

# A model of institutional fragility and breakdown of trust, with an application to Chile\*

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**Abstract.** We build a formal model of how trust in government institutions can arise — and also disappear. At the heart of our argument is a two-way causation: government effectiveness helps engender trust, but trust is more readily bestowed upon governments that at providing the things —like high-quality public services— people want. Externalities are also at work: the trust we place on a governmental institution matters, but other citizens' trust matters just as much. The model displays multiple equilibria, so that self-fulfilling prophecies can occur: if people come to distrust government institutions and expect them to perform poorly, they change their behaviour in ways that ensure that government performance will indeed be poor. The model can also explain how a small exogenous shock can yield a big change in outcomes, as society shifts from one equilibrium to another. We use this model to analyze the experience of Chile, a country that was once the poster-child for democratic politics in Latin America but which in recent years has suffered a collapse in institutional trust —and, since October 2019, massive social unrest and persistent street violence.

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*Shirking and property destruction are among the “weapons of the weak”; disobedience to the law, tax evasion, inoculation resistance, and even non-voting can represent active non-compliance.*

Margaret Levy (2019)

*Individually rational choice is no guarantee of a collectively desirable equilibrium. Any contrary idea that people may have garnered from a mistaken reading of Adam Smith needs to be discarded; social optimality of perfectly competitive markets for private goods is a very special property that does not generalize to other kinds of interactions.*

Avinash Dixit (2006)

## 1. Introduction

“The Secret to Coronavirus Success Is Trust”, runs the title of a recent article in *Foreign Policy* (Schrader 2020). A growing literature claims that lack of trust in government has hindered U.S. attempts to fight the coronavirus, while high-trust countries like Iceland or Taiwan have been much more successful at controlling contagion (Hsieh and Child, 2020).<sup>1</sup>

Lack of trust is reportedly also behind the growing populism in many countries’ politics. Algan et al (2017) entitled their influential paper “The European trust crisis and the rise of populism”. Norris and Inglehart’s examination of the global populist phenomenon finds that “Populist support is...stronger among the working class, the less educated, men, white Europeans, the economically insecure, and those expressing political mistrust” (Norris & Inglehart, 2019).<sup>2</sup>

Of course social science did not discover yesterday that trust is important. Alexis de Tocqueville (1856) and Max Weber (1964) argued long ago that trust contributes to democratic wellbeing. And, as Francis Fukuyama (1995) has emphasized, many of the crucial characteristics of a healthy society, such as cooperation and reciprocity, plus desirable kinds of economic behavior, such as saving and investing, all depend on trust.

In spite of the central role of trust in many social science discussions, there exist few formal models of trust. In this paper we provide a formal account of how trust in government institutions can arise — and also disappear. At the heart of our argument is a two-way causation, also recognized by Levy (2019) and Levi, Sacks, and Tyler (2009): government effectiveness helps engender trust, but trust is more readily bestowed upon governments that at providing the things —like high-quality public services— people want.

In this second strand of causation, external effects are at work. If Citizen A trusts public health authorities and follows rules on social distancing but no one else does, then A is still susceptible to contagion during a pandemic. Alternatively, there may be a moral sanction associated with

not paying subway fares, but the more people jump over the turnstiles, the less powerful that sanction is. The trust we place on a governmental institution matters, but other citizens' trust matters just as much.

What we obtain then is two-way causation plus external effects, yielding multiple equilibria. Our model can explain how a small exogenous shock can yield a big change in outcomes, as society shifts from one equilibrium to another: people change their behavior in ways that make government institutions less effective, triggering in turn an additional (and potentially sharp) decrease in trust. Self-fulfilling prophecies can also occur: once citizens come to believe that institutions are listless and ineffectual, they change our behaviour in ways that ensure that listless and ineffectual institutions they will get.

Does it follow that any country, at any stage of development, with any level of institutional quality, is vulnerable to a sudden and self-fulfilling crash in trust? Our model suggests the answer is no. Initial conditions matter, as in Krugman's (1991) pioneering paper on history versus expectations. For a country to be vulnerable to small shocks and self-fulfilling shifts in expectations, its institutions have to be sufficiently weak to begin with.

The model helps understand another practical puzzle. Government effectiveness —as measured, for instance, by the Governance Indicators assembled by the World Bank<sup>3</sup>— typically changes slowly. In peacetime it takes time to weaken a well-functioning public health-service, or to discredit an honest judiciary. In contrast, public perceptions of government effectiveness — measured by polls and public opinion surveys— often move around abruptly and dramatically.

The combination of forward-looking behavior and coordination failure across agents helps explain the puzzle. Suppose that a citizen's trust in the government depends on the quality of the public services the government is expected to deliver in the future. And the quality of those public services, in turn, depends on how much people trust the government, today and in future. If one citizen expects other to lose trust, thereby causing government performance to deteriorate, then that citizen will trust as well. So small shocks or sudden shifts in expectations can trigger large changes in reported trust, even if actual government effectiveness has moved hardly at all.

We use this model to analyze the experience of Chile, a country that was once the poster-child for democratic politics in Latin America but which in recent years has suffered a collapse in institutional trust —and, since October 2019, massive social unrest and persistent street violence.

When subway fares in Santiago, Chile, rose by less than 4%, no one expected what was to come. Following the price hike students began invading metro stations, jumping over turnstiles and blocking exits. The protests intensified over a period of ten days, when 13 metro stations were set on fire and an additional 10 were vandalized.<sup>4</sup> Demonstrations turned increasingly violent, especially in the low-income outskirts of the city, damaging at least 300 supermarkets and countless shops and businesses.<sup>5</sup> Then millions took to the streets for a peaceful march, raising a wide range of concerns, from the cost of health care and low pensions to global warming and the defense of Chile's glaciers. A new era in Chilean politics had begun.

Why did millions of angry Chileans take to the streets in protest for several months? And why did Chile –long held as a success story, and arguably the most prosperous and law-abiding country in Latin America– explode in a rampage of violence, vandalism and looting? The most common explanation is that the increase in fares caused public indignation at rising prices and high inequality to boil over.<sup>6</sup> At some level that must be true: people with sufficient income who feel they are treated fairly do not loot and riot. But as an explanation on which to base policy and political changes, that standard account risks being simplistic.

Chile does indeed have a history of inflation. Yet Chilean inflation in the 12 months to September 2019 was barely 2.1%, and, in fact, the Central Bank had been cutting interest rates because inflation was below its target. And Chile is very unequal for an upper-middle-income country, with a high Gini coefficient of 46.6 in 2017 (100 represents absolute inequality). Yet according to the World Bank, the Gini coefficient has fallen from an eye-popping 57.2 when Chile returned to democracy in 1990.<sup>7</sup> The notion that *rising* income inequality is behind *rising* citizen discontent does not fit the facts.<sup>8</sup>

To understand the causes of a social phenomenon, one must ask: Why here? Why now? If citizen discontent has spiked in Chile, some other causal factor must also have moved so as to explain the change (or, alternatively, the sensitivity to the relevant causal factor must itself have spiked suddenly, which seems unlikely). What changed dramatically in Chile over the last few years that might explain massive citizen anger? One possible answer is to be found not in economics, but in politics: Chileans lost trust in all the institutions in their country.

The polling firm CERC-Mori has long been asking Chileans whom they trust. It issued a report in May 2019, just five months before the outbreak of violence, which was alarming in both tone and content: “Trust collapses between 2018 and 2019, reaching the darkest moment since we began measuring trust in 1990.” By then the two institutions displaying the lowest levels of trust were the Catholic Church, with 8%, and political parties, with just 5%. The least trusted categories of people, the report concluded, were politicians with 6%, and bishops and priests, with just 5%.

Of course collapsing levels of trust do not necessarily cause an outburst of violence. But they do generate the conditions in which massive and potentially violent protests can happen. Development is always a race between frustration and trust. In a not-quite developed nation with much inequality and large pockets of poverty, many people lead harsh lives. Their income and consumption fall far short of their needs; they have difficulty paying their bills at the end of the month; they worry about losing their job or getting sick; they receive mediocre public services.

But people govern their anger as long as they believe that things will get better for them and their children. And crucially, that institutions —the government, parliament, judges, prosecutors, the police, the military, labor unions, big business— are working to make that improved future possible (or at least are not working to impede it). But if trust suddenly collapses, and people come to believe that institutions are not working —or, worse, that they are working to further the interests of people in power, not of ordinary citizens— then frustration and anger will boil over and quite possibly turn violent. That is what seems to have happened in Chile.

The next section reviews the literature on political trust and legitimacy, and connects our paper to previous work on the subject. Section 3 provides data on the evolution of trust in Chile. Sections 4-6 present the basic model and its results. Section 7 then describes the gap between polling evidence and “expert opinions” on the quality and trustworthiness of institutions in Chile. Sections 8 and 9 extend the model to account for that gap. Section 10 concludes.

## **2. Trust and legitimacy: how much do we know?**

The literature on governmental trust and legitimacy goes back at least to Weber (1964), according to whom legitimacy is subjective: “the basis of every system of authority, and correspondingly of every kind of willingness to obey, is a belief, a belief by virtue of which persons exercising authority are lent prestige”. Weber’s classic distinction is part of his three sources of legitimacy: tradition, charisma and legality.

The liberal tradition, on the other hand, has tended to view legitimacy as stemming from democracy itself. Modern theorists of democracy such as Dahl (2006), Przeworski (1991) and O’Donnell (2007) stress that the cornerstone of democratic legitimacy is a majority government chosen that also protects minority rights, so that minorities feel safe and have a chance to become a majority.

But procedural democracy is not enough for political legitimacy. Nor are the traditional Weberian sources such as tradition, or charisma-based legitimacy (although they help). The basic social contract of the past —where citizens are willing to give up part of their freedoms in order to be governed and protected<sup>9</sup>— has morphed into a demand to be governed well. Sharpf (1997) has distinguished between legitimacy based on inputs (the traditional kind) and based on outputs. Rothstein (2009) argues that legitimacy today mostly depends on the quality of those outputs.

The evidence points very much in that direction. A survey of 72 countries carried out by Gilley (2006) found that good governance, democratic rights, and advances in welfare were the most important variables for maintaining legitimacy. Now, states need to be capable of delivering high-quality public services and other desirable outputs, so there is a tight link between trust and state capacity, as Bellina et al (2009) and Mclaughlin (2015) argue.

Trust is also fragile, even in advanced nations. Inglehart (1999) has argued that modernity contributes to a decrease in trust in institutions. While traditional societies may have a strong sense of authority resulting from paternalism, corporatism or religious authority, modern societies, as they become more democratic, lose respect for authority and also lose trust in the institutions which channel that authority. Alternatively, in Robert Putnam’s account (2000), modern life reduces personal face-to-face interactions and, as a result, also reduces trust.

A modern theory of the endogenous determination of trust must start from two-way causation: government effectiveness helps create trust, but governments that are widely trusted find it easier to provide high-quality “outputs”, including high-quality public services.

Consider the first of the two strands of causation: the British love the National Health Service because it delivers (waiting times notwithstanding) high-quality health care. Americans have rejected attempts to privatize the popular Social Security system for analogous reasons. The average Chilean used to trust the local police force because it delivered a reasonably safe country (certainly when compared to neighbors in Latin America). Trust people place in an government institution depends on many factors, but the key is how effective that institution turns out to be.

The second line of causation is less obvious, but very important nonetheless: the effectiveness of a public institution in turn depends crucially on how much citizens trust it. A national development bank can fund its operations via low-cost deposits only if savers are confident their money is safe when deposited there. Doctors at a public hospital can cure disease only if a patients trusts them, follows their instructions and swallows the medicines they prescribe. Conversely, once users start jumping over turnstiles and refusing to pay their fee, as was increasingly happening in the Santiago metro in the antipodean Spring of 2019, no one can be surprised if the quality of service sooner or later deteriorates.

The existence of two-way causation means that virtuous and vicious cycles, involving trust creation and destruction, can occur. As far as we know, Levi, Sacks and Tyler (2009) were the first to make this point. This is how Levy (2019) describes it: "...a virtuous circle can exist in which a trustworthy government spawns legitimacy beliefs, which in turn leads to greater compliance, which feeds back into government whose increase in capacities enables it to provide more services and garner greater legitimacy." Levy, Sacks and Tyler (2009) and Levy (2019) describe this process verbally. In the next sections we develop a formal model in which two-way causation and both virtuous and vicious cycles can occur.

### **3. The evolution of (dis)trust in Chile**

Figure 1 shows data for Chile on the extent of trust in five institutions: political parties, the Senate, the Catholic Church, the Judiciary and Carabineros (the national police force). For some institutions, like political parties, trust has been consistently low since the 1990s. For others, like the Catholic Church and the police, specific drops are plausibly associated with specific scandals: cases of sexual abuse in the Church starting around 2010, and fraud in Carabineros in 2016. But a general decline begins in 2009-10, and it accelerates in the two years prior to 2019.

The CERC-Mori report issued in May 2019 revealed that in the previous year trust in Carabineros had fallen from 49% to 32%, in the judiciary from 31% to 13%, in political parties from 15% to just 5% —and trust in the Catholic Church had simply collapsed, going from 31% to 8% of the sample. The *Centro de Estudios Públicos* (CEP) polls show a similar shift regarding how much Chileans trust institutions in their country. Data appear in Table 1. Between 2013 and 2019 a generalized collapse in trust takes place. Trust in the national government (the same President, Sebastián Piñera, was in office at both times) fell from 25.8 to 4.7 percent. Institutions that already endured low levels of trust (Congress, political parties, private business firms) reached very low figures: by late 2019 fewer than 3 percent of citizens reported trusting Congress or political parties.

**Do you trust the following institution?**  
(percentage answering “very much” and “to some extent”)

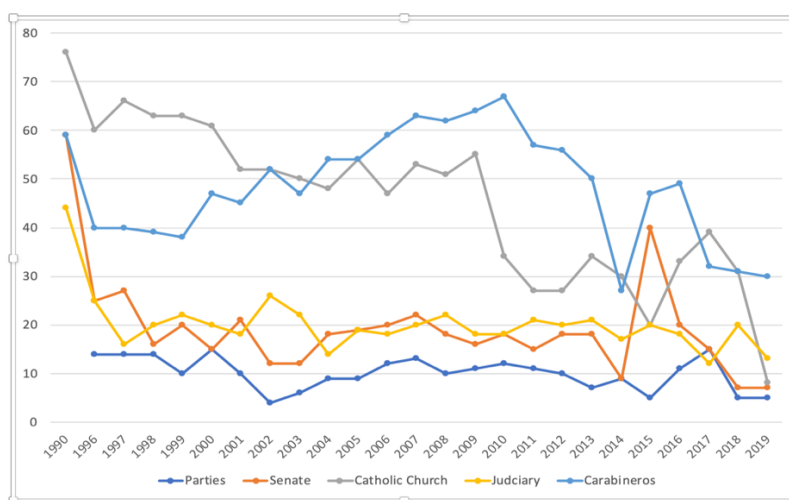


Figure 1

Source: CERC-Mori

**Do you trust the following institution**  
(percentage answering “very much” and “to some extent”)

	July / August 2013	November 2018	December 2019
National government	3.8 + 22.0 = 25.8	NA	0.7 + 4.0 = 4.7
Congress	1.5 + 10.1 = 11.6	0.9 + 3.6 = 4.5	0.5 + 2.2 = 2.7
Political parties	1.6 + 6.4 = 8.0	NA	0.3 + 1.8 = 2.1
Municipal governments	3.3 + 14.0 = 17.3	NA	1.7 + 14.9 = 16.6
Courts of justice	1.8 + 9.5 = 11.3	1.2 + 5.7 = 6.9	0.8 + 7.5 = 8.3
Armed forces	9.8 + 40.4 = 50.2	NA	7.5 + 16.6 = 24.1
Carabineros	10.9 + 37.5 = 48.4	NA	3.9 + 12.7 = 16.6
Ministerio Público	3.5 + 25.1 = 28.6	NA	0.9 + 5.3 = 6.2
Private businesses	3.5 + 14.0 = 17.5	2.3 + 9.5 = 11.7	2.2 + 6.0 = 8.2
Labor unions	3.3 + 17.1 = 20.4	NA	3.2 + 14.4 = 14.6
Catholic church	13.8 + 19.7 = 33.5	4.5 + 8.7 = 13.2	4.7 + 9.3 = 14.0
Newspapers	2.8 + 26.3 = 29.1	NA	1.5 + 9.8 = 11.3
TV channels	2.8 + 25.2 = 28.0	NA	0.7 + 7.4 = 8.1
Radio stations	7.3 + 39.5 = 46.8	NA	4.5 + 24.4 = 28.9

Table 1

Source: [www.cepchile.cl](http://www.cepchile.cl)

The courts of justice and the public prosecutor’s office, two institutions crucially responsible for law enforcement, also suffered a sharp drop: by 2019 neither commanded the trust of even one citizen in ten. And that is not the end of the story. Institutions that were once widely trusted — the Catholic Church, radio stations, Carabineros, the military— also fell sharply in public esteem, losing the confidence of more than half the people who once trusted them. What Chile experienced, then, was a meltdown of institutional trust.

#### 4. The model

Consider a society where individuals come together to finance a collective good.<sup>10</sup> The most natural interpretation is that the payments are tax payments, with government using the revenue to fund an institution that provides a public good such as education or healthcare. But the payments could also be interpreted as user fees—in a subway or in a toll road—with the resulting resources then used to maintain the system. Or the contribution could be non-pecuniary: for instance, behaving in a classroom so that other students can learn. In what follows we use the language of taxes and revenue, but keep in mind the alternative interpretations.<sup>11</sup>

The constant tax rate on exogenous personal income  $y$  is  $\tau$ .<sup>12</sup> People have a choice: they can pay taxes and contribute to the public good, or evade taxes and not contribute. Let  $p$  be the share of people who contribute (to be determined endogenously below).<sup>13</sup> Suppose also that those who do not contribute enjoy only a portion  $\beta$ , ( $0 < \beta < 1$ ), of the benefits of the public good.<sup>14</sup>

Total tax revenue is  $\tau py$ . Those resources are used to produce a public good that yields  $(1 + \alpha)\tau py$  in citizen utility, where  $\alpha \geq -1$ . One can interpret the parameter  $\alpha$  as either a technological parameter, indicating the ability of government to turn private resources into public ones, or a preference parameter, indicating how well suited the public good is to people's desires. In either case,  $\alpha$  is an input into of the quality of institutions. High-quality institutions have high  $\alpha$ , low quality institutions have low  $\alpha$ . If  $\alpha < 0$ , government institutions destroy value.

Our definition of trust matches what the OECD calls “trust in competence”, or “the ability of institutions to do their job”.<sup>15</sup> Given that in this simple model there is only one governmental institution producing one output, then trust is simply the extent to which citizens believe government will deliver the largest feasible amount of the right kind of public good. The higher  $(1 + \alpha)\tau py$  is, the more people trust the government. So trust depends not just on  $\alpha$ , but also on the share  $p$  of people who contribute.

In turn, as we shall see, high trust is reflected in the decision to “play by the rules”. Conversely, absence of trust causes a portion (possibly a growing portion) of people to disregard those rules—here, by not paying the tax  $\tau$ .

The welfare level of someone who contributes to pay for the public good is:

$$w^c = (1 - \tau)y + (1 + \alpha)\tau py$$

Notice that, intuitively, that level of welfare is an increasing function of the share of people who contribute. Notice also that if everyone contributes welfare becomes  $w^c(p = 1) = (1 + \alpha\tau)y$ , while if no one else contributes it is  $w^c(p = 0) = (1 - \tau)y$ .

Turn now people who do not contribute. Assume there is a social sanction associated with not contributing, and that sanction is a function of how many people do contribute. An individual who does not contribute suffers a psychological cost  $\mu p$ , where  $\mu > 0$ . It follows that if (almost)



everyone contributes this cost is  $\mu$ , while if no one contributes this cost is zero. So we have a kind of “herd moral effect”: it is less costly not to contribute when others also fail to contribute. This kind of complementarity across individuals will be crucial to some of the results below.

The welfare level of someone who does not contribute is

$$w^n = y + (1 + \alpha)\beta\tau py - \mu p$$

Again, it is useful to note that if everyone contributes and  $p = 1$  this becomes  $w^n(p = 1) = [1 + (1 + \alpha)\beta\tau]y - \mu$ , while if no one contributes and  $p = 0$ , it is  $w^n(p = 0) = y$ .

Notice that  $w^n(p = 0) > w^c(p = 0)$  always, which is intuitive: if no one else is contributing, it pays off not to contribute. Last but not least,  $w^c(p = 1) > w^n(p = 1)$  if and only if  $\tau y[1 - (1 + \alpha)(1 - \beta)] < \mu$ . That is to say, to prevent free riding (so that each person chooses to contribute when everyone else is contributing), the social sanction  $\mu$  must be sufficiently large.

## 5. Multiple equilibria

There is one  $p$  that makes welfare from contributing equal to welfare from non-contributing:

$$y + (1 + \alpha)\beta\tau py - \mu p = (1 - \tau)y + (1 + \alpha)\tau py.$$

Solving for  $p$  we obtain

$$p^* = \frac{\tau y}{(1 + \alpha)(1 - \beta)\tau y + \mu}$$

Where, recall,  $p^*$  is that share of the population that makes both courses of action equally advantageous. Note that  $p^*$  is decreasing in  $\alpha$  and in  $\mu$ , which is intuitive. For  $p^* < 1$  we need  $\tau y[1 - (1 + \alpha)(1 - \beta)] < \mu$ , which is the same condition above for  $w^c(p = 1) > w^n(p = 1)$ . We assume this condition is met. Notice that the cost to each individual of non-contributing is  $\mu p$  – a proxy for the importance of “herd moral effects”.

Figure 2 shows both welfare functions. The two schedules cross at  $p^*$ . Notice that welfare from non-contributing could have a positive or negative slope, though in what follows we always draw the corresponding function with a positive slope. All that matters for our results is that  $w^n(p)$  be flatter than  $w^c(p)$ , and that is indeed the case for all parameter values.

What are dynamics around  $p^*$ ? Assume first the very simple gradual adjustment process

$$\dot{p} = \phi(w^c - w^n)$$

where  $\phi > 0$  is a speed-of-adjustment parameter. The share of the population that contributes grows whenever welfare from contributing is larger than from not contributing, and vice-versa.<sup>16</sup>

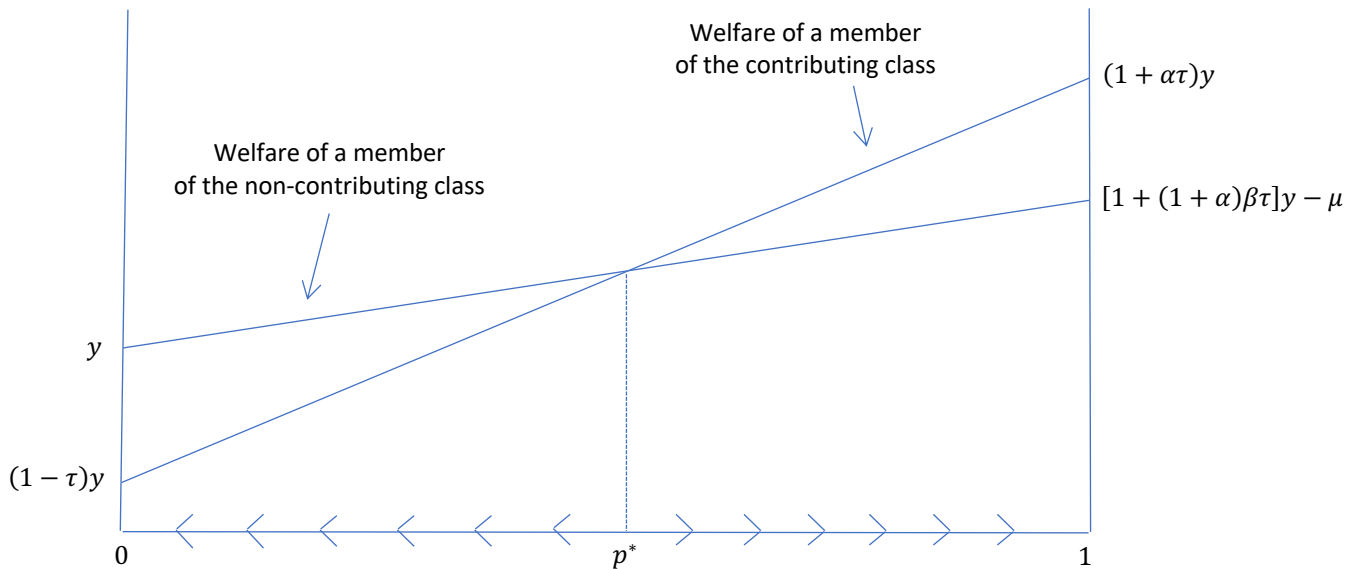


Figure 2

Under this adjustment rule, the equilibrium at  $p^*$  is unstable: if one more individual were not to contribute, then the welfare associated with not contributing would be above that associated with contributing, causing other individuals to stop contributing too. Traveling down that slippery slope, sooner or later no one would be contributing. And because when  $p = 0$  the welfare level of non-contributing is higher than that associated with contributing, that is a stable equilibrium.

A similar story unfolds if, starting at  $p^*$ , one more person chooses to contribute. Then others have an incentive to do the same, and the economy converges to a situation in which everyone contributes. And because when  $p = 1$  the welfare level associated with contributing is higher than that associated with non-contributing, then that also is a stable equilibrium.

In short, long-run equilibria are at  $p = 0$  and  $p = 1$ . There is more than one equilibrium because society exhibits a kind of herding behavior, derived from strategic complementarities across people: it is more attractive to contribute when many others are also contributing, and it is more attractive not to contribute when many others are also failing to contributing.

The complementarities come from two sources. For both contributors and non-contributors, welfare is increasing in  $p$ . That is intuitive: the larger the share of the population that contributes to the public good, the higher the level of provision, and hence the higher is everyone's welfare. In addition, there is a complementarity arising from the moral cost of not contributing. For non-contributors, welfare is decreasing the larger is  $p$ , because there is more shame attached to evading taxes (for instance) when there are relatively few people doing so.

It does not follow that both equilibria yield the same welfare. When  $p = 0$  individual welfare is  $y$ , while if  $p = 1$  individual welfare is  $(1 + \alpha\tau)y$ . So having everyone contribute is better than having no one contribute as long as  $\alpha > 0$ , which is intuitive. If society is trapped in the equilibrium in which no one contributes, then we have a glaring inefficiency.

## 6. Shocks and their effects

We are now ready to apply this model to situation like Chile's. Suppose that the parameter  $\alpha$  drops permanently to  $\alpha'$ , so that the quality of society's institutions drop forever. New and old welfare levels for contributors and non-contributors are shown in Figure 3. The new unstable equilibrium point is at  $p^{**}$ . The long-term consequences of this shock depend on initial conditions.

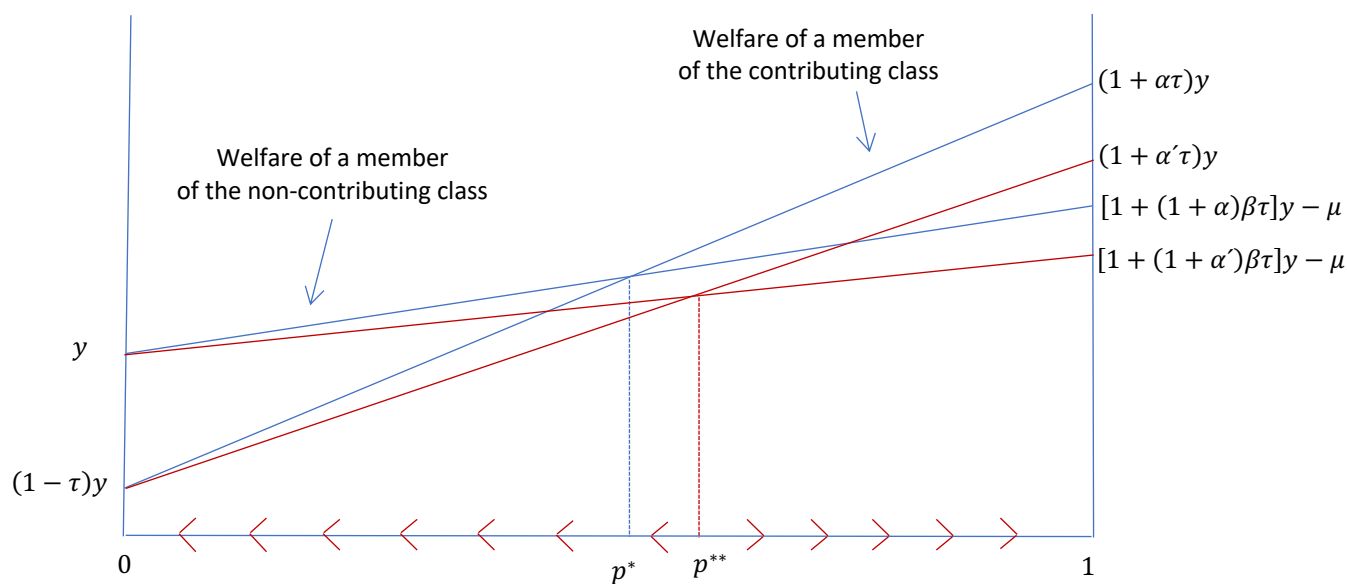


Figure 3

If society was initially at a point to the right of  $p^{**}$ , then nothing much happens. Society will continue “developing” —that is,  $p$  will continue rising and more and more people will gradually contribute to the public good. The only effect of the shock is that now the same private resources generate a smaller flow of utility from the public good, so that in the long run individual utility will be  $(1 + \alpha'\tau)y$  instead of the higher  $(1 + \alpha\tau)y$ .

But if society was initially between  $p^*$  and  $p^{**}$ , something much more dramatic (and costly) will happen:  $p$  will begin to fall and fewer and fewer people will contribute to the public good. In the end,  $p = 0$  and final individual welfare will drop to  $y$ , which is below  $(1 + \alpha'\tau)y$ .

So this is an example of how a relatively small change in an exogenous parameter —in this case, the quality of institutions— can have a large long-term impact on both the extent to which people respect and use those institutions, and once on long-term individual welfare. But notice: that large long-term adverse effect will only be relevant for societies that were not too developed to begin with —that is to say, for societies where the initial  $p$  is not too high.

Now suppose that the parameter  $\mu$  drops permanently to  $\mu'$ . This is a fall in the degree to which, at each possible  $p$ , non-contribution is morally costly for individuals. Such a change may well have happened in Chile. The recent crisis began when students from a downtown secondary school began flaunting their refusal to pay when boarding the metro. For them, refusing to contribute to the collective good is not just morally less costly than before; it is a badge of honor.

New welfare schedules for contributors and non-contributors appear in Figure 4. The new unstable equilibrium point is at  $p^{***}$ . The implications are analogous to those of the shock to  $\alpha$ . If society was initially between  $p^*$  and  $p^{***}$ , then  $p$  will begin to fall until it eventually hits 0.

Again the lesson is that small changes in parameters—in this case, to the moral or social cost  $\mu$ —can have large and persistent effects on public good provision and welfare. But this “discontinuity” only occurs if initially the country was relatively “underdeveloped” and institutions were sufficiently weak, in the sense that a small enough number of people contributed to public good provision, so that the initial  $p$  was to the left of  $p^{***}$ .



Figure 4

## 7. Slow-moving performance, fast-moving perceptions

We claimed at the outset that a striking feature of Chilean society is the sharp drop in citizens’ trust in institutions, whether private or public. Do those subjective assessments of the quality of Chilean institutions coincide with more objective assessments? Not quite. The World Bank compiles six indices of the quality of governance. They are based on household surveys but also on the assessments of experts, NGOs, businesses, and a number of multilateral organizations and other public sector bodies. As such, the indices offer a different evaluation of the quality of institutions in Chile than the opinion polls cited above.<sup>17</sup>

Table 2 contains the World Bank indices for Chile in 2013 and 2018. Three facts stand out. First, Chile’s performance is reasonably strong. In both years and in 5 out of the 6 indicators, Chile is in the top 20 percent of countries in the world. And in Political Stability, the one indicator in which Chile is not in the top 20 percent, we see an improvement starting in 2013 that places Chile in the top 40 percent by 2018.

**World Bank Governance Indicators for Chile**  
(Based on surveys / expert opinion)

	2013		2018	
	Governance Index (-2.5 to 2.5)	Percentile Rank (1 to 100)	Governance Index (-2.5 to 2.5)	Percentile Rank (1 to 100)
Voice & accountability	1.11	84.5	1.05	82.27
Political stability	0.36	59.72	0.43	61.43
Government effectiveness	1.26	86.73	1.08	81.73
Regulatory quality	1.49	91.94	1.34	89.94
Rule of law	1.37	87.79	1.12	83.65
Control of corruption	1.54	90.52	1.01	81.73

**Table 2**

Source: [www. https://info.worldbank.org/governance/wgi/Home/Report](https://info.worldbank.org/governance/wgi/Home/Report)

Second, the indices for Chile move relatively little. They show a decline between 2013 and 2018, but that drop is moderate. The average for all six indices was 1.19 (in a range that goes from -2.5 to +2.5) in 2013, and 1.01 in 2018 —a drop of only 15%.

Third, the decline is much smaller than that in the CEP survey, where the average drop in the share of people reporting trust is 56%.<sup>18</sup>

So the World Bank indices suggest that Chile has high-quality institutions, even after the drop in quality for the last five or six years. By contrast, Chileans believe that their country’s institutional framework is in terrible shape, and their assessment has been getting dramatically more pessimistic over the same period of time. Are these two positions irreconcilable? Not necessarily. One reason for the gap could be that World Bank data are mostly backward-looking: they reflect the state of institutions at the time of assessment, incorporating past developments that may have brought those institutions to the state they find themselves at that point in time. By contrast, household surveys plausibly have an element of forward-looking assessment: if institutions are strong then the country’s future (all else equal) looks rosy, and if the future looks rosy then the country’s institutions must be doing alright today.

The *Centro de Estudios Públicos* also asks whether the country is, in the opinion of respondents, moving forward, stagnating or going backwards. Between 2013 and 2019, the survey shows,

Chileans took a gigantic leap toward pessimism. Table 3 shows that the share of people who felt the country was “moving forward” went from 41.6 to just 6.3 percent, and those fearing the country was “going backwards” grew four-fold, from 8.2 to 32.3 percent of the total. This drastic change in the national mood surely influenced people’s assessments of the quality of the country’s institutions —and must in turn have been affected by it, in a two-way feedback loop.

Another bit of relevant data appears in Table 4. The same CEP survey also asks people for their view on the country’s economic prospects in the following 12 months. It is striking that these assessments are very similar in 2013 and 2019, in spite of the massive change in the overall outlook. For instance, the share of respondents claiming the economy would stay pretty much “the same” was 54.1 percent in 2013 and 54.6 in 2019. The share of people claiming the economy would be “better” did fall by 7.7 percentage points, but the share claiming it would be “much better” remained almost unchanged —as did the share claiming it would be “much worse”.

**Do you think that at the present moment the country is...**  
(percentage choosing each alternative)

	July / August 2013		December 2019
Moving forward	41.6		6.3
Stagnating	48.6		60.5
Going backwards	8.2		32.3

**Table 3**

Source: [www.cepchile.cl](http://www.cepchile.cl)

**8. Trust as an asset**

Trust ought to be a forward-looking variable. That is, whether people trust a given institution may be influenced by that institution’s past performance, but it should also depend quite crucially on the expectation of that institution’s future performance. The Chilean Carabineros may have had a proud history (though the atrocities committed during the dictatorship are no cause for pride), but if people expect that in the future the Carabineros will fail to combat crime and guarantee public safety, naturally trust in them will fall.

So far in this model we have no variables that could serve as proxies for this forward-looking definition of trust. To fill that gap, think of the present discounted utility value of contributing relative to not contributing as an asset,<sup>19</sup> and let the price of this asset be denoted by  $q$ , which now summarizes the state of trust in our model.

By arbitrage it must be the case that

$$\frac{\dot{q}}{q} + \frac{w^c - w^n}{q} = \delta$$

The LHS is the total return on this asset, which is given by the capital gain or appreciation of the price (the first term) and the difference in welfare levels between contributing and not (second term) both expressed as a proportion of  $q$ . On the RHS is the positive parameter, the subjective rate at which people discount future utility.

Notice that  $q$  is a forward-looking variable, since the arbitrage equation takes into account not only the contemporary level of  $q$  but also the expected change in  $q$  between today and tomorrow. We can think of this variable as a proxy for the value (or trust) placed on the institutions that produce public goods. Perhaps something akin to  $q$  is what public opinion polls are capturing in Chile: a forward-looking assessment of the quality of institutions.

Plugging in values for the welfare levels the expression for  $q$  becomes

$$\frac{\dot{q}}{q} + \frac{\pi p - \tau y}{q} = \delta$$

where  $\pi \equiv \alpha(1 - \beta)\tau y + \mu > 0$ . The equation can be re-written as

$$\dot{q} = \delta q - \pi p + \tau y$$

which is a linear differential equation in  $q$  and  $p$ .<sup>20</sup> How does  $p$  evolve? If agents are forward-looking, it seems natural that they will change their behavior in response to this “asset price”: when  $q$  is positive more and more people will start contributing, while when  $q$  is negative the opposite will happen. We therefore now assume

$$\dot{p} = \theta q$$

where  $\theta > 0$  is an indicator of the speed of adjustment.<sup>21</sup>

The last two equations together constitute a system of differential equations in two variables:  $p$ , the share of the population that contributes, and  $q$ , the “asset price” associated to contributing versus not contributing. Appendix 2 shows that there are two cases to consider. If the discount rate  $\delta$  is large relative to the speed-of-adjustment parameter  $\theta$ , then the system is forward-looking but not too much so. The corresponding phase diagram appears in Figure 5.

Dynamics occur along the s-curve emanating out of the points where the  $\dot{p} = 0$  and  $\dot{q} = 0$  intersect. If the initial point is to the right of  $p^*$  the system eventually moves to  $p = 1$  and  $q = (\pi - \tau y)/\delta$ . If it is to the left of  $p^*$ , the system eventually moves to  $p = 0$  and  $q = -\tau y/\delta$ . These are the same dynamics we had informally described above.

By contrast, if the discount rate  $\delta$  is small relative to the speed-of-adjustment parameter  $\theta$ , then expectations about the future gain importance. This is intuitive: a small  $\delta$  means that future welfare levels matter more, while a large  $\theta$  means that people adjust quickly.

The corresponding phase diagram appears in Figure 6. Dynamics occur along the spirals emanating out of the point where  $\dot{p} = 0$  and  $\dot{q} = 0$  intersect. Trajectories of  $p$  and  $q$  toward their final resting points are no longer monotonic: both variables can move up and down along the transition.

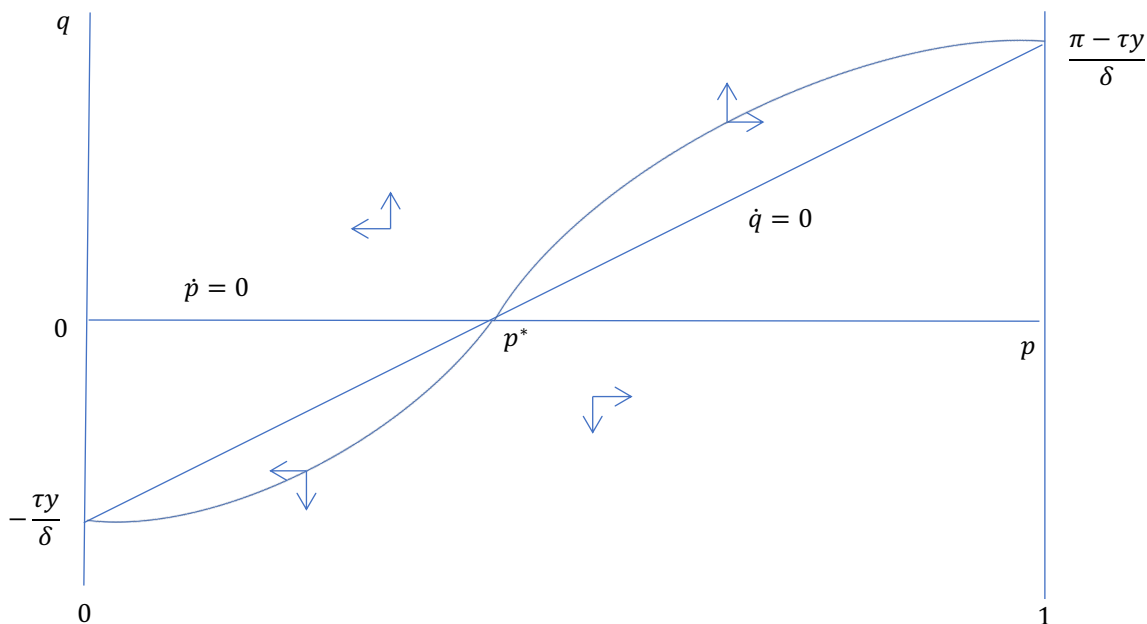


Figure 5

Most strikingly, initial conditions no longer pin down uniquely whether society converges to  $p = 0$  or  $p = 1$ . There exists a range of initial conditions for  $p$ , in the segment between points  $A$  and  $B$ , where depending on expectations the system can converge to either final resting point. Consider, for example, initial point  $p = \hat{p}$ . From there, if expectations are optimistic, the asset price could jump to point  $C$ , and thereafter society would converge to the state in which everyone contributes. Conversely, if expectations are pessimistic, the asset price could jump to point  $D$ , and thereafter convergence would occur to the state in which no one contributes.

It is no longer the case that if initial institutions are sufficiently strong, in the sense of starting to the right of  $p^*$ , only convergence to the good equilibrium is possible. Now you can have pretty strong institutions, with an initial  $p$  between  $p^*$  and point  $B$ , and still suffer a crisis of self-fulfilling pessimistic expectations, which destroys confidence in institutions, causing those institutions in turn to function badly, so that people gradually stop contributing to them until one day no one is left. So societies and their institutions are even more vulnerable to pessimism than our initial analysis suggested.



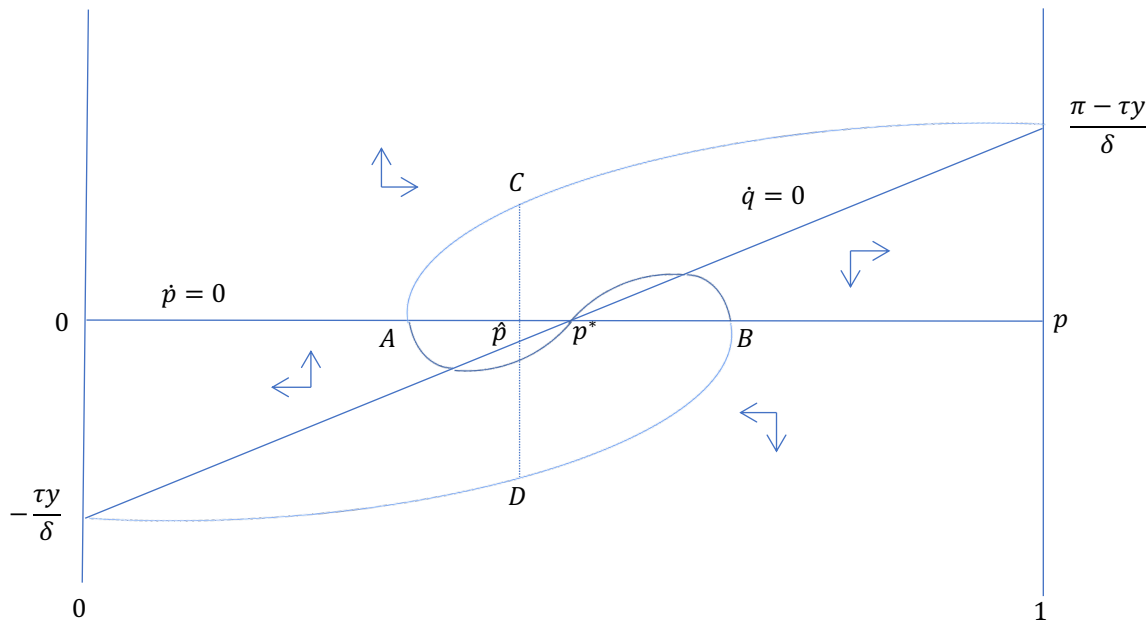


Figure 6

In the language first used by Krugman (1991), this is a case of history versus expectations. If a society's initial  $p$  is to the left of  $A$  or to the right of  $B$ , then only history matters. Societies that begin to the left of point  $A$  are condemned to a gradual loss of trust and the weakening of institutions until a sort of "state of nature" with no public good provision is restored. By contrast, societies that begin to the right of point  $B$  are the lucky ones: no matter how pessimistic their citizens may become, progress is the only way forward: gradually more people will contribute to the system and public good provision will be enhanced. This is perhaps the fate of the prosperous countries in Northern Europe or down under in Australasia.

But if a society happens to start out between points  $A$  and  $B$ , with intermediate levels of institutional trust and quality, then expectations rule. Hard-won institutional progress in the past may suddenly be undone because of a crisis of confidence. This has been the fate of Chile.

What determines the width of the "overlap" between points  $A$  and  $B$ ? The discount rate  $\delta$ , the speed-of-adjustment parameter  $\theta$ , and all the parameters contained in  $\pi$ , including institutional-quality indicator  $\alpha$  and moral cost  $\mu$ . Changes in any of these can make the overlap wider and increase vulnerability.

### 9. Effect of a drop in $\alpha$ or in $\mu$

Suppose now that either  $\alpha$  or  $\mu$  drop unexpectedly and permanently (qualitatively, the effect is the same). Consider the simple case of real roots and s-curves first. Dynamics following the shock can be described most easily by means of the following diagram:

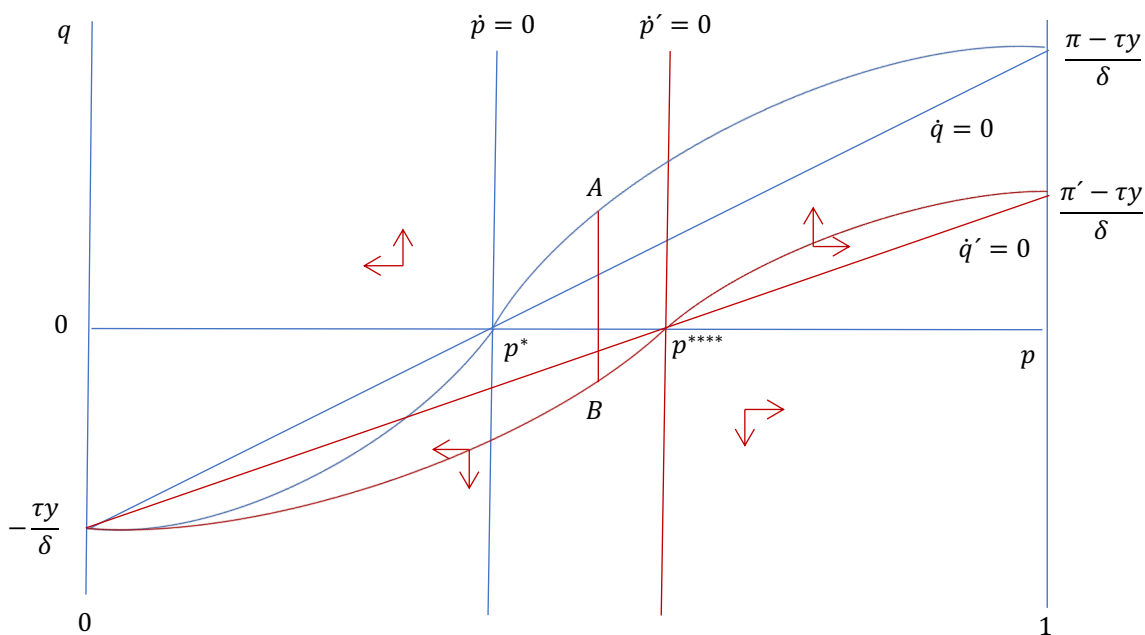


Figure 7

Schedules that correspond to the state of society before the shock appear in blue; after the shock, in red. The new unstable equilibrium point is at the intersection of the  $\dot{p}' = 0$  and  $\dot{q}' = 0$  schedules. Transitions to the steady state occur along the s-curves emanating from that point.

Suppose before the shock society was at point A, gradually moving toward the northeast along a path in which both the share of people who contribute, and the price of the “asset” of being a contributor (relative to not being a contributor) were both rising. At the instant after the shock, the price of the asset goes from point A to point B, suddenly moving from positive to negative territory: being a non-contributor suddenly becomes more attractive. And that is not the end of the story: the “asset price” continues to fall thereafter, as the share of contributors falls. Eventually that share will go to zero, and the “asset price” will converge to  $-\tau y / \delta$ .

We do not draw the messy diagram depicting the effects of the same shock in the case in which dynamic adjustment happens along those artistically remarkable spirals. But glancing at Figures 6 and 7 it is easy to get a pretty good sense of what happens. After the drop in either  $\alpha$  or  $\mu$  the new unstable equilibrium point will shift to the right; so will the whole “overlap” area in which initial conditions do not pin down the outcome uniquely. So a crisis of expectations, either of the self-fulfilling or the deterministic kind, will now be possible starting at higher initial levels of  $p$ .

## 10. Conclusions

The quality of institutions and the trust that citizens deposit in them are two sides of the same coin. Quality of course promotes trust, but a citizenry that trusts and respects a country's institutions in turn allows them to function better. There can be a virtuous cycle along which quality inspires trust, which in turn improves the performance of institutions, and so on. But the opposite can also happen: shocks can trigger a vicious circle in which collapsing trust and deteriorating public good provision mutually reinforce each other.

Development occurs, to borrow Acemoglu and Robinson's (2019) phrase, along a "narrow corridor": it does not take much to push a successful society off that corridor and into an abyss of distrust, distemper, bad politics, bad policies – and even violence. That is what seems to have happened to Chile.

Several kinds of shocks can push a country off the narrow corridor of institutional progress. "Small" declines in exogenous institutional quality and in the moral costs of asocial behavior can do the trick. And, for some parameter combinations and initial conditions, a generalized shift in expectations toward pessimism can be enough to shove society toward the abyss.

Might this be relevant to Chile? Its institutions were strong compared to those of most other emerging nations (and some developed nations too), but not strong enough to shield society and politics from a sudden meltdown in national self-esteem.

What is to be done? The story in this paper implies there is no quick technocratic fix that can get a country like Chile back on its feet. Beyond playing institutional catch-up (greater democracy and transparency), the name of the game is social coordination. But coordination across millions of people who feel they are living through several intertwined crises —economic, political, social, and now epidemiological— is notoriously difficult.

Coordination needs to happen along several dimensions. Citizens must come to believe again that it is their duty to pay taxes or subway fares even if many others are not doing so. Paradoxically, the common challenges posed by COVID-19 to all Chilean may help to focus minds on the benefits of collaborative behavior (and, conversely, an inadequate government response may further weaken institutional trust). Chile has also just started the job of writing a new constitution, which can be interpreted as a broad-based attempt to build mutual trust and trust in the political system.

A danger, of course, is that when politicians feel unloved by voters they often resort to easy fixes and demagoguery in a vain attempt at recovering their lost prestige. They also polarize politics and attempt to divide the world into warring camps. We call that *populism*. Many Chilean politicians seem tempted by this strategy.

It took Chile the better part of two centuries to build trustworthy institutions of which citizens could be proud. Much of that trust vanished in a few months. How long will the rebuilding take?

## Appendix 1

The asset price is defined as

$$q_t = \int_t^{\infty} [w^c(p_s) - w^n(p_s)] e^{-\delta(s-t)} dt$$

which, using the welfare functions, becomes

$$q_t = \int_t^{\infty} (\pi p_s - \tau y) e^{-\delta(s-t)} dt$$

Using Leibnitz's rule we can differentiate this expression with respect to  $t$  to obtain:

$$\dot{q}_t = \delta \int_t^{\infty} (\pi p_s - \tau y) e^{-\delta(s-t)} dt - (\pi p_t - \tau y)$$

which, using the definition of  $q_t$ , becomes

$$\dot{q}_t = \delta q_t - \pi p_t + \tau y$$

This is the equation in the main text.<sup>1</sup>

## Appendix 2

In matrix form the 2x2 system of differential equations is

$$\begin{bmatrix} \dot{p} \\ \dot{q} \end{bmatrix} = \begin{bmatrix} 0 & \theta \\ -\pi & \delta \end{bmatrix} \begin{bmatrix} p \\ q \end{bmatrix} + \begin{bmatrix} 0 \\ \tau y \end{bmatrix}$$

The eigenvalues of the system are

$$-\lambda(\delta - \lambda) + \pi\theta = 0$$

$$\lambda^2 - \lambda\delta + \pi\theta = 0$$

Therefore,

$$\lambda_1 = \frac{\delta + \sqrt{\delta^2 - 4\pi\theta}}{2}$$

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<sup>1</sup> In the main text we have suppressed time subscripts for simplicity.

$$\lambda_2 = \frac{\delta - \sqrt{\delta^2 - 4\pi\theta}}{2}$$

So both roots are positive. If  $\delta^2 > 4\pi\theta$ , both roots have only real parts. Convergence to one of the two equilibria happens along the s-curves depicted in the phase diagram in Figure 5.

If  $\delta^2 < 4\pi\theta$ , both roots are positive but have both real and imaginary parts. Convergence to one of the two equilibria happens along the spirals depicted in the phase diagram in Figure 6.

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<sup>1</sup> South Korea understood this early on, releasing transparent and very detailed information about individual behavior and patterns of contagion, in an attempt to build public trust. This trust in turn allowed for widespread data collection, enabling tracing and other measures (Zastrow 2020).

<sup>2</sup> See also Fieschi & Heywood, 2004; Foster & Frieden, 2017; Goodhart, 2017; Rodrik, 2018; and Torcal, 2014.

<sup>3</sup> Available at [www.https://info.worldbank.org/governance/wgi/Home/Report](https://info.worldbank.org/governance/wgi/Home/Report)

<sup>4</sup> Asociación Chilena de Municipalidades (2020).

<sup>5</sup> During the first month of unrest, looting and vandalism caused an estimated USD \$4.6 billion worth of damage to infrastructure, and cost the Chilean economy approximately 1% of GDP in foregone output.

<sup>6</sup> This New York Times piece, “Chile Learns the Price of Economic Inequality”, is representative of the type of causal analysis common at the time (<https://www.nytimes.com/2019/10/22/opinion/chile-protests.html>, accessed 9 March, 2020).

<sup>7</sup> See the data in <https://datos.bancomundial.org/indicador/SI.POV.GINI?locations=CL>

<sup>8</sup> At the very least, a proponent of this view would have to explain why intolerance for income inequality rose sharply in the recent past, so that even a *reduced* level of inequality became unacceptable and triggered protests and looting. The classic paper by Hirschman and Rothschild (1973) provides a few clues along these lines.

<sup>9</sup> Scholars such as Tilley trace the origins of state capacity to the sort of social contract required to finance and wage war (1990)

<sup>10</sup> There is a continuum of measure one of individuals. To make things simple we will assume all individuals are identical, but it would be straightforward to introduce heterogeneity of incomes or willingness to pay.

<sup>11</sup> The resulting game is similar to the experimental design in Fehr and Gächter (2002).

<sup>12</sup> Of course  $0 < \tau < 1$ .

<sup>13</sup> We will only consider parameter values so that  $0 \leq p \leq 1$  in equilibrium.

<sup>14</sup> This could happen, for instance, if someone who hides his income to avoid paying tax then cannot buy a big flashy car in which to travel government-provided roads, so his/her utility from road use falls by  $\beta$  percent. Or it could be that users who refuse to pay are caught and cannot use the subway (or the toll road)  $\beta$  percent of the time.

<sup>15</sup> OECD (2017). Adams, Forsyth, and Hoy (2011) define trust in an analogous manner

<sup>16</sup> This adjustment rule is backward-looking. In a later section we will introduce a forward-looking rule, which takes into account future differences in the welfare from contributing vis à vis welfare from not contributing.

<sup>17</sup> For details on the methodology behind the surveys, see Kaufmann, Kraay and Mastruzzi (2010).

<sup>18</sup> In the World Bank data there is one category, Control of Corruption, which is a bit of an outlier, with a 34% drop in the index. But that drop is still smaller than 11 of the 14 drops in trust reported in the CEP survey.

<sup>19</sup> Since adjustment from contributing to not contributing (or vice-versa) is gradual by assumption, an agent could be “caught” in one state even though it pays to be in the other. The variable  $q$  is the amount

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someone stuck not contributing would be willing to pay in order to move to the ranks of those who contribute.

<sup>20</sup> Appendix 1 shows how to derive this equation from the definition of  $q$ .

<sup>21</sup> Note that in contrast to Krugman (1991) and Benabou and Fukao (1993), who write down similar models, we do not assume this is the result of optimization under congestion costs. The difference matters for the dynamics.