

Institutional vulnerability, breakdown of trust: a model of social unrest in Chile*

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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. The puzzle

Why did millions of angry Chileans take to the streets in protest for several months, starting in October 2019? And why did a country like Chile –perhaps the most prosperous and law-abiding country in Latin America– explode in in a rampage of street violence, vandalism and looting?

The most common explanation is that a 3% increase in metro fares caused public indignation at rising prices and high inequality to boil over.¹ 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.

Take price increases. Yes, Chile has a history of inflation. And, yes, because it is more prosperous, Santiago is more expensive than most Latin American cities. Yet Chilean inflation in the 12 months to September 2019 was barely 2.1%, and the central bank had been cutting interest rates because inflation was below its target.

Or take income inequality. For an upper-middle-income country, Chile is very unequal, with a relatively 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 1990.² The notion that *rising* income inequality is behind citizen discontent does not fit reality.³

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 spiked 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? Here is a possible answer: Chileans lost trust in all the institutions in their country.

¹ 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).

² See the data in <https://datos.bancomundial.org/indicador/SI.POV.GINI?locations=CL>

³ 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.

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. All of this causes anxiety, frustration and, yes, anger.

But people control 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 not 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 run wild and quite possibly turn violent. That is what seems to have happened in Chile.

Chile, like all other Latin American countries, has never achieved the levels of institutional or interpersonal trust seen in the United States. This should not be surprising. When de Tocqueville travelled to the United States, he was struck by what he found. American exceptionalism extended to the trust citizens accorded one another. In France, by contrast, rather than turn to each other for help, citizens looked to the state.⁴ Latin America is more like France than the United States in this respect. In the region, according to Latinobarómetro, interpersonal trust has been very low and on a downward trend for the last fifteen years.⁵

It might seem odd that trust in political institutions has been declining as the region, even as it democratized. But politicians, journalists and big business are not trusted in advanced countries either. Ronald Inglehart has argued that modernity, or postmodernity, contribute to a decrease in trust in institutions. Alternatively, in Robert Putnam's account, modern life reduces personal interactions and, as a result, trust.⁶ 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 trust in the institutions which in one way or another channel that authority.⁷ This may be indeed occurring in Chile.

Although many polling organizations have explored issues of trust in Chile and Latin America, — including Latinobarómetro, Vanderbilt University's Latin American Public Opinion Project (LAPOP) and Chile's well-respected Centro de Estudios Públicos (CEP) poll— the CERC-Mori poll has the most consistent series on the subject, having asked the same set of questions regularly since 1990. Figure 1 shows CERC-Mori 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 Carabineros, specific and sizeable drops are

⁴ De Tocqueville (1856).

⁵ Latinobarometro.org.

⁶ Putnam (2000).

⁷ Inglehart (1999).

plausibly associated with specific scandals: a slew of cases of sexual abuse in the Church, revealed mostly since 2010, and financial fraud in Carabineros, revealed in 2016. But a generalized decline seems to begin around 2009-10, and it accelerates in the 2-3 years prior to 2019.

The CERC-Mori report issued in May 2019, 5 months before the outbreak of violence, is alarming in both tone and content: “Trust collapses between 2018 and 2019, reaching the darkest moment since we began measuring trust in 1990.” The report goes on to point out that in the previous year trust in Carabineros fell from 49% to 32% and trust in the judiciary dropped from 31% to 13%. The two institutions displaying the lowest levels of trust are the Catholic Church (from 31% to 8%) and political parties (from 15% to just 5%). The least trusted categories of people, the report concludes, are politicians with 6%, and bishops and priests, with just 5%.

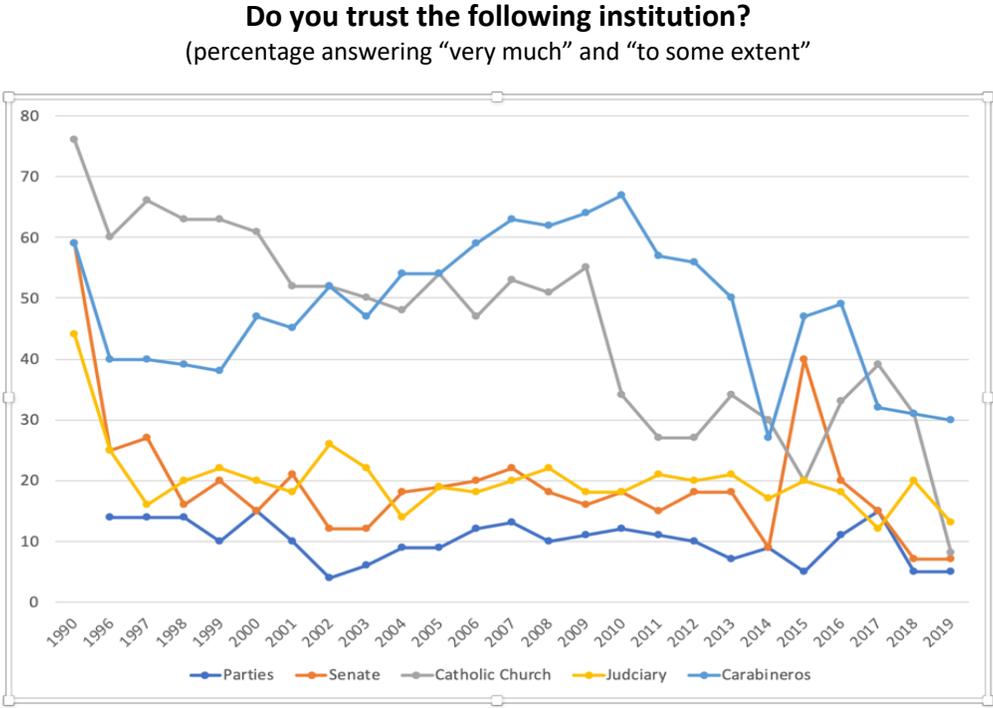


Figure 1

Source: CERC-Mori

The *Centro de Estudios Públicos* (CEP) polls show a similar shift regarding how much Chileans trust institutions in their country. If one compares the change of attitudes between 2013 and 2019 one cannot help but note a generalized collapse. 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 unbelievably 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”)

	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

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 national police), 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.

Do these 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.⁸

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.

⁸ For details on the methodology behind the surveys, see Kaufmann, Kraay and Mastruzzi (2010).

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](http://www.info.worldbank.org/governance/wgi/Home/Report)

Second, the indices for Chile 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%.⁹

So the World Bank indices suggest that Chile has reasonably 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.

The World Bank data are supposed to reflect the cool judgement of experts. By contrast, citizens’ opinions could well be colored by the prevailing national mood: at times of shared euphoria even the bureaucracy looks user-friendly, while at times of national depression (to which Chileans are far from immune), no politician seems deserving of a paycheck from the public purse.

Another reason for the gap could be that World Bank data are mostly backward-looking. That is, 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, while if the future looks rosy that reflects well on the quality of the country’s institutions today.

⁹ 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.

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”.

So something other than economics seems to have driven Chileans to become more pessimistic. This stands in contrast to the commonly-held view that citizens’ anger results from dashed expectations of economic growth under Sebastián Piñera.

Do you think that at the present moment the country is....

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

(percentage choosing each alternative)

Table 3

Source: www.cepchile.cl

A year from now, your own economic situation will be...

(percentage answering ...)

	July / August 2013		December 2019	
Much better	4.5		3.0	
Better	34.6		26.9	
The same	54.1		54.6	
Worse	3.9		12.6	
Much worse	0.4		0.8	

Table 4

Source: www.cepchile.cl

2. The argument

So the data suggest Chile is experiencing a crisis of hopelessness. And also a crisis of trust and credibility. The main message of this paper is that both crises are one and the same. And that in the interactions among pessimism, institutional fragility and trust lies the core of Chile's travails.

To understand this it helps to remember two simple ideas. The first is obvious: the trust people place in an institution depends on many factors, but a key one is how effective the institution is. 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 Carabineros because it delivered a reasonably safe country (certainly when compared to neighbors in Latin America).

The second is less obvious: the effectiveness of a public institution 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 patient trusts them, follows their instructions and swallows the medicines they prescribe. Once users start jumping over turnstiles and refusing to pay their fee, as was increasingly happening in the Santiago metro in the Spring of 2019, no one can be surprised if the quality of service sooner or later deteriorates. Or, to return to the Carabineros: back in the day when they were widely respected and trusted, a verbal warning from a uniformed cop was all that it took for a protestor to stick to the unwritten rules of peaceful protest; by 2019, when Carabineros were widely viewed as brutish ineffective and corrupt¹⁰, no display of water cannons sufficed to keep protestors from breaking store windows and setting buses on fire.

This second idea comes with a twist: externalities are at work. If I trust the bank and no one else does, my money is not safe. If I trust the doctors and accept the vaccine, but no one else in the neighborhood does, then my children are still susceptible to contagion. In short: the trust I place in an institution matters, but other citizens' trust matters just as much or more. And that is not the only conceivable externality: there may be a moral sanction associated with not paying metro fares, but the more people jump over the turnstiles, the less powerful that sanction is.

So we have two-way causation plus externalities and therefore ample scope for coordination failures. When it comes to institutional quality and trust, the door seems wide open for self-fulfilling prophecies: once we all come to believe that our institutions are listless and ineffectual, well.... listless and ineffectual institutions we will get.

But not so fast. 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? Can this happen in any day now in happy Denmark, industrious Holland, prosperous Switzerland or well-governed New Zealand? Unlikely. Initial conditions matter. For a country to be vulnerable, its institutions have to be sufficiently weak. To see why, bear with us and consider the formal model that follows.

¹⁰ Recall that in 2016 high ranking officers in Carabineros were embroiled in a corruption and embezzlement scandal.

3. The model

Imagine a society where individuals come together to finance a collective good.¹¹ The most natural interpretation is that the payments are tax payments, and government uses 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 properly in a classroom so that other students can learn. In what follows we use the language of taxes and revenue, but please keep in mind the alternative interpretations.¹²

The constant tax rate on exogenous personal income y is τ .¹³ 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 that contributes (we will determine it endogenously below).¹⁴ Suppose also that people who do not contribute enjoy only a portion β , where $0 < \beta < 1$, of the benefits of the public good.¹⁵

Total tax revenue is τpy . 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 α 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, α is an indicator of the quality of institutions. High-quality institutions have high α , low quality institutions have low α . If $\alpha < 0$, government institutions destroy value.

In this model, trust is an assessment of the value or the quality of the institutions in society. That assessment is expressed in the collective decision to “play by the rules” of those institutions. Conversely, absence of trust causes a portion (possibly a growing portion) of people abandoning those rules in favor of a different action—here, not paying the tax τ .

The welfare level of someone who contributes 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 contributes it is $(p = 0) = (1 - \tau)y$.

¹¹ 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.

¹² The resulting game is similar to the experimental design in Fehr and Gächter (2002).

¹³ Of course $0 < \tau < 1$.

¹⁴ We will only consider parameter values so that $0 \leq p \leq 1$ in equilibrium.

¹⁵ 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 β percent. Or it could be that users who refuse to pay are caught and cannot use the subway (or the toll road) β percent of the time.

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 μp , where $\mu > 0$. It follows that if (almost) everyone contributes this cost is μ , 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 some of the results below.

The welfare level of someone who does not contribute is

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

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 μ must be sufficiently large.

4. Equilibria

There is one p that makes welfare from contributing equal to welfare from non-contributing. It is given by the solution to

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

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 α and in μ , which is intuitive.

For $p^* < 1$, so that in fact p^* is a share of the total population, we need $\tau y[1 - (1 + \alpha)(1 - \beta)] < \mu$, which is the same condition we had above for $w^c(p = 1) > w^n(p = 1)$. This is the case if the moral cost associated to non-contribution is large enough. We assume this condition is met in what follows. Notice that as long as $0 < p < 1$, the cost to each individual of non-contributing is μp , this is also an index of 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 it 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.

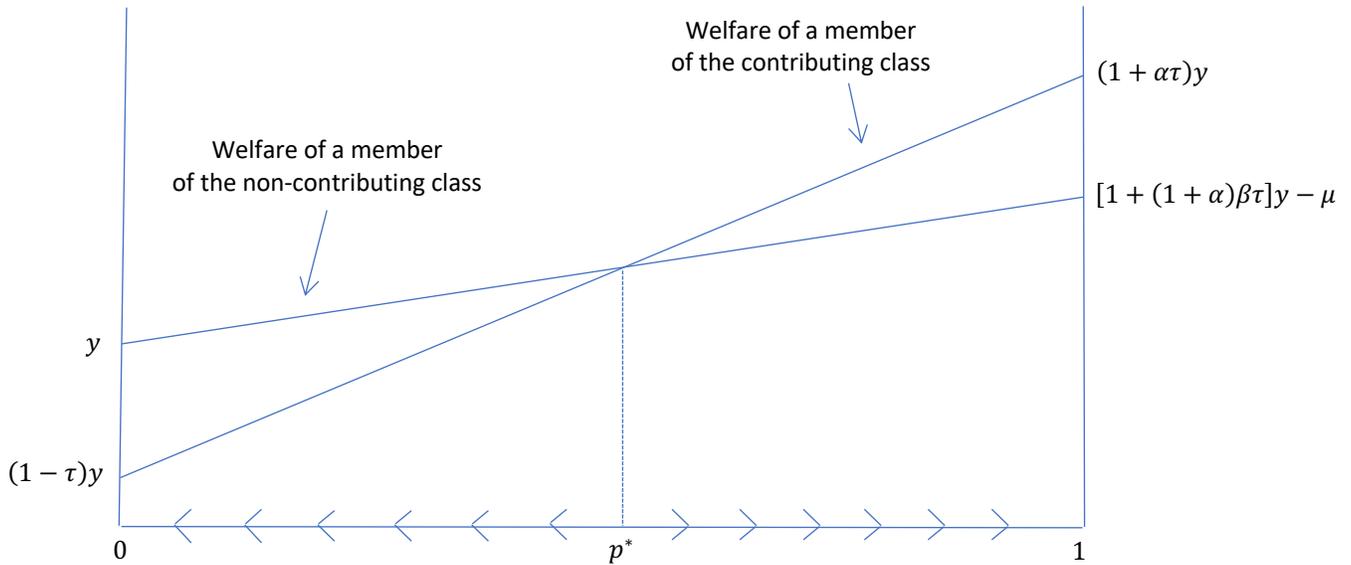


Figure 2

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. In words, the share of the population that contributes grows whenever welfare from contributing is larger than welfare from not contributing, and vice-versa.¹⁶

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, 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

¹⁶ 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.

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, other things equal, 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. It is an example of Dixit's dictum that is the epigram to this paper: "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."

5. Shocks and their effects

We are now ready to apply this model to the situation of Chile. Suppose that the parameter α drops permanently to α' , 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^{**} . What the long-term consequences of this shock are depends crucially on initial conditions.

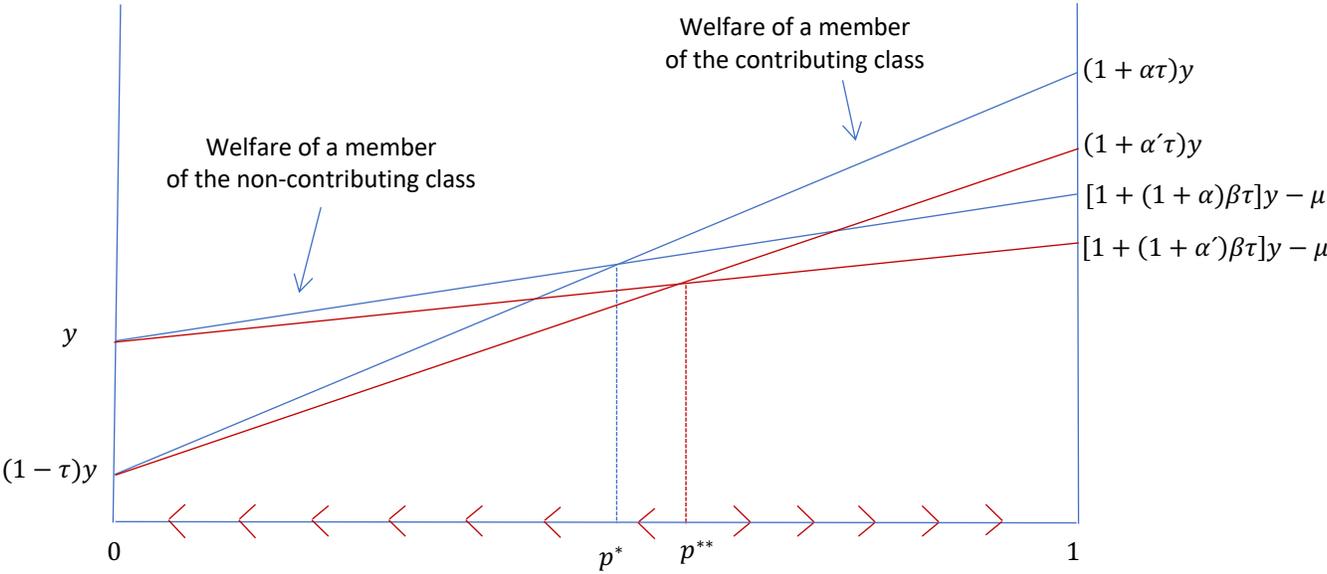


Figure 3

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. Society will begin “under-developing” —that is, 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 can be substantially 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 μ drops permanently to μ' . 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 the Chile of recent months and years. The current 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 previous shock to α . If society was initially between p^* and p^{***} , it will begin “under-developing” —that is, fewer and fewer people will contribute to the public good and p will begin to fall until it hits 0.

Again the lesson is that small changes in parameters —in this case, to the moral or social cost μ — 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^{***} .

The implication from both kinds of shocks —to the quality of institutions and to the moral cost of not contributing to society— is the same: society can get trapped in a long-term inefficient and undesirable equilibrium in which fewer and fewer people contributes institutional quality deteriorates sharply and persistently, and public good provision and welfare levels are inefficiently low. Small shocks can be enough to trigger that persistent social dynamic.

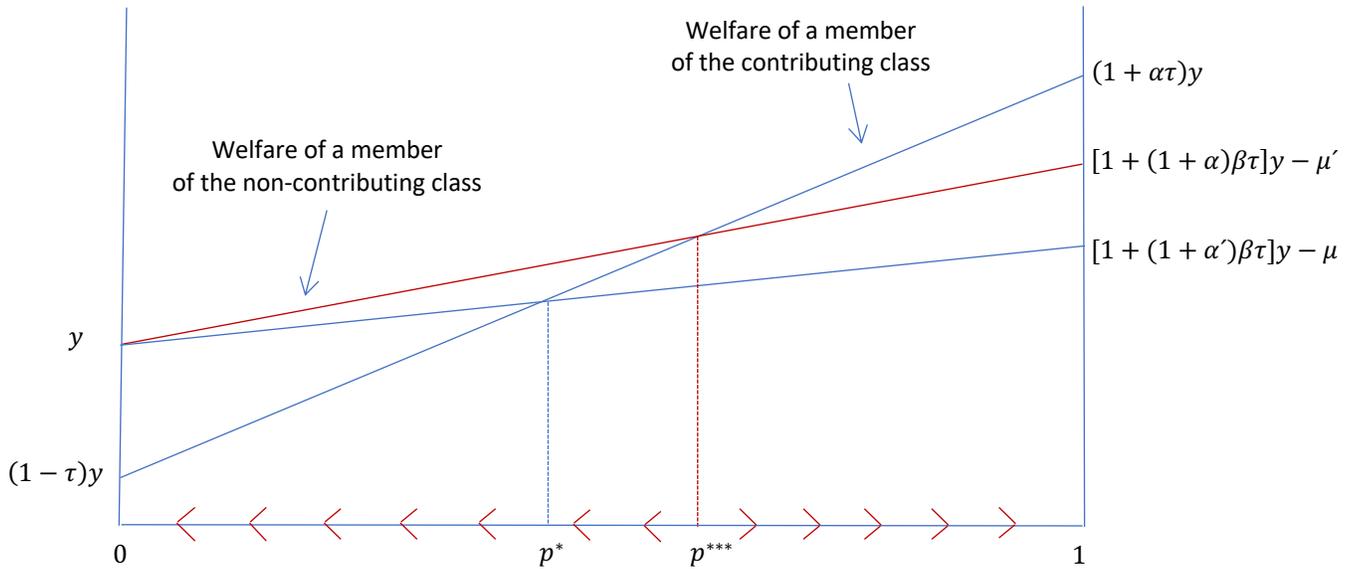


Figure 4

6. Institutions as assets

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. Intuitively, trust ought to be a forward-looking variable. That is, whether people trust a given institutions may be influenced by that institution's past performance but also, and perhaps more importantly, by the expectation of future performance. The Chilean Carabineros may have had a proud history (though the atrocities they committed during the dictatorship are no cause for pride), but if people expect the Carabineros will perform poorly in the future, 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,¹⁷ and let the price of this asset be denoted by q .

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

¹⁷ 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 someone stuck not contributing would be willing to pay in order to move to the ranks of those who contribute.

term) both expressed as a proportion of q . On the RHS is $\delta > 0$, 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 .¹⁸ 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.¹⁹ 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 δ is large relative to the speed-of-adjustment parameter θ , 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.

¹⁸ Appendix 1 shows how to derive this equation from the definition of q .

¹⁹ 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.

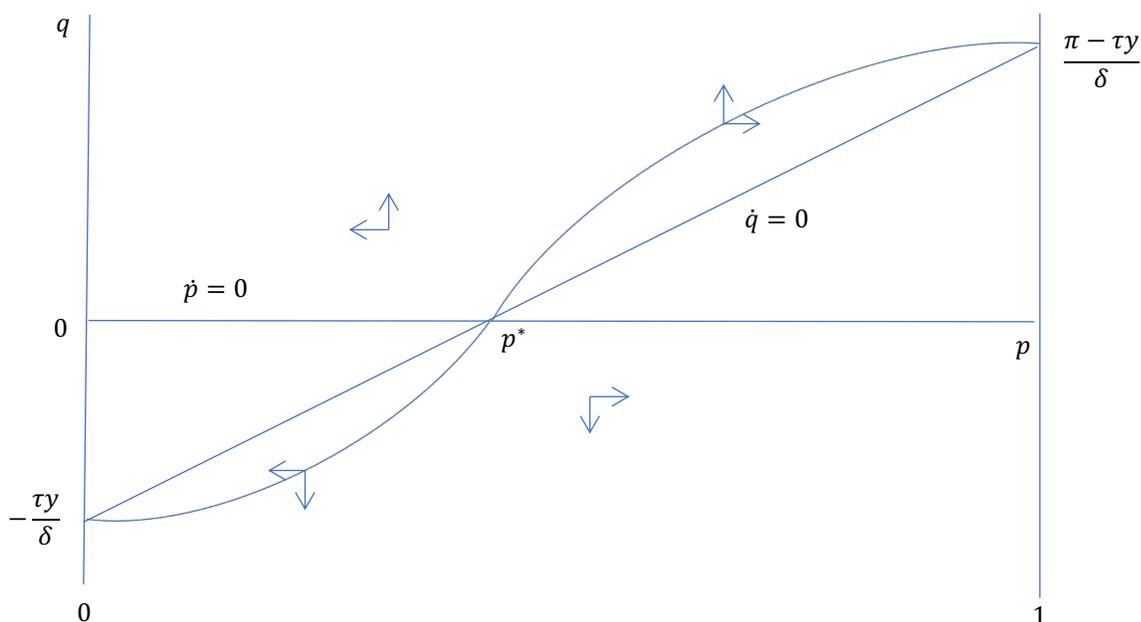


Figure 5

By contrast, if the discount rate δ is small relative to the speed-of-adjustment parameter θ , then expectations about the future gain importance. This is intuitive: a small δ means that future welfare levels matter more, while a large θ 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.

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.

The practical implications are vast. 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.

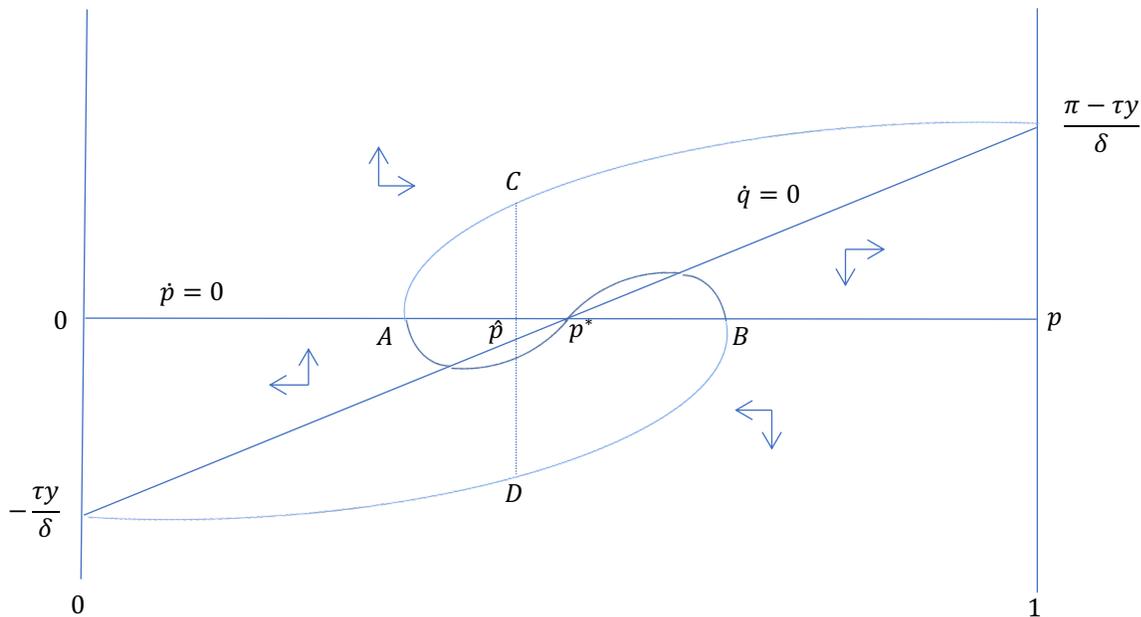


Figure 6

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 δ , the speed-of-adjustment parameter θ , and all the parameters contained in π , including institutional-quality indicator α and moral cost μ . Changes in any of these can make the overlap wider and increase vulnerability.

7. Effect of a drop in α or in μ

Suppose now that either α or μ 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:

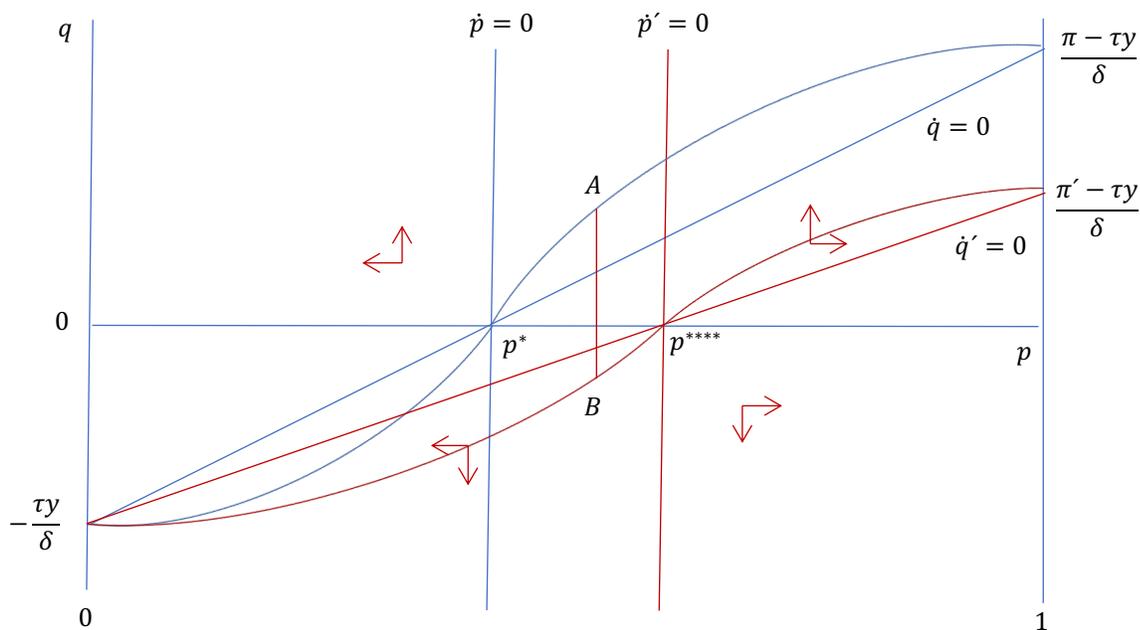


Figure 7

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 than being a contributor. And that is not the end of the story: the price of the asset continues to fall thereafter, as the share of contributors falls. Eventually that share will go to zero, and the price of the asset will converge to $-\tau y/\delta$.

To avoid excessive complications, we will 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 α or μ 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 .

8. Conclusions

Chile, often celebrated for having the best institutions in Latin America, has experienced a complete breakdown of institutional trust. Angry citizens are not just eager to join protest marches; some of them have also been torching supermarkets, firebombing subway stations, and vandalizing uncounted small businesses.

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 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. We saw that "small" declines in exogenous institutional quality and in the moral costs associated with asocial behavior can do the trick. But, for some parameter combinations and initial conditions, a generalized shift in expectations toward pessimism may be enough to shove society toward the abyss. This is also what seems to have happened 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? If you believe the story in this paper, then you must conclude there is no quick technocratic fix that can get the country back on its feet. There are, as observers from Tocqueville to Putnam to Fukuyama point out, deep-rooted social foundations underlying trust, which include family life and associativity, and these have been evolving together with Chile's economic progress. Beyond playing institutional catch-up (greater democracy, transparency), the name of the game is social coordination, and 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 two dimensions. First, 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. The marauding gangs of toughs who harassed those who chose to pay at several Santiago metro stations, for example, show that task will not be easy to accomplish. Curiously, the common challenges posed by COVID-19 to all Chilean may help to focus minds on the benefits of collaborative behavior (and, conversely, an inept government response may further weaken institutional trust).

At the same time, the leaders of the country's institutions —politicians, bureaucrats, judges, prosecutors, business and union leaders, reporters and journalists, even priests— must listen more carefully, get the message and improve their performance. But even here there are two traps.

First, the very tools of improving institutional performance need to be handled well. Take transparency. Transparency sounds good, and is an important element of institutional modernization. Yet the logic of transparency relies on reason, or as David de Cremer says, to “let the facts speak for themselves”.²⁰ Today's political culture, dominated by social media, soundbites and ideological manipulation, does not seem to leave much room for such rational, enlightened discussion. Facts can be manipulated, leading to an decrease, not an increase, in trust.

The second trap is that when politicians feel unloved by voters they are often do exactly the opposite: resort to easy fixes and demagoguery in a vain attempt at recovering their lost prestige. We call that *populism*, and we are seeing signs of many Chilean politicians being tempted by this strategy.

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

²⁰ De Cremer (2016).

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.²¹

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,

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

²¹ 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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