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ABSTRACT

This chapter provides a selective review of the literature on trust and the law. We highlight the psychological and game theoretic mechanisms underpinning the role of trust in relationships with incomplete contracts. We also discuss evidence on whether behavioral trust and the strength of legal institutions act as substitutes or complements for the purposes of overcoming moral hazard.

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Amartya Sen (1977) famously accused economists of studying rational fools: narrowly self-interested economic actors, disconnected from the webs of trust, reciprocity, and social interaction that constitute the reality of economic exchange. Economics has responded to this critique through three largely disjointed literatures. The growth literature has studied the relationship between survey measures of trust and economic growth in cross-country regressions. Organizational economics has focused on game theory and how self-interested rational actors can foster mutual trust through repeated interactions. Behavioral economics has drawn on experimental evidence to uncover the psychological and social mechanisms that motivate trusting and trustworthy behavior.

This understanding of the nature of trust has substantial implications for thinking about the economics of law. Laws represent the underlying institutions of the economy, allow enforcement of contracts, protect property rights, and facilitate the possibility of stable long-term trading relationships. Here, we consider the interaction between laws and trust . Specifically, this chapter seeks to address whether strong legal institutions and trust act as substitutes, such that strong law crowds out trust, or whether law and trust are complements, such that high trust and strong law are especially beneficial when the occur together. We pursue this inquiry by looking at the growth, behavioral economics, and organizational economics literatures.

In the macro growth literature there is evidence that high trust levels, and high quality of legal institutions, both contribute to positive economic outcomes (e.g., Knack and Keefer 1997; La Porta et al., 2008), but what remains to be explained is why high trust levels and good quality institutions tend to be observed together. One possibility is that these are complements for some reason: the combination of high trust and strong law is beneficial, and more so that the sum of the parts.

As causality, and underlying mechanisms, are difficult to unravel using macro data, we turn to experimental evidence, and to game theory. These literatures show how, depending on the circumstances, trust and the law may be either substitutes or complements. One key factor seems to be the process through which laws were implemented. Laws imposed externally, by the experimenter or by a subject with unilateral decision rights, tend to reduce motivations to trust, i.e., law is a substitute for trust. Laws adopted through referendum, by contrast, tend to increase cooperation and act as a complement to trust. We discuss psychological mechanisms that may underlie these findings. Another strand of the experimental and game theory literatures shows that strong legal institutions can be a complement to trust if these facilitate repeated interactions, e.g., by protecting property rights and allowing economic actors to sustain stable long-term trading relationships. Repeated interactions allow "gift exchange" to emerge, a virtuous cycle of trust and reciprocal trustworthy behavior (Akerlof, 1982). Without initial trust, however, gift exchange does not work even with strong legal institutions, so trust and the law are complements.

To frame our discussion of these effects, we employ a simple model that captures various types of interactions between trust and law. The model shows how trust can promote efficient transactions in an economy with moral hazard and adverse selection from asymmetric information. The model

demonstrates that there may be a variety of different mechanisms underlying trusting behavior, including trust preferences, beliefs about the preferences of others, and other preferences related to social norms and risk. The model also illustrates how different types of psychological mechanisms can generate trustworthy behavior. Finally, the model will show how different types of laws and institutions may lead to different outcomes.

The chapter proceeds as follows. In the following section we present key definitions and describe the model. Then we review results on the relationship between trust and growth from the development and macroeconomics empirical literatures. These results suggest broad patterns of how trust matters in the economy and the cross-national patterns of association between trust, legal institutions and economic growth. We then turn to evidence from experiments that shed light on mechanisms that may link trust and the law and help us understand why in some circumstances they may be complements and in others substitutes.[1] We draw some preliminary conclusions about the factors that might contribute to explaining complementarity of trust and the law at the macro level. We end the paper with a discussion of some specific laws, and how these interact with trust.

Defining trust

While economists are generally precise in their models, they have been surprisingly loose in their definition of the idea of trust. Although common usage and dictionary definitions often suffice,[2] perhaps the best way to describe how economists understand trust is in terms of how it is normally measured. The basic ways that trust is measured are either using behavior in experiments (Berg et al., 1995), beliefs elicited in experiments (e.g., Fehr et al, 2003), or through survey measures such as those asked in the General Social Survey (e.g., Putnam, 1995).

The canonical trust experiment (Berg et al., 1995) has two players, a trustor and trustee. The trustor is first given some money, say $10. The trustor can keep some amount of this money, or entrust any amount to the trustee. Whatever he entrusts triples in value. For example, if the trustor entrusts all $10, then the trustee receives 3 x $10, or $30. The trustee can now choose to divide that $30 however she wants between herself and the trustor. Given that the trustee is under no obligation to return anything, the amount sent by the trustor has been used as a measure of trusting behavior; the greater is the amount sent, the more trusting is the behavior of the trustor. Similarly, the amount sent back by the trustee is a measure of trustworthiness.

Trusting behavior in the trust game has been widely used as a measure of trust (and trustworthiness), as the game seems to capture an essential feature of why economists care about trust in the first place. Specifically, because there is no contract forcing the second-mover to return something, the trust game captures a basic moral hazard problem, which is present in many different settings, such as investing in a

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[1] For an excellent survey on the relationships between financial incentives and pro-social motives, see Bowels and Polania-Reyes (2012).
[2] Trust can be defined as "assured reliance on the character, ability, strength, or truth of someone or something" or "dependence on something future or contingent" (Merriam Webster, 2012).

company, or hiring a worker, or buying from a seller a good of uncertain quality. In these settings, contracts are typically incomplete, and thus moral hazard arises. With complete contracts trust is not relevant, because a principal does not have to worry about moral hazard.

Another approach to measuring trust isolates the belief component of trust in the context of a trust game. A player in the role of a trustor may be asked what amount he expects to be returned for different possible amounts sent by a trustor. Subjects can be given financial incentives to state beliefs as accurately as possible. For example, subjects might be rewarded for reporting beliefs that match the actual behavior of trustors (e.g., Costa-Gomes, 2010). Trusting behavior is generally strongly correlated with beliefs, consistent with claims that trustworthiness is an important determinant of trust. Some designs create exogenous variation in beliefs and suggest a causal impact of beliefs about trustworthiness on trusting behavior (Costa-Gomes, 2000; Bartling et al., 2013). Importantly, however, the correlation between beliefs and behavior is far from perfect, indicating that other factors also play a role in determining trust. Candidate factors include various types of preferences, e.g., risk preferences and social preferences; evidence on determinants of trust is discussed in more detail later in the chapter.

The third approach to measuring trust (typically used in macroeconomic growth papers) is survey questions, such as those asked in the General Social Survey (GSS), the World Values Survey (WVS), or the German Socioeconomic Panel (see Putnam et al., 1995; Sapienza et al., 2010; Fehr et al., 2003). The trust question in the GSS, which has been most widely used, asks:

> ''Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?''

One interpretation of responses to this question relates to beliefs; people may be trusting, or not, based on their beliefs about the likelihood of trustworthiness by others.[3] Indeed, responses to trust survey questions have been shown to be correlated with stated beliefs in the trust game (Sapienza et al., 2010). Individual differences could also potentially reflect, however, differences in willingness to trust independent of beliefs about trustworthiness; just as with trusting behavior in the trust game, survey responses might reflect preferences in addition to beliefs.[4]

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[3] Respondents can indicate their responses on a scale, with 1 indicating "most people can be trusted," 2 indicating "can't be too careful," and 3 indicating "depends." Typically, researchers use a response of 1 as a binary indicator for level of trust.

[4] Notably, the evidence on whether survey responses are correlated with trusting behavior in the trust game is mixed: some studies find little correlation (Glaeser et al., 2000; Lazzarini et al., 2003), while others find that trust as measured by the survey is a significant predictor of trusting behavior in the trust game (Fehr et al., 2003; Bellemare and Kroeger, 2007). Thöni, Tyran and Wengström (2012) find that answers to the trust question predict cooperative behavior in a public goods game, but through the channel of preferences rather than beliefs about cooperativeness of others. Interpreting the different results is hampered, however, by differences in experimental design and subject pools. For example, studies finding null results have used relatively homogenous samples, and have at least partially dropped the veil of anonymity, while studies finding positive correlations have used representative samples and interactions between strangers.

Other survey measures have been deliberately designed to capture trusting behavior, as opposed to capturing beliefs. For example, Glaeser et al. (2000), use questions such as:

> "How often do you lend money to your friends?"

> "How often do you lend personal possessions to your friends (e.g., CDs, clothes, bicycle, etc.)?"

> "How often do you intentionally leave your rooming group's hallway door unlocked (when nobody is home)?"

Glaeser et al. (2000) find that responses to these types of questions are better predictors of the behavior in trust games than the standard GSS questions.[5]

Theoretical Framework

To better define the ideas about trust embodied in trust game experiments, as well as how they relate to the survey questions, we present a simple model, adapted from Ho (2012).

Consider a game with two players, a principal (the trustor) and an agent (the trustee). The game has two stages: first, the principal offers to transfer an amount w to the agent, and second the agent chooses an action x that produces some return $y(x)$ for the principal. The cost c the agent faces to perform the task for the principal depends on the agent's trustworthiness θ where θ is exogenous to the agent. θ can depend on the any number of behavioral mechanisms described below including, but not limited to, the fairness of the game perceived by the agent, the altruism of the agent (pure altruism or reciprocal altruism) or simply the cost of effort. Note that each behavioral mechanism is affected by many specific factors. For example, the reciprocity of the agent may depend on the amount the principal transferred, the agent's beliefs about the principal's trust or kindness, and the agent's aversion to guilt. The utilities of principal and agent are given by:

$$U_P = y(x) - w$$

$$U_A = w - c(x, \theta)$$

We define x and θ such that $y(x)$ is increasing in x, and so that $c(x, \theta)$ has increasing differences (i.e., complements) in x and θ. Note that this specification abstracts away from risk aversion (but see Bohnet et al., 2004, for evidence that behavior in the trust game is not primarily driven by risk aversion). Note also that we do not assume that cost is minimized when x is zero; in fact factors like guilt or altruism could make zero effort quite costly. Solving each player's first order condition (FOC), the agent chooses her optimal x^* such that she satisfies her FOC (assuming no corner solution[6]):

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[5] But see footnote 3 for a discussion of mixed evidence.

[6] To simplify exposition, we are interested in characterizing behavior where players do not choose the highest or lowest possible values (solutions at the corners). While classical economics often predicts such extreme behavior, choice at the extremes is rarely observed in experiments.

$$\frac{dc(x,\theta)}{dx} = 0$$

And then using the Implicit Function Theorem (or Topkis theorem for discrete choices), complementarity gives us:

$$\frac{dx^*}{d\theta} \geq 0$$

In which case, by backward induction the principal chooses w, which satisfies the principal's FOC:

$$\frac{dy}{dw} = 1$$

$$\frac{\partial y}{\partial x}\frac{\partial x}{\partial \theta}\frac{\partial \theta}{\partial w} = 1$$

Note that if the agent's trustworthiness, θ, is independent of the principal's choice, as in the case of narrowly self-interested agents, or if θ represents pure dispositional altruism of the agent, then $\frac{d\theta}{dw} = 0$ and we get a corner solution. Only if θ depends on w, with $\theta'(w) > 0$ (for example due to the agent having a preference for reciprocity), then $\frac{\partial x}{\partial w} > 0$ and the principal is incentivized to increase the amount transferred to the agent.

In general, the choices that the principal and agent make on their own will differ from the choices a social planner would assign. A social planner maximizes joint utility $U_P + U_A = y(x) - c(x,\theta)$ and would choose x such that the FOC of the social welfare function is maximized:

$$\frac{dy}{dx} = \frac{dc}{dx}$$

This conflicts with the agent's first order condition that insists on setting $\frac{dc}{dx} = 0$. Since $\frac{dy}{dx} > 0$ and $c(x,\theta)$ is convex, the agent's optimal x will produce a socially suboptimal return for the principle. By complementarity, x is increasing in θ, so higher θ will move the agent closer to the socially optimum choice.

Defining Trust in the Model

So far, we have noted that θ is a measure of trustworthiness, but we have yet to specify how we measure trust. In the context of our model, we will think about trust either as the principal's beliefs about the trustworthiness of the agent, or since these beliefs are often unobservable, as the principal's action w, which is reflective of his level of trust. Suppose there are two types of agents $\theta \in \{\theta_L, \theta_H\}$, with $\theta_H > \theta_L$, so that the principal is more willing to trust higher type agents (seen from the principal's first order condition). Then we can define b as the principal's belief that the agent is a high type: $b = \Pr(\theta = \theta_H | \hbar)$, where b might be derived from Bayes' rule and $\hbar$ is the observable history of play. In this simple one-shot game, there is no history, so the principal's belief is only his prior, but the history

could include the agent's past interactions or information about the agent's identity. Also, it is worth noting that in this model, trust and trustworthiness are connected. As trustworthiness increases in the system, then under rational expectations, people's belief that their partner is trustworthy increases and will therefore increase trusting actions like investment that depend on having a trustworthy partner.

Applying the Model to the Trust Game

We can apply the model to the specific setting of the Berg et al. (1995) trust game experiment, as follows:

w = amount entrusted $0 \leq w \leq 10$

x = amount returned $0 \leq x \leq 3w$

y = three times the amount returned, 3x

If we assume narrowly self-interested agents, then $c(x, \theta) = x$.[7] Then, the agent's FOC is $\frac{dc}{dx} = -1$, so the non-negativity constraint binds, and the agent chooses to return $x = 0$. This implies that the principle's FOC is $\frac{dU_P}{dw} = -1$, so the principle also chooses to entrust zero.

As we will discuss in detail, the data almost never support this stark prediction (starting with Berg et al., 1995). Instead, principals often trust, and agents often reciprocate. Thus, it is likely that the agent's disposition, captured by θ, does matter. At least some agents have a trustworthy disposition that causes them to reciprocate trusting behavior even without financial incentives to do so, and with rational beliefs, a principal may therefore find it worthwhile to trust.

Trust and law

Our main interest in this paper is how this trust interacts with the legal system. To that end, let us define $\mathcal{L}$ as the strength of the legal institutions, where stronger laws (better monitoring, better contract enforcement, etc.) increase effort all else equal: $\frac{d^2c}{dxd\mathcal{L}} < 0$ so that $\frac{dx^*}{d\mathcal{L}} > 0$. Then we might ask whether law enhances the value of trustworthiness—i.e., law and trustworthiness are complements $\frac{d^2x^*}{d\mathcal{L}d\theta} > 0$— or whether law interferes with trustworthiness—i.e., law and trustworthiness are substitutes $\frac{d^2x^*}{d\mathcal{L}d\theta} < 0$.

The relationship between the legal system and trust (both in terms of beliefs and action) is more complicated because the effect that laws have on the principal's action can work through two channels. If laws increase the value of trustworthiness, $\frac{dx^*}{d\theta d\mathcal{L}} > 0$, then principals with rational expectations would

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[7] The actual payoffs for the agents might be more intuitively represented by $U_a = 3 * (w - c(x))$ but since the scalar multiple, 3, has no effect on the agent's choice.

entrust more. However, even if laws decrease the value of trustworthiness such that $\frac{dx^*}{d\theta d\mathcal{L}} < \mathbf{0}$, the direct effect of legal institutions increasing effort through stronger enforcement ($\frac{dx^*}{d\mathcal{L}} > 0$) may lead principles to entrust more as well even if the efficacy of the agent's trustworthiness declines. The tension between these two mechanisms—1) laws increase trust because they make the population more trustworthy, 2) laws increase trust because they make entrusting safer—will be important as we consider the macro and experimental evidence.

Trust, Law and Growth: Macro Evidence

In this section we briefly summarize the evidence on how trust and legal systems affect economic outcomes. We also provide some evidence of a correlation that has not been as widely discussed: the tendency for trust and strong contract enforcement to be observed together.

A main stylized fact from the literature on trust and growth is that growth in income per capita is positively correlated with the level of trust in a country, where trust is measured by answers to standard trust survey questions (Knack and Keefer, 1997; La Porta et al., 1997; Zack and Knack, 2001; Algan and Cahuc, 2010). Higher trust levels are also positively correlated with many other positive outcomes, ranging from lower levels of infant mortality to greater financial development (La Porta et al., 1997; Guiso et al., 2000).

The main approach in the growth literature to estimate the causal impacts of trust has been to use instrumental variables for trust, such as the prevalence of "hierarchical religions" in a country (La Porta et al., 1997) or the degree of "ethnic fractionalization" (Knack and Keefer, 1997). Instrumental variables are intended to address the problem of reverse causality, that growth might cause trust; the key assumption is that the instrumental variables are related to growth only through an impact on trust, i.e., there is no direct link between the instrument and growth.[8]A more recent approach involves using the trust levels of different waves of immigrants to the U.S. as time varying instruments for trust in the home countries of the immigrants (Algan and Cahuc, 2010). Using time varying instruments helps to avoid problems caused when the instruments correlate with fixed characteristics of countries that determine both the instrument and growth. Completely ruling out concerns about the validity of instrumental variables is always difficult, but we discuss converging evidence from laboratory experiments, below, which also suggests a causal impact of trust on outcomes.

In this literature, trust has been argued to foster economic growth through several channels. Due to the prevalence of incomplete contracts, high levels of trust (and trustworthiness) can free up a substantial amount of resources that would otherwise need to be spent on monitoring. These can in turn be used for investment in physical capital (Knack and Keefer, 1997; Zack and Knack, 2001). Also, higher levels of trustworthiness and trust mean that investment in physical capital is less risky (Zack and Keefer, 1997). Another potential benefit of trust is allowing a country to depart from an economy characterized by

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[8] Because the instrument is not related to growth directly, there is no concern of reverse causality from growth to the instrument. It can be debated whether religiosity and ethnic fractionalization are plausibly independent of growth.
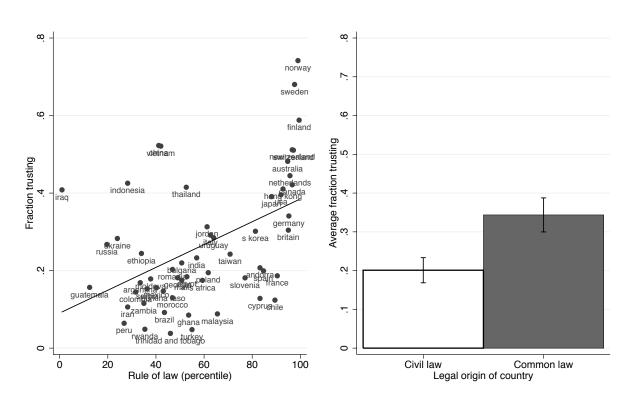
inefficient, closed group interactions, widening the scope of exchange to include largely anonymous others (La Porta et al., 1997; Algan and Cahuc, 2010). In the context of the model, when society is more trustworthy, θ is higher, and thus effort, wages and output are all increased.

A different strand of the growth literature has studied the impact of legal systems on economic performance. For example, one prominent line of research has related economic performance to the extent of countries' legal protections for investors (for a survey see La Porta et al., 2008). In order to get at causality, researchers have used the fact that common law countries (a system of law originating in England) tend to have stronger protections than countries with civil law (originating in Roman law); the argument is that adoption of common law versus civil law was in many cases the result of invasion and colonization, generating variation in legal systems that is plausibly exogenous to more recent economic conditions. This literature finds that common law, and associated stronger contract enforcement, are associated with positive economic outcomes, and this is true even controlling for trust in multivariate regression analysis. This suggests that strength of the legal system has an independent and positive impact on growth.

Interestingly, however, high levels of trust and strong legal systems tend to be observed in combination; to show the correlation between trust and legal system, we use the Rule of Law indicator constructed by the World Bank, and combine this with data from the World Values Survey on trust levels (measured by the GSS trust question).[9] As shown in the left-hand panel of Figure 1, countries that are at higher percentiles of the distribution for rule of law have higher average trust levels, and the correlation is statistically significant (Spearman; 0.48; p<0.01). To shed some light on causality, we next look at average trust levels by legal origins, using the classification of common law and civil law origins developed by La Porta et al. (1998). We find that countries with common law origins have significantly higher average trust levels (Figure 1, right-hand panel). This suggests that at least some of the causality may flow from strong legal institutions to higher levels of (survey) trust. This does not rule out, however, that trust might also feed back into development of stronger institutions. Thus, the question remains: Why should trust and strong contract enforcement tend to be positively correlated?

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[9] For the data on trust we use *WORLD VALUES SURVEY 2005 OFFICIAL DATA FILE v.20090901, 2009. World Values Survey Association (www.worldvaluessurvey.org).* The rule of law indicator comes from the World Bank Governance Indicators Project, which can be found at
http://info.worldbank.org/governance/wgi/index.aspx#home.

FIGURE 1

Notes: The left-hand panel shows the fraction trusting versus rule of law percentile. The sample includes all countries surveyed in the most recent WVS wave, in which any given country was surveyed in one of the four years 2005-2008. Rule of law percentile comes from the World Bank governance indicators database, and reflects rule of law in the same year as the trust measure for each country. The right-hand panel is restricted to countries with

common law or civil law origins, according to the classification of La Porta et al. (2008), and fraction trusting is averaged across countries.

One explanation for why high trust might be associated with strong contract enforcement is that contract enforcement causes trust. The survey trust question does not ask specifically about trustworthiness in one-shot situations without legal protections, or about trustworthiness in general, under the vigilant eye of the law. Thus, agreement that people can be trusted might be a reflection of the strength of the legal system, rather than beliefs about innate trustworthiness. One argument against this explanation comes from evidence that trust levels in incentivized trust games differ across countries, e.g., across Gulf and Western countries (Bohnet et al., 2010). Because the trust game is by construction a setting without contract enforcement, differences in trusting behavior across countries in the trust game are less likely to be the direct result of differences in contract enforcement strength. However, there is not sufficient systematic evidence to establish whether behavior in trust games is correlated with the strength of a country's contract enforcement.

An alternative explanation for why high trust and strong contract enforcement go together is that high trust levels leads to stronger contract enforcement. Following the line of argumentation in the literature on trust and growth, discussed above, trust allows individuals to not spend as many resources on monitoring, which frees up resources for investment in physical capital, but also potentially for investment in better legal institutions. With more efficient and effective institutions, the need for monitoring could be reduced even more, creating a feedback loop that increases trust.[10]

A third explanation for the positive correlation between trust and quality of legal institutions is that the two are complementary for some reason: it could be that high trust and good institutions are particularly effective when combined, i.e., when they are complements, and thus countries with one have tried and in some cases managed to develop the other. In our simple model, trust can make legal systems more effective, and vice versa, if we have $\frac{dx^*}{d\theta d\mathcal{L}} > 0$ (a dynamic model would be required to fully describe a process of coevolution of high trust and strong contract enforcement laws).

At this point, there is limited evidence in the growth literature on how trust shapes legal systems, and vice versa, the mechanisms that could potentially generate complementarities are unclear. Thus, different possible explanations for the broad patterns remain to be disentangled. In the next section, we

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[10] Interestingly, the impact of trust on growth appears to be stronger for developing countries than for higher income countries. One explanation is that low-income countries have weaker property rights and contract enforcement, and thus trust is especially important for growth. With better legal systems, trust is less necessary (Knack and Keefer, 1997). In other words, the impact of trust is greatest when legal systems are weak, $\frac{dx^*}{d\theta d\mathcal{L}} < 0$, implying that trust and the law are substitutes for this sub-group of countries.

turn to an alternative source of evidence on how trust affects economic outcomes: lab experiments on trust and market institutions. This approach has some advantages over field studies in terms of being able to cleanly identify causality and the separate and interacted effects of trust and law (see Falk and Huffman, 2006). Our survey is far from exhaustive, but rather focuses on experiments that speak most directly to the question of when trust and the law may be substitutes, and circumstances under which they may instead be complements.

Lab Experiments on Trust

As described above, the classic framework for studying trust in the lab at the micro level is the Berg et al. (1995) Trust Game. Recall that the classic setup involves the principal entrusting part of her endowment to the agent. The amount entrusted gets tripled, and then the agent chooses how much to transfer back. From the point of view of the players of the game, social welfare is always increasing in the amount of trust the principal demonstrates, or more specifically, the amount the principle entrusts. Thus, trust is beneficial from a societal perspective within this experimental setting, while it may or may not be beneficial from the perspective of an individual principal.

The standard result from the trust game literature is that many principals do send a positive amount to the agent, and some agents return enough to the principal to at least allow the principal to on average break even (Berg et al., 1995) or do substantially better than if they had not trusted (e.g., Falk and Zehnder, 2006). Because trust is present, social welfare is higher than predicted under the standard economic assumption that there is no such thing as a trustworthy disposition, i.e., $\frac{dx^*}{d\theta} = 0$. Given that the classic trust game is a setting with zero possibility for contract enforcement, and trust is efficiency enhancing, trust acts as a beneficial substitute for contract enforceability and the law.

It should be acknowledged that in this section, we focus on the average effects across the population, but in all experiments, there is considerable heterogeneity in behavior. Our interest in this chapter is in how average tendencies toward trust and trustworthiness affect a population, but it is clear that, especially in a dynamic story of preference changes over time, heterogeneity would likely play an important role.

Experimental Results on Law and Trust as Substitutes

Various experimental studies have used the ability to exogenously vary institutions to shed more light on the interaction of trust and the law, and some have found that stronger external enforcement of contracts crowds out intrinsic pro-social behaviors.[11] Imposing such constraints tends to reduce intrinsic trustworthiness, which leads in turn to less trust and worse welfare outcomes. This provides a case of stronger legal protections and societal trust being negatively correlated, because of a negative interaction effect.

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[11] There is a substantial literature on crowd-out by financial incentives on intrinsic cooperative behavior. We survey only a limited number of papers here, but see Bowles and Polania-Reyes (2012) for a more extensive review of the experimental literature.

The role of enforcement and legal institutions can be introduced in various ways, but one approach has been to do so through allowing the possibility for a principal to restrict the choice set of the agent. The prototypical study that takes this approach is Falk and Kosfeld (2006), which studies in one experimental condition a trust game with a 0th stage, where the principal has the option to exert control on the agent's action space by choosing a minimum level that has to be returned. They find that if a principal uses the minimum option and controls the agent's actions this reduces the trustworthiness of the agent's response, and that this reduction outweighs the benefits of using control.[12]

Rietz et al. (2011) provide related evidence on negative impacts of control. They consider the impact of minimum effort restrictions in a trust game, where the restrictions are imposed by the experimenter rather than by the principal. They find that imposing a minimum reduces the willingness of principals to trust, even though the minimum puts a lower bound on agent effort. The reduced trust by principals is associated with reduced back-transfers by agents, and efficiency is reduced relative to a situation without a minimum.[13]

Other studies also find examples of stronger contract enforcement crowding out trust, where enforcement takes the form of monitoring. Bohnet, Frey and Huck (2001) study the impact of experiencing higher or lower rates of monitoring on subsequent trustworthiness in a low monitoring environment; monitoring is an exogenously imposed (by the experimenter) probability that untrustworthy behavior is punished. They find that high monitoring increases trust when it is in effect, but after monitoring probabilities are lowered, trustworthiness is worse for those who experienced high monitoring than those who had low monitoring always. The authors argue that experiencing high monitoring crowds out trust.

Dickenson and Vilevall (2008) study a real-effort principal agent game with a similar structure to the trust game, where the level of monitoring intensity is chosen by the principal. They find that trustworthiness is reduced when principals choose monitoring above a certain threshold. This effect only occurs, however, when the agent's actions have implications for the principal's payoffs.

Experimental Results on Law and Trust as Complements

Another group of studies finds examples where institutional rules are complementary to trust. Specifically, a set of papers finds that if rules are voted on by subjects, then rules can increase pro-social behavior. For example, Tyran and Feld (2006) and Putterman, Tyran and Kamei (2011) find that non-

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[12] The possibility exists that the crowding-out effect is context-dependent and perhaps not completely robust. For example Ploner and Ziegelmeyer (2007) try but fail to replicate the Falk and Kosfeld results. However, other studies do replicate the result, and similar findings have been found in a variety of other settings (e.g. Schnidler and Vadovic, 2011).

[13] A control condition in Falk and Kosfeld (2006) considered the impact of an experimenter-imposed minimum transfer in a dictator game, and found no impact on dictator transfers. This contrasts with the negative impact they observe in a condition where the recipient chose to impose the minimum in the dictator game. The Rietz et al. (2011) study, where an experimenter imposed minimum did have a negative impact, is different because it considers exogenous minimums in the context of a trust game.

deterrent (i.e. small) legal sanctions have little effect on cooperation when exogenously imposed, but do effectively induce cooperation if those rules were accepted in a vote by the participants.

Another factor that can determine whether laws crowd out, or complement, trust is how the law is framed. For instance, Schnidler and Vadovic (2011) replicate the findings of Falk and Kosfeld (2006), but also include a treatment where the initial endowments are shifted to reframe the imposition of control as one of maintenance of property rights. In the later case, the harmful effects of control are reduced, presumably because protecting property rights is viewed as a more legitimate motivation for imposing legal restrictions, than is increasing one's likelihood of receiving a "hand-out."

Institutions and trust may also be complements to the extent that they work together to facilitate "gift exchange," i.e., a pattern of high w from the principal being reciprocated by high x from the agent. Bartling et al. (2014) present principals with examples of past play, and these are found to prime high or low trust beliefs. They then study how the impact of this exogenous variation in trust depends on the institutional environment. High levels of predicted trustworthiness cause high w, and agents reciprocate with high x, in a setting where principals and agents can endogenously choose to engage in repeated interactions. When the institutional environment is worsened, in the sense that stable trading relationships are ruled out and interactions are one-shot, agents become less trustworthy, and principals reduce trust from initially high levels. High trust levels thus have a weaker impact where institutions are worse at sustaining stability. Bartling et al. also study a third environment, in which there is both instability and additional problems with contract enforcement, in the sense that principals can cheat on wage offers. In this case, even high initial trust does not prevent rapid convergence to minimum possible total payoffs, and outcomes are much worse than with either of the other institutional settings. While these results suggest that high trust levels are more effective with more favorable institutional environments, another aspect of the data suggests that the impact of institutions also depends on trust. Bartling et al. find that, regardless of the institutional environment, low initial trust leads to bad economic outcomes. Even in the strongest legal environment with stable trading relationships, and only one-sided moral hazard, low trust is self-fulfilling and the outcome is similarly bad to what is achieved in worse institutional environments.

We now turn to a discussion of the psychological and game theoretic mechanisms on which trust is based, in order to shed light on why law can sometimes be a complement and sometimes be a substitute for trust.

Mechanisms Underlying Trust

In the context of our model, trust is a choice. The trustor is the principal, and the trustee is the agent. Trust on the part of the principal depends partly on beliefs about an agent's disposition, and partly on the perceived/experienced stakes involved in trust being violated. In this section we first survey theory and evidence on the psychological mechanisms underlying trust. We then discuss economic mechanisms featured in the game theory literature.

Psychological Mechanisms

Various psychological mechanisms may cause an agent to have a trustworthy disposition and affect the level of the principal's trustworthiness, even in the absence of material incentives to be trustworthy. This, in turn, makes trust by the principal more likely if the principal has rational beliefs. We focus on mechanisms that seem most relevant for explaining the experimental evidence on trust and the law.

One source of a trustworthy disposition among agents is unconditional kindness or altruism: An agent might not exploit the principal because his preferences put a positive weight on the principal's payoff. Models of "warm glow" altruism, for example, allow for such a utility function (Andreoni, 1990). In the context of our model, an agent who cares about warm glow has a higher level of trustworthiness θ, which provides intrinsic utility for higher levels of output x.

Substantial evidence indicates, however, that trustworthiness is at least partly motivated by conditional kindness, i.e., *reciprocity*. A key piece of evidence supporting this interpretation is the strong relationship between the amount of trust and the amount of money transferred back in the trust game (e.g., Berg et al., 1995). Another study by Ashraf et al. (2006) explicitly tests for the role of unconditional altruism and conditional altruism. Unconditional altruism is measured by a Dictator Game, where a subject simply decides how much of an endowment to share with an anonymous other. This altruism measure does help predict trustworthy behavior, but trustworthiness still depends on the amount sent by the trustor, indicating an important role for positive reciprocity. Various models incorporate a "kindness" term into agent utility functions, which captures the perceived kindness, or unkindness, of the principal and affects the utility value of helping the principal (see, e.g., Falk and Fischbacher, 2006).

In our baseline model, agent's choice of output x, should not be affected by the principal's choice over the transferred amount w. However, if we assume that the agent's desire to reciprocate is given by $\theta(w)$ which is increasing in the principal's choice $\theta'(w) > 0$, then the agent's effort is increasing in the initial payment, which gives the principal incentive to increase the transferred amount. Other models assume that people care about equality in payoffs, or fairness, with the result that a generous act by the principal requires a compensating act by the agent (Fehr and Schmidt, 1999). There are interesting implications if trustworthiness is based on reciprocity, in that low trust levels can be self-fulfilling, generating low trustworthiness, while high trust levels can lead to trustworthiness and enhanced efficiency.

Importantly, reciprocity can be negative as well as positive; individuals are willing to take actions that are personally costly in order to punish individuals for unkind actions. In experiments, people are willing to engage in costly punishment of individuals who violate norms of trust or fairness (Fehr and Gächter, 2000; Fehr and Fischbacher, 2003). Measures of self-reported emotion and evidence from brain imaging studies suggest that people are angered by unfair behavior and enjoy, or feel relief, from punishing wrong doers (Fehr and Gächter, 2000; Quervaine et al., 2004). Negative reciprocity implies that agents do not just reward high trust with being trustworthy, they might take advantage of opportunities to punish low trust. For example, if a principal imposes a minimum effort level as in Falk and Kosfeld (2006), this would have no psychological effect through positive reciprocity. If agents are negatively reciprocal, however, and lack of trust is viewed as unkind, this could explain the reduction in effort

caused by control. Clearly, legal institutions play a role in a society's approach to punishing wrong-doing, and they may reflect an underlying psychological motivation to punish.

Instead of assuming that the agent gains utility from the payoff of the principal, another way to explain altruistic or reciprocal behavior is to assume that the agent cares about the beliefs of the principal: if there are two types of agents, $\theta \in \{\theta_L, \theta_H\}$ and as before we let $b = \Pr\left[\theta = \theta_H | \hbar\right]$, then we can introduce a term for the psychic utility an agent receives for being perceived to be a high type:

$$U_A = w - c(x, \theta) + v(b)$$

where v is increasing in b. Then the agent's FOC is moderated by the effect of her choice on the principal's beliefs:

$$\frac{dc(x, \theta)}{dx} = \frac{dv(b)}{db} \frac{db}{dx}$$

Therefore, an agent chooses a level of x where marginal cost of effort is equal to her marginal psychic utility. In particular, the agent may behave altruistically and reciprocally because she wants the principal to *perceive* her as altruistic or reciprocal (see Benabou and Tirole, 2006). Empirically, there is growing support for image maintenance as an important mechanism underlying altruistic or reciprocal dispositions. For example, effort on a task that generates payoffs for a charity is reduced when a personal financial incentive is added and the presence of this incentive is public knowledge (Ariely et al., 2009). This is consistent with people caring about their social image and finding less value in being pro-social when incentives make this a noisier signal of a good disposition.[14] This social-image aspect of trustworthiness is potentially important in the context of the law, if legal rules affect the signaling value of being trustworthy as well as the perceived kindness of trusting.

Agents might also be upset with the principal for having negative beliefs. Distrust could be viewed as an "insult" and agents might resent the need to exert effort to change the principal's beliefs. In this case negative reciprocity motives might lead agents to be less trustworthy if they think the principal does not trust them, in order to punish the principal for having this belief. Thus, even laws that impose some minimum standards of performance, but do not prevent signaling trustworthiness by putting in more than minimum effort, may have a negative impact; imposing the minimum may signal distrust, and cause the individual to do the minimum only in retaliation (Falk and Kosfeld, 2006).

So far we have focused on determinants of beliefs about trustworthiness, but psychological factors also play a role in determining the willingness of a principal to trust independent of the principal's beliefs about the agent's disposition. In particular, one determinant of trust is risk preference. Trusting is like playing a lottery, where the payoff is uncertain given some uncertainty about the degree of trustworthiness of the agent. Standard risk aversion can cause someone to be less willing to trust for a

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[14] Related evidence shows that subjects are willing to pay to exit a Dictator Game if they can keep most of the endowment but avoid having an anonymous other know that sharing would have been possible (Dana et al., 2007).

given belief about the probability that the agent is trustworthy. Indeed, risk aversion as measured by choices in lottery experiments predicts willingness to trust in a trust game (e.g., Schechter, 2005).

There is also evidence, however, that people have a special aversion to having their trust betrayed, above and beyond that which can be explained by risk aversion over financial payoffs. Bohnet et al. (2008) demonstrate "betrayal aversion," where the willingness to pay to avoid playing a lottery increases if the outcome of the lottery depends on the actions of another human being. In other words, there is something worse about getting a low payoff as the result of violated trust, as opposed to getting the same payoff as the result of a lottery, even if subjective beliefs equate the probabilities of a bad outcome in the lottery situation and in the human interaction environment. A potential explanation for betrayal aversion is an anticipated negative emotional experience, which a person expects to feel if they are exploited. Betrayal aversion is also an example of how affective states can influence the choices of the principal. If the principal is more betrayal-averse, he or she may be more concerned about the risk of any interaction since possible negative outcomes are compounded by negative emotional experience. To the extent that institutions, or contracts, are structured in such a way as to reduce variance in behavior, or risk of betrayal, they may foster willingness to trust. On the other hand, if the presence of legal protections signals that people are not trustworthy, this could actually undermine willingness to trust, if principals are betrayal averse and the law does not allow perfect contract enforcement.

Taken together, the existing evidence indicates a potentially complex interaction between trust and law due to human psychology. Some psychological mechanisms may cause trust to be a substitute for legal contract enforcement, but such mechanisms also can lead to complementarities between trust and the law. For example, to the extent that reciprocity and altruism cause agents to be trustworthy, legal enforcement of contracts is less important. If contractual enforcement reduces the ability of agents to signal their trustworthiness, stronger laws might reduce trustworthiness and trust. On the other hand, if principals are betrayal averse, and law brings greater certainty, this might facilitate trust, thereby triggering reciprocity and trustworthiness. If the presence of strong law sends a negative signal about trustworthiness, by contrast, this could reduce willingness to trust. We discuss various laws and institutions in detail later in the chapter in light of the evidence on psychological mechanisms.

Game Theory Mechanisms

Having surveyed the behavioral and experimental economics literature on trust, we turn to what has traditionally been a distinct literature that asks the same question: the organizational economics literature, which uses neo-classical game theory and assumes narrowly self-interested players in order to understand how cooperation can be sustained in principal-agent transactions. It should be noted that most of the game theory models are based on infinitely repeated play and thus are not directly applicable to the experimental evidence or the baseline model we presented above, which is largely a one-shot or finitely repeated design. However, it is typically argued that insights from theories of repeated games are useful for explaining these results either because players in one-shot games follow heuristics of behavior that they developed while playing repeated games (Frank, 1988) or because the existence of irrational opponents allows repeated game equilibria to be sustained in finite-move games (Kreps, Roberts, Milgrom, Wilson, 1982).

The literature on relational contracts originated primarily with Baker, Gibbons and Murphy (1994) and MacLeod and Malcomson (1989) in studies designed to explore how principal-agent problems involving non-contractible subjective performance can be circumvented through infinitely repeated interaction. Returning to our model, and considering narrowly self-interested agents, recall that in a one-shot game, agents will put in minimal effort, and principals will anticipate that and offer minimal investment. However, the well-known folk-theorem argues that in a repeated setting where actions can be conditioned on past behavior, how much a player values her reputation or her "reputational capital" can be a sufficient incentive to maintain a socially welfare maximizing equilibrium. A more complete survey of the theoretical literature can be found in MacLeod (2007), and a survey of this literature as it pertains to law can be found in Spier (2006). We focus here on the elements that pertain to the behavioral phenomenon of trust and how it interacts with legal regimes.

One theme of the literature is that it may be optimal to not take full advantage of the possibility to specify obligations of trading partners in a contract, even when legal institutions allow such contractual enforcement. The basic idea is that the efficiency of the equilibrium outcome of repeated games depends critically on what happens to each party in the event that cooperation breaks down. Laws and institutions that protect afflicted parties in the case of contract breach can actually make cooperation more difficult because they improve the value of outside options and thus increase the temptation to renege.

For example, Bernheim and Whinston (1998) analyze why contracts often have the feature of "strategic ambiguity," where parties choose incomplete contracts when complete contracts are available. They find that incomplete contracts work better in repeated games because they increase the degree of punishment available when either party shirks. Similar results are shown in Shaprio and Stiglitz (1984) and Levin (2003) who show that the power of a performance incentive a relational contract is able to provide decreases as the attractiveness of the outside option increases.

This literature also considers the impact laws have on signaling, but again in the context of contractual breach. For example, Allen and Gale (1993) and Spier (1992) note that parties may prefer incomplete contracts because complete contracts serve as a signal of the intent for bad behavior. A trustworthy person would not need to spell everything out in a complete contract, therefore game theory suggests that one might infer that someone who relies on complete contracts has something to hide.

A different theme in the literature is that certain types of legal institutions, which foster the possibility to interact repeatedly over long time frames, will be complements to trust. Legal institutions that facilitate repeated interactions are broadly speaking those that promote stability, e.g., limiting the possibility of seizure of assets by the state, or reducing the possibility of violence, and thereby increasing the chance that the trading partner of the current period will still be a viable partner in the next period.The potential for repeated interactions means that trading partners operate under "the shadow of the future", allowing the possibility for cooperation to be sustained by appropriately chosen punishment strategies in an infinitely repeated game. In fact, the experimental literature shows that this idea goes through even in finite horizon games. Brown et al. (2004) show in the lab that market efficiency is higher when market participants can endogenously engage in repeated interactions with

trading partners who have performed well in the past. The mechanism is "gift exchange", in the sense that principals offer generous up front wages to agents who have performed well in the past, and agents respond by being trustworthy. Efficiency is lower when institutions create instability and only allow one-shot interactions, because agents become less reciprocal in the absence of the "shadow of the future". Notably, while institutions fostering repeated interaction make gift exchange possible, the virtuous cycle still requires principals to be trusting enough to pay generous wages. Thus, from a game theoretic perspective, trust and the law can also be complements.

A related theme in the literature stresses the importance of dissemination of information about past behavior. If future players "forget" the performance of trading partners in the past, then the possibility for repeated interactions loses its bite in terms of fostering cooperation. Milgrom, North and Weingast (1990) demonstrate the importance of institutions that disseminate reputation information for the development of medieval international trade. The theme of the importance of information systems to maintain reputation has also been developed in Greif (1989, 1993) and Kranton (1996).

In summary, the game theory literature shows mechanisms through which the use of contracts to specify agent obligations can be a substitute for trust. Similar to the empirical findings on trust as a substitute, it can be suboptimal for a principal to take advantage of the opportunity to constrain the choices of agents. The theory also outlines mechanisms through which strong legal institutions may be complements to trust, namely by fostering the possibility for repeated interactions.

Trust and the Law: Substitutes or Complements?

In this section we return to the contrasting experimental evidence, about the law being a substitute or complement for trust, in light of psychological and game theoretic mechanisms.

One interpretation of the experimental evidence is that the process through which laws are implemented matters for whether they crowd out or foster trust. In the studies we surveyed where trust and the law were substitutes, the law took the form of externally imposed contractual constraint on agent choices, imposed either by a principal or by the experimenter. By contrast, studies where contractual enforcement was imposed through referendum found that law was a complement to trust. The process through which contractual constraints are imposed thus seems to matter.

The process for implementing laws may matter is because it determines what "signal" is sent about intrinsic trustworthiness of agents. Specifically, laws that are imposed externally and that serve to limit the choices of agents may send a signal that agents are untrustworthy. In the case that the rules are put in place by the experimenter, principals may infer that agents are untrustworthy, and reduce trust, strategically or due to betrayal aversion motives. This can in turn be self-fulfilling, if agents are reciprocal and respond to low trust by being untrustworthy. In the case that a principal is given the option to constrain the agent, and makes use of the option, this may signal to the agent that the principal believes they are untrustworthy. This might trigger a negatively reciprocal action from the agent, in the form of reduced trustworthiness. As in the game theory literature, it may be optimal for principals to not utilize

the possibility to adopt stronger contract enforcement, even if this is possible within the legal framework.

Laws that are implemented through referendum may send a different signal, that agents view trustworthiness as important and fair. In such a process, individuals who vote for sanctions for untrustworthy behavior will be affected by the sanctions themselves. Thus, voting for sanctions tends to signal that agents may be intrinsically trustworthy. This might increase principals' willingness to trust, as well as directly affect the trustworthiness of agents because they want to conform to the social norm. Indeed, Tyran and Feld (2006) measured beliefs about cooperation, and show that subjects expected greater cooperation if mild sanctions were implemented by a vote, compared to a setting where sanctions were not an option.

In line with this interpretation, Jolls, Sunstein and Thaler (1998) argue that the content of law should be viewed as a codification of what society sees as right or wrong. For example, laws that ban mutually beneficially transactions like usury or price gouging fail on the usual economic metrics of efficiency but exist because they reflect prevailing norms of fairness. Societies that have prevailing norms of trust and trustworthiness might also collectively choose stronger laws of enforcement.[15]

Whether or not the law is a complement to trust also seems to depend on the content of the legal institution: strong laws do not only mean perfect contract enforcement between trading partners, they may also have an important function in terms of protecting trading relationships from external threats and promoting stability. The results of Bartling et al. (2014) highlight the complementarity between trust and legal institutions that allow stable long-term relationships; the combination of such institutions with high trust is very beneficial, whereas having either bad institutions, or low trust, leads to much worse outcomes. Their results also show the importance of some minimal ability to enforce contractual terms; if there is double moral hazard in the sense that both wage offers and worker effort levels are not contractually enforceable, then market outcomes are even worse, and high initial trust beliefs do not help. Game theory and psychological mechanisms both provide explanations for how ``gift exchange'', a virtuous cycle of trust and reciprocal trustworthiness, can arise in a setting with repeated interactions and partial contractual enforceability, although strictly speaking game theoretic mechanisms only work

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[15] While Jolls, Sunstein and Thaler do not specify the direction of causality, others have suggested that law may serve as a mechanism to shift the norms in society. For example, Kahan (2000) notes counter-intuitively that the effectiveness of a new law that contravenes an established norm in society may be decreasing in the severity of the punishment associated with that law. The purported reason is that severe punishments would be seen by law enforcers as unjust and thus the law would go unenforced, while mild punishments would be accepted and help shift the norm to match the change in the legal framework. More broadly, Stout (2011) argues that laws should be constructed to "cultivate the conscience" of society through the channels of obedience, conformity and empathy and the overemphasis of law and economics on material incentives has caused a neglect in a key channel of how law and trust norms might interact.

with an infinite horizon. The ability to credibly promise high wages is necessary for principals to be able to send a gift and start the gift exchange process. The ability to engage in repeated interactions is also important, because in this case agents have a stronger motive to reciprocate high trust and high wages with high effort: Being trustworthy in the current period increases the likelihood that the principal chooses to interact with the agent again in the future, and continue to pay high wages. Trustworthiness of agents in term reinforces the willingness of principals to continue trusting.

In summary, one way to reconcile the apparent complementarity of trust and law at the macro level, with experimental evidence, is to think about the process underlying the implementation of law, and the precise content of strong "rule of law". To the extent that legal systems of contract enforcement are seen as signaling a social value placed on trust, as opposed to a negative signal that people are untrustworthy, this could explain complementarity at the macro level. In addition, if rule of law is capturing features of institutions that promote stability and the ability to have long-term trading relationships, this is another channel through which trust and the law may be complementary.

Case Studies and Discussion

Having discussed the relationship between trust and law at a relatively general and abstract level, we now turn to a discussion of the interaction of trust with several specific types of laws. We focus on laws that affect employment contracts, and laws that are seemingly designed to help restore violated trust, so-called apology laws

Employment Contracts - Minimum Wage, etc.

Turning to specific aspects of employment law that interact with trust, one important case in point is minimum wage laws. Increasing legally required minimum wages have been found to produce unexpected effects: a tendency for firms to increase wages to a level *above* the new minimum wage, the so-called "spillover effect," and for firms to not take advantage of exceptions in the law to pay less than the minimum wage to certain groups, e.g., teenagers.

One explanation for these effects is that minimum wage laws might affect the perception of agents about what is a "fair wage" with consequences for the lowest wage workers are willing to accept. Specifically, Falk et al. (2006) conduct experiments where the labor market starts out with no minimum wage law and then one is introduced. Exploiting the fact that a lab experiment makes it possible to directly measure worker reservation wages (in an incentive compatible way), they show that introducing a higher minimum wage causes workers to increase their reservation wages to be above the new minimum wage. As a consequence of this change, firms with rational beliefs about worker dispositions know that they need to pay wages higher than the new minimum wage, even if they were paying lower wages than the new minimum wage level before the law was introduced. Workers in this experiment demand higher wages even though their outside option if they refused the contract was a payment of zero.

One interpretation of these results is that workers perceive the minimum wage as a signal about the bare minimum a firm should pay if it is "decent." This might explain why the fair wage is somewhat

higher than this minimum, as is indeed the case with worker reservation wages. Falk et al. (2006) also conduct experiments where a minimum wage is first introduced and then removed. Strikingly they find that reservation wages stay high even after the minimum is eliminated. Thus, even temporary laws can have a lasting impact through the channel of changing agent fairness perceptions.

Trust is also relevant when principals design employment contracts. Different forms of compensation involve different degrees of trust, ranging from a binding up-front wage, which is paid regardless of the agent's performance and thus involves maximum trust, to compensation being fully contingent on performance, which reduces the need for trust by the principal (Fehr et al., 2007). In some cases, there is also an issue of trust by the agent: for the labor relation to be successful, the agent may need to trust that a principal will actually pay a promised but unenforceable performance bonus, or reward good performance with a future wage increase (e.g., Lazear, 1981). Empirically, trust is shown to allow fixed wage contracts, or contracts that mix fixed wages with some unenforceable performance pay, to be quite successful. For example, Fehr et al. (2007) conduct an experiment where a principal and agent have a one-shot interaction. They give principals the choice between different contract forms and find that a contract combining a fixed up-front payment with the unenforceable promise of a bonus payment is the most successful. This is because subjects that are acting as the firms in the experiment did in fact pay their promised bonuses when the worker performed well, despite the one-shot nature of the game. Showing that they expect this trustworthiness on the part of employers, workers choose high effort levels. By contrast, principals do worse with a ``trust free'' contract, which automatically imposes a modest fine for poor performance by the agent. The value of flexible contracts is also demonstrated by Charness et al. (forthcoming AER), who find in a trust game experiment that principals can do even better if they allow agents to set their own wages. This is because agents choose higher effort for a given wage payment, when they chose the wage level themselves.

Employment protection legislation (EPL) is another important labor market institution that complicates the relationship between principal and agent by making firing costly if an agent is retained beyond an initial probation period. Falk et al. (2014) use a labor market experiment where firms and workers can endogenously engage in repeated interactions, and they exogenously vary whether the market has EPL, and whether or not bonus payments are possible. Without the option to pay bonuses, EPL is shown to sharply reduce market efficiency possibly because it forces firms to rely on rising wage profiles as an incentive device. This elicits only modest effort levels from workers, presumably because of the limited credibility of large wage increases that go into effect only at the end of the (finite) game. When bonus pay is possible, by contrast, EPL has little impact on market efficiency. This is because, as in Fehr et al. (2007), firms use bonus pay and credibly reward workers for good performance from the start. The degree of required trust is lower because the principal must make good on her promise immediately.

Liability for Accidents: Apologies and the Restoration of Trust

One key application of how trust and specifically violations of trust interact with the law is in the realm of tort law, particularly as applied to legal liability for product defects. The relationship between a buyer

and a seller when the quality of the good is uncertain depends on trust. Liability provisions where the buyer can seek recourse against the seller increases the outside options for buyers and reduces the relational incentives for the seller. We have seen then that increasing the strength of product liability laws could decrease trust. One particular case study worth considering of how laws interact with trust relationships is in the area of Apology Laws. The function of apologies has long been seen as a social custom that mends frayed relationships. Ho (2012) shows that apologies act as signals by agents for future trustworthy behavior. In the area of medical malpractice, states have become concerned that one cause of rising malpractice costs is that doctors are reluctant to apologize because they fear inviting litigation, but patients often sue only because they never received an apology. In an effort to encourage apologies and more trust, thirty-six states have drafted apology laws that forbid plaintiffs from using apologies by doctors as evidence in court. However, like the minimal effort laws, apology laws also interfere with the agent's ability to signal. This is a case where the laws could serve as a complement to trust, encouraging more trust-generating apologies, or as a substitute, subverting apologies by diminishing their meaning. Ho and Liu (2011) find in a difference-in-differences study that the former effect dominates: apology laws reduce the average size of malpractice payments while increasing the speed of settlement. Ho (2012) and Ho and Liu (2011) point out that the welfare implications of more apologies and less malpractice is ambiguous. As doctor effort is unobserved and standards of care are enforced by malpractice, more apologies could increase moral hazard on the part of doctors.

Conclusions

In this chapter, we offer a survey of the literature on trust and the law, exploring the behavioral and game theoretic mechanisms that help maintain cooperation when contracts are incomplete. Our particular focus is on understanding the extent to which trust and the law are substitutes or complements. We begin with evidence at the aggregate, country level that high trust levels and strong legal institutions are observed together, consistent with complementarity. We then consider evidence from laboratory experiments, some of which is consistent with trust being a substitute for law, and some of which shows a complementary relationship. A survey of the evidence on behavioral and game theoretic mechanisms that underlie trust helps shed some light on the reasons for the different results in the experimental literature and suggests directions for future research on disentangling the reasons for the observed macroeconomic behavior. Understanding the relationship between trust and the law has important consequences for policy makers and institutional design related to how trust can support or undermine the law, and for practitioners in understanding how laws can support or undermine trust. We understand relatively little about how social trust and institutional rules co-evolve over time in a dynamic political economy context. That suggests a next step in research for understanding the macro patterns we observe today.

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