to guarantee. In small scale bargains, like employment contracts, the *ex ante* bargain is enforced by law, though
either party is normally free to give more to the other if unanticipated ex-middle circumstances make it sensible to do so, as it might where repeat players are concerned. An employer is free to give a bonus or a promotion to just one or two employees at year’s end, and especially so if no labor union stands in the way, and this might give other employees the idea that they too can receive benefits outside the original contract, if they perform well during the next year. Somewhat similarly, the government can grant an early release from prison or can lock down a prisoner in order to give incentives for good behavior. A reward might change the optimal *ex ante* prison sentence, but that is for the legal system to calculate. Things are different where large-scale negotiations are concerned. If one side wants to renegotiate a reparations plan that was agreed upon in the past or, in the South African case, a “Grand Bargain” that 25 years earlier allocated property and voting rights, it has little incentive to consider how an ex-middle alteration will affect incentives in other negotiations in the distant future or in a distant place. Put differently, law, and even law-and-economics, might have a good deal to say about local ex-middle problems among repeat players, and this is the subject of Part II below. However, much larger ex-middle problems, such as the settlement of claims that *ex ante* property rights agreements were unjust and should be renegotiated, are probably beyond the reach of law. They are public choice problems, to which this article does not pretend to offer solutions.

2. Solutions to the Ex-Middle Problem

However familiar the ex-middle problem is to specialists in the law-and-economics of contracts, it is not limited to contracts, and it often overwhelms first-order *ex ante* thinking.4 Continuing with the earlier example, lawmakers might think they can discover an optimal prison sentence, but they then

4. In future work, I hope to show the ubiquity with examples that touch on law’s response to hostage taking, immigration and border crossings, dictators, accepting citizens who have gone abroad to fight or marry foreign enemies or terrorists, large scale torts (such as compensation systems after the British Petroleum Corporation’s Deepwater Horizon oil spill of 2010), and attempts to offer reparations or other remedgies for long-ago or even recent wrongs (such as the more recent treatment of original peoples in Canada, and that of sexual misconduct by Catholic authorities). There are also many examples to be explored in less dramatic, private legal arrangements such as the issue of
want to encourage good behavior by the convict while he serves out the *ex ante* determined prison term. Lawmakers can try positive rewards, or penalties, to encourage the desired behavior. In this setting, law usually opts for carrots, in part because of a constitutional (or even an ethical) objection to increasing penalties after the trial is over and the wrongdoer is sentenced. It is tempting to think that what separates carrots and sticks, in the face of the realization that they can be made equivalent from an *ex ante* perspective, is the influence of loss aversion. If this mainstay of the behavioral economics literature is taken at face value, sticks will be the more powerful tool. There is also the idea that citizens identify with those who are rewarded and penalized, and to them sticks seem unfair. Closer to home, a Dean can reward and therefore motivate high performing faculty with a salary increase, an endowed chair, or just a costless new title, but it will be unpopular and even destructive to penalize unproductive scholars, delinquent graders, or unprepared teachers by moving them to basement windowless offices, even if this scheme is accompanied by higher compensation for everyone at the outset, or by rewards for above-average performers. Such sticks are often disfavored because they are associated with favoritism and other abuses; carrots seem to raise fewer objections, and certainly fewer ethically based objections, from colleagues.

A contemporary example is the ongoing scandal about payments to prestigious university employees aimed to secure admission to a university for a child, at the expense of the principal, the university itself. An employee who takes such a payment, as well as the parent who engages in bribery, may be penalized by the employer and by law. But what is the optimal penalty? An economist is likely to be open to the idea of forcing the illicitly admitted student out of the university, even on the verge of graduation, because such a restitutionary move would further deter future misbehavior in the application process. However, citizens (including university administrators) may have compassion for an admitted student who had no idea of her parents’ stock options that would seem to undo some of the incentive effect of options granted *ex ante* (Levmore, 2001).

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5. This is not the place to take issue with much of this literature, but its favorite examples, though useful, should not be taken at face value. For example, while there are clear examples of loss aversion, there are also instances of envy—which in many ways is the opposite of the famed loss aversion idea.
wrongdoing, much as they do for families whose homes are destroyed after they were built, despite warnings, on flood plains (Levmore, 1996). In the university case, the hypothesized ethical objection might be overcome by a rule that rewarded an applicant who was not admitted (at the expense of the wrongfully admitted one), but it is likely impossible to identify a competing applicant who was turned away and would have attended in place of the student admitted because of the parent’s wrongful intervention. A tort recovery by this unknown student is also likely to be unworkable. Again, the *ex ante* perspective may be efficient, but common citizens focus on individuals and thus gravitate to an *ex post* perspective, at least when there is no evidence that the admitted student was complicit in the earlier wrongdoing. Similarly, the owners of a home destroyed on a flood plain may be saved by the compassion directed at their young, and now homeless, children. In the first case, there is sympathy for the individual, often accompanied by the observation that the person has by now demonstrated competence at the university, and in the second case the state might be perceived as more to blame than the dispossessed family, inasmuch as the state could have done more to block home construction. Note that these observations also reflect personalized, *ex post* perspectives.6 Nor do ethical sensibilities encourage *ex ante* calculations by innocent victims. For example, imagine that a university eliminates its football team, whether in response to recent evidence of danger to players or fear of future lawsuits or fraternity behavior. The university can easily alter its admissions process so that it no longer favors star players, but it is hard to imagine that the university would or could dismiss admitted athletes who have already spent some years on the football team and as enrolled students. An economist might suggest that it ought to dismiss student-athletes who have not maintained a B grade-point average, in order to give an incentive to other athletes to take academic performance seriously, but again there will be overwhelming sympathy for

6. As an aside, and returning to the familiar problem of optimal contracting with imperfect information, note that machines cannot easily behave strategically, while human agents may do so. Therefore, a principal who is concerned about strategic behavior by his agents, might prefer to use machines instead of people. Just as the literature suggests that otherwise inefficient mergers will take place (at the risk of increased agency costs), the same reasoning anticipates otherwise inefficient machine/human ratios. With the advent of artificial intelligence, this is something that deserves more attention.
the individual whose *ex post* circumstances take precedence over *ex ante* thinking about other students’ behavior. If the university had announced the rule before admitting any of these students, sentiments would shift; ethical intuitions are not always inconsistent with *ex ante* thinking, or perhaps this is another case where both parties to a bargain are regarded as sufficiently sophisticated, so that there is no individualized ex-middle “problem.”

Returning to the struggle between law-and-economics and its unconvinced or even hostile adversaries, it is likely that the latter group prefers “second chances,” and plays down the impact of ex-middle optimism on efficient incentives. One group thinks about a particular conception of social welfare while the other concentrates on specific individuals. In the realm of family relationships, when children misbehave, a common parental strategy is to say something like “if you hit your brother again, then we will cancel the planned trip to Disney World,” but then if the child strikes again, the parent might want to renegotiate ex-middle in order to give an incentive that will discourage the child from committing a third offense. Unfortunately, children learn to anticipate the availability of second chances, and this reduces the power of an earlier threat. The more general ex-middle problem, reflected in this example, is that while we want the parties to be influenced *ex ante* by anticipating rewards and penalties, they can also anticipate that other parties, or adversaries, will need to renegotiate ex-middle. A lawmaker wants people to expect some things, but to be ignorant about the lawmaker’s inclination to change the reward structure later on. Law-and-economics has focused on *ex ante* thinking and too little on the ex-middle problem, at least outside of contracts, and it has certainly not focused on the constraints imposed by the society’s ethical sensibilities. Even children will think it is unfair for a parent or teacher to treat cohorts unequally; they will have an expansive view of what it means to treat like persons alike. Economists will insist that, all things considered, the children are in unlike positions. We might insist that uncertainty is a useful tool, or we might try to dispense with the idea that similarly situated people ought to be treated in like fashion. An economist might want to come down harder on the first offending child in order to properly deter second and third children. Alternatively, the economist might want to under-deter a child’s initial offense, in order to leave room to raise the penalty at the second and third infractions in optimal fashion. Either way, where there are clever children, there is some
sacrifice of efficiency or a need for complicated calculations. Moreover, the optimal solution requires the economist-parent to treat children differently, while the ethically oriented observer or primary-school teacher wants to treat like cases alike, and is even averse to solutions that rely on tossing coins. If we try to solve this problem at home or in law by increasing the ex-middle penalties, empathic colleagues accuse us of being heartless or of violating rights. And if lawmakers are advised to use carrots, they are still accused of not treating like cases alike. In addition, there is reason to worry about the moral hazard created by expected rewards. In fact, it is rare for law to use sticks in the later period, and this reflects or brings about the idea that law is most easily predicted, and that it converges, as we will soon see, where efficiency arguments and local ethical sensibilities are in sync. The several examples provided thus far support the observation that using rewards ex-middle subverts the efficiency of previous rules, but deploying penalties ex-middle runs up against ethical sensibilities. It is no wonder that we observe enormous variety in parenting styles, as we do in the rewards offered to well-behaved prisoners as well as the penalties imposed by Deans on subpar faculty members. The divergence continues because of the absence of convincing empirical studies about the effects of these rewards and penalties. This sort of evidence may never be accessible.

The ex-middle problem is ubiquitous. In the world of health care, we want to encourage people to invest in preventive steps in order to avoid more costly health care in the future. Similarly, we want people to save for retirement. In both cases, the economist thinks in \textit{ex ante} terms, and justifies legal intervention by referring to internalities; the law can help individuals promote their own self-interest (Levmore, 2014). There are arguments for paying people to plan ahead, or for penalizing them if they fail to do so, in order to reduce future private and public costs. Either way, it is clear that an affluent society will be unwilling to let people suffer from grave illnesses or starvation if these outcomes can still be avoided. Knowing that \textit{ex post} the ethically minded will prevail—and, in any event, that it would be costly to differentiate between strategic and unlucky or incapacitated members in a community—law alters its \textit{ex ante} strategy, as it does with mandatory social security or with the free distribution of vaccines. Lawmakers prefer for people to take the desired and efficient steps upfront, but the way to ensure this is to fool them about the probability of an end-period rescue
at public expense, or to mandate *ex ante* behavior on their part. A public choice perspective suggests that those who do not save for the future might even be rational, as has been suggested in the area of disaster relief; the more people know that they are not alone in failing to take optimal precautions, the more they can count on a bailout in the later period. When homeowners are located on flood plains, or middle-aged people present with no savings, lawmakers need to devise an ex-middle strategy. If lawmakers do nothing and then disaster strikes later on, lawmakers will find it necessary to abide by voters’ ethical sensibilities, and the economist’s value in designing forward-looking policies will be reduced or lost. There is a good argument for increasing social-security taxes and payouts as a kind of *ex ante* policy that avoids the *ex post* disaster relief that might discourage earlier planning and savings. Similarly, it might be wise to raise taxes on people who build on flood plains or climb mountains in defiance of restrictions—but these laws must be communicated and enforced long before the *ex post* period.

In some settings, the strategic behavior problem that confounds attempts at *ex ante* contracts is avoided with *ex ante* agreements or rules that appear inefficient (Brooks and Stremitzer, 2012). Today’s venture capitalists use

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7. The approach can be sensible if only some people are fooled. Even the American Law and Economics Association manages the tradeoff between efficiency and “ethical” or fairness sensibilities. Year after year it announces a date by which papers must be submitted for evaluation in order to be accepted for its annual conference, but then the submission period is regularly extended by 1 week. Without the extension, some members would think it is unfair that a submission received just past the stated time was excluded. And yet, some deadline is efficient for the purpose of organizing the review process. Repeat players are surely aware that the deadline is regularly extended, and might complain if it is suddenly not extended. Still, most of those who submit take the first deadline seriously.

8. While these examples point to the ex-middle problem, or strategy, they differ from others mentioned here, because they point to circumstances in which it is difficult as a political (or ethical) matter to enforce the optimal *ex ante* strategy. One punchline here is that we should probably think harder about opportunities to impose ex-middle sticks before the *ex post* horror strikes and ethical sentiments get in the way of rules that will be harsh *ex post* in order to create the proper *ex ante* incentives. The idea is that if we are unable to restrain building on flood plains, then instead of arguing that people who defy the law should not be bailed out, lawmakers could place higher taxes on the builders or homeowners, after construction but before disaster strikes and ethical sentiments make the efficient step impossible. Similarly, lawmakers should either raise social-security taxes and retirement benefits, or at least raise them for those who cannot show, ex-middle, that they are saving for the future.
business structures that combine common and preferred stock in order to take over a start-up that fails to meet certain, periodic goals that are specified \textit{ex ante}, even where the future is broadly unknowable (Gilson and Schizer, 2003; Fried and Ganor, 2006; Di Bacco and Sharp, 2018). Defined and carefully drawn business plans are popular because they prevent strategic behavior on one or both sides. It has been observed that an applicant’s business plan is the most important requirement in getting funds from these investors, beyond even the talent of the people who seek funding. The plan is like a machine; it is a fixed asset that cannot exert hold-out power, even as it prevents the investor from strategically claiming that the insider has failed to live up to expectations. It may seem inefficient, until one takes into account that it avoids ex-middle problems.

Foreign aid offers another example, and introduces the value of reputation and uncertainty in solving ex-middle problems. Lawmakers design and fund development plans without making credible promises about what will happen if a recipient country misuses the aid package or otherwise disappoints donors. A partial solution to this problem is to structure foreign aid with progress payments, though the success of this strategy depends on an ability to predict the future.\footnote{A similar point is made by Joshua Sarnoff regarding subsidies for research and development (Sarnoff, 2013). Sarnoff similarly proposes that governments should make subsidies to private entities engaged in research and development contingent on outputs as an \textit{ex ante} inducement.}

Reputation is often omitted in the Hart and Williamson contracts literature (Williamson, 1979; Grossman and Hart, 1986; Hart, 2017).\footnote{A notable exception is Hart and Moore (1990).} The value of reputation can be combined with progress payments and uncertainty. Lawmakers might develop a reputation that future progress payments, of unspecified amounts, will be adjusted ex-middle as new facts develop. Recipients can then count on the fact that these ex-middle rewards and penalties will vary depending on their own performance, but that this performance will be evaluated in light of facts that could not be perfectly known \textit{ex ante}. That is, after all, what most private-market employers do with respect to compensating employees. More generally, legal systems take insufficient advantage of their capacity to use uncertainty in designing \textit{ex ante} and ex-middle interventions. The law-and-economics community
has a great deal to contribute here, with both theoretical and empirical work. Ethically oriented people might say that this is offensive because people deserve certainty from the law, but surely there is more to it. After all, ethically minded voters show affection for labor unions, whose negotiations make future compensation unpredictable; they also favor changes in tax law though these might surprise and disappoint earlier investors. Arguably, most observers and citizens do not crave certainty, as much as they want faithful representatives or laws that seem to treat like cases alike.

Part of the genius of law, many private contracts, personal relationships, and employment practices, is the capacity to guide behavior with an \textit{ex ante} understanding that rewards and penalties are not always specified upfront, but are controlled by the decision-maker’s capacity to develop a good reputation, tit-for-tat responses, or ex-middle rules beyond the original decision-maker’s control. Most agents (including employees, faculty members, spouses, and children) know that superb performance will be rewarded, but they do not know to what degree. It is interesting that we do not see a clever employer or venture capitalist announce “I have written down the rewards that will be yours if you achieve a combination of goals x, y, and z, and I will put a set of promises in an envelope in that locked box. At the end of the year we will open it together, and see your reward, based on outcomes.” This strategy would cause the employee, like a law-firm associate, to work hard all along, because she never knows when she has already earned the next level of reward, even as it serves her interest by guarding against the risk that the manager will adjust the rewards as he observes her behavior and external events over the course of the year. Meanwhile, the strategic behavior risk on the other side is controlled by repeat play and reputation. Even the criminal cannot be sure of his sentence or its later reduction; the lock-box may be equivalent to not knowing which judge, jury, or parole board will be assigned to a case.11

11. The incentives are like those facing a student who wants a good grade or a faculty member seeking tenure in an academic institution. The applicant faces an uncertain reward system and is encouraged to work hard at every point, while the decision-maker has reason to be vague about requirements for the prize, but needs to be concerned about gaining a reputation for strategic judgments.
In reality, the use of uncertainty, along with rewards that cannot be altered midstream by a strategic party, is probably inferior to relying more completely on the value of reputation. One who builds a bridge at lower cost than expected, with a time-and-materials contract, is more likely to be awarded the next contract by the municipality, but there is uncertainty on both sides. The contractor is protected by the buyer’s reputational interest, but the promise could also be specified in advance, and hidden from the contractor. Such contracts are similar to the interaction between parent and child when the former says “Trust me, you will be in deep trouble if you continue to do that.” In both cases, law plays nothing more than a small role.

3. The Ex-Middle Problem and Convergence-Divergence Theory

In other work, I have argued that when we try to understand legal evolution, as well as comparative law, it is useful to characterize rules as either converging or diverging among legal systems over time (Levmore, 1986; Levmore, 1987). The argument is not so different from the convergence idea in evolutionary biology, which can be traced back to Darwin, and in controversies about cultural evolution theory (Ruhl, 1996; Jones et al., 2011). Efficient legal rules often converge over time for some obvious reasons. To take two such examples, every society needs to deter theft and negligence, and indeed goals of this sort probably explain the very origin of legal systems in large-scale communities. Divergence among systems, on the other hand, comes from several sources. Divergence is easily attributed to cultural differences, but there is more to it. Efficiency may be promoted by more than one rule, and it may be impossible to know which is superior. Different societies may have evolved different social norms, and are likely to be more or less homogeneous, and these differences are likely to bring about dissimilar demands for legal intervention, not to mention different goals or measures of efficiency. Two or more rules aimed at the same problem can survive and spread if they are both reasonably efficient. Driving on the left or right side of the road is a familiar example of such divergence across legal systems.
Divergence will normally be found somewhat downstream, by which I mean at a level of greater detail. There will be convergence at the level of generalities, such as the imposition of severe penalties for armed robbers. Downstream, when it comes to details, such as the precise length of prison terms these convicted robbers serve, or the benefits they receive for good behavior while incarcerated, we can expect variety among legal systems. When it comes to these details, it is less obvious or discernible which option is efficient, and different sets of details may work in disparate societies and settings. It is also unlikely that there are shared ethical intuitions about these downstream details: one need only look at the variety in modern prison systems to determine that “severe” punishment might look very different across countries. In sum, convergence is not brought about by either efficiency or ethically driven pressures.

Convergence is most easily predicted when efficiency considerations are consistent with societies’ ethical sensibilities. Consider, for example, the emergence of comparative negligence rather than contributory negligence in the tort law of so many legal systems. It represents the evolutionary success of a rule that was arguably one of several fairly efficient rules, but possessed the advantage of appealing to the population’s sentiment that spreading liability is better than completely denying recovery to injured parties who were contributorily negligent. The convergence hypothesis might work just as well in reverse; people might have very different views as to what is ethically required—and divergence among legal systems follows. But, over time, an ethically attractive rule runs up against the costs of inefficiency, and we should expect convergence where ethics are consistent with a given rule that is efficient.

Correspondingly, there are two major sources of divergence among legal systems. First, when efficiency can be achieved through a variety of means,

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12. “Ethical sensibilities” and related terms used here, can be thought of as referring to the notion that people or voters, or those in contact with judges and legislators, have certain strong sentiments that are hard to undo. These sensibilities may differ across societies or may themselves converge, especially as information spreads around the globe. Ethical convictions might come from religions or other sources of cultural practices, from some evolutionary source, or from charismatic influencers, but the idea is that lawmakers will not want to be demonized for forcing on society rules that are considered to be unethical by so many people. The disinclination is yet clearer when there is a more efficient substitute for the proposed rule.
or where we simply do not know which of several rules is more efficient, we should expect divergence, excluding any rule regarded as offensive. Second, where there is a conflict between ethical sentiment and efficiency, divergence can be anticipated. As noted earlier, uncertainty about efficiency is often about things far downstream in the details of law; empirical study aimed at discovering the effectiveness of a detail in law is often quite difficult. It is, for example, beyond our capabilities to determine optimal prison sentences, locally or globally, so the divergence there is unsurprising (Walmesley, 2003). Ethical sentiments also differ, so the combination of uncertainty about the most efficient rule along with variety in ethical intuitions virtually guarantees divergence across legal systems. Even when legal systems both decide to use prison sentences when penalizing a certain type of wrongdoer, we find 3-year sentences in one jurisdiction and 7-year sentences in another, much as we find variety in the use and number of police cars and bicycles.

The argument is easily extended to torts, contracts, criminal law, property, admiralty, and even tax law. It also comports with divergence yet further upstream; legal systems differ as to what is criminalized (rather than left to tort law or reputational influence), for example, and here too there is probably no division of labor that is clearly efficient or that matches widely shared ethical intuitions. Thus, societies will differ when it comes to wealth distribution; some will use the tax system to redistribute, some will use in-kind government programs, and some will do nothing at all. It is hardly clear which approach is most efficient, and ethical intuitions on the matter are divergent.

Down in the details, an optimal income tax may have a marginal rate of zero; the millionaire will be taxed, but arguably should not be taxed on the next thousand dollars he makes, in order not to discourage his effort. But this is difficult for voters to accept when they see the very rich around them having an especially good year. A modestly progressive tax system emerges, with a higher rather than lower rate (and certainly not zero) at the margin, but there is no reason to expect it to be uniform across legal

13. No doubt there is also convergence and divergence regarding legal classifications. Thus, one legal system might treat something as harmless while another regards it as a tort and another as a crime. This divergence (or convergence) can often be traced to ethical sentiments or enforcement costs.
systems. Similarly, deterrence considerations alone may suggest horrific penalties for murderers, but these are often so at odds with people’s sense of justice—and extremely so when a conviction turns out to have been be wrongly applied—that it is unlikely to emerge in a modern legal system and, more to the present point, is most unlikely to lead to details that converge across systems, absent external coordination.

4. Conclusion

It is apparent that the same tension that makes it difficult to solve many ex-middle problems, brings about divergence among legal systems. The claim advanced here, that law-and-economics has an ex-middle problem, can be understood to have two meanings. First, there is the one familiar to contracts scholars, and very much in the center of the law-and-economics tradition—that of preserving law’s deterrent power even when it is sensible to renegotiate later on. This article has advanced the idea that the problem is ubiquitous, and that familiar solutions might be tried in disparate areas. The ex-middle problem in prisons is not different from that in contracts or that faced daily by parents trying to influence children without unraveling future ex ante strategies.

Second, and perhaps more important, is the idea that the more law is driven by an ex ante perspective, the more it distances itself from common ethical intuitions that tend to involve ex post thinking. Thus, the more it solves ex-middle problems by tinkering with incentives and trying to optimize ex-middle renegotiations with an eye on the impact on ex ante incentives, the more it runs up against objections from ethically minded audiences who keep an eye on individuals rather than on overall efficiency. Efficiency claims are unattractive to many observers, especially when they burden individuals in the interest of future unidentifiable beneficiaries. The conflict makes it hard for law-and-economics to have its deserved influence on lawmaking. A law-and-economics approach is more successful when it devises efficient rules that are not at odds with ethical sentiments. Law-and-economics practitioners can surprise colleagues and legislators with clever, counterintuitive suggestions, but it is usually of academic interest alone, and not of real social value to do so, if these proposals are regarded as offensive by many citizens. Observers are likely to identify implausible assumptions
in models, but the real objection is based on the observers’ and citizenry’s ethical sensibilities, which cause them to reject insights that are based on behavioral and efficiency considerations. Few citizens are attracted to Gary Becker’s approach to deterring criminal behavior, and many are discomfited by modern “three-strikes” rules in criminal law. The discomfort reflects the divide between efficiency and individualized, ethical sensibilities. Ironically, the ethical objection may have a law-and-economics element to it. When an individual is crushed in the interest of incentives and benefits for a larger group, it is possible that the individual’s loss is greater than the group’s apparent gain because costs are not linear; Becker’s large penalty for one nabbed criminal may impose a greater loss in utility than ten smaller penalties. It is difficult for us to calculate and compare these utility losses, and it is plausible that ethical sensibilities reflect an intuition about the underlying non-linearity. But my aim here is not to offer an efficiency argument for evolved ethical sensibilities, but rather to draw attention to the problem law-and-economics faces when its efficiency-driven ideas are at odds with ethical sensibilities.

There are lessons here for law and also for empirical work. The hurdle presented by ethical sensibilities, and what is politically feasible, might suggest a greater use of rewards than penalties, which is to say carrots over sticks, in the ex-middle and ex post periods. If lawmakers raised taxes on prisoners after their release as a means of increasing the ex ante incentive not to commit crimes, law might well discourage released prisoners from seeking jobs once they are free to do so. On the other hand, if law were to encourage gainful employment on the part of released prisoners, by matching and doubling their earned income, it might create an ex ante moral hazard, for law will then have reduced the cost of crime. This is a testable proposition. We might reward released prisoners who find employment, and then observe the impact on the rate of criminal behavior. This sort of experiment mirrors (apart from the moral hazard problem) the private sector practice in which employees regularly anticipate promotions in the event of good work, and then anticipate demotions or other losses if they prove to be subpar employees.

The ex-middle “problem” is a challenge as much as a problem. This article has emphasized its ubiquity but it can hardly claim to have made an initial discovery. Ex-middle thinking is the essence of the well-known
literature on renegotiating contracts (Williamson, 1975; Hart and Moore, 1988; Hart, 2017), and in retrospect it can be found just below the surface in the literature that followed the Coase Theorem. A simple restatement is that when law renegotiates with positive incentives, it reduces its ex ante impact. This sort of effect is unsurprising to anyone accustomed to thinking of law in terms of efficiency. What is new, apart from the extension to other areas, is the claim that when law relies on negative incentives, either ex post or ex-middle, accompanied by a readjustment of the optimal ex ante rule, it runs the risk of offending ethical sentiments. When it does so, it rarely takes hold. Law’s ex-middle problem—though by now it is apparent that the expression refers to an opportunity as much as it does to a problem for law-and-economics—is to devise rules that are coordinated with ethical sensitivities. It is these sorts of rules that survive the test of time, and that have the capacity to converge across legal systems.

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14. Coase showed that parties can bargain around a rule—but what if they fail to do so? Consider an inefficiently excessive polluter. The party suffering the externality caused by this polluter can go to regulators or to courts, but can also pay the polluter to cease or reduce the pollution. The legal rule does not matter under some assumptions. But now let us say that the victim has failed to gain a legal remedy, and for the first or second time he goes to the polluter to bargain as anticipated by Coase. The polluter may extract a better deal from the victim, because the latter has failed to succeed in the legal system. In some cases, it will be the other way around (because the injured party won), but either way it is plausible that one party or the other will prefer to wait and engage in the second bargain. This produces an unnecessary loss, an inefficiency that can also be described as an ex-middle problem. It is not easy for the parties to bargain around this if they have different expectations of winning and losing in law. Perhaps the efficient rule is one that requires backward-looking damages once the matter is adjudicated, if the complainant shows that he tried to reach an ex ante bargain. But even this is questionable, because it might cause parties to overinvest in litigation; that can also be seen as part of the ex-middle problem that deserves more attention. There are many other ways to consider this problem, and bargaining depends on what has been called second order, and yet more complicated, rules. I am not ready to claim that the complexity of analysis brings about divergence, but it is surely the case that some of these imagined rules and bargains will strike different audiences as more or less consistent with their ethical inclinations. Interested readers should explore Ian Ayres’ terrific book, Optional Law (2005), where some of the discussion (at pages 95 and 126–130 for example) suggests the role of ethical intuitions.
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