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Essays on the construction and consequences of trust

**Habilitation à diriger des recherches
de l'Université Paris-Saclay**

présentée et soutenue à Paris, le 13/10/2021, par

Liam WREN-LEWIS

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Titre : Essais sur la construction et les conséquences de la confiance

Mots clés : Confiance, Engagement, Corruption, Infrastructure, Terre, Contact

Résumé : Une grande partie des interactions économiques importantes ont lieu de manière non simultanée, c'est-à-dire qu'une partie entreprend une action dans l'espoir qu'un autre acteur se comportera comme promis dans le futur. Ces transactions ont lieu entre des individus, des entreprises et des États. Pour que ces transactions soient entreprises, les participants doivent croire que la contrepartie se comportera comme promis - c'est-à-dire qu'ils ont besoin de confiance. La question centrale qui traverse mes travaux est la suivante : "Comment les politiques doivent-elles répondre à un manque de confiance ?".

Une partie de la réponse à cette question est clairement "construire plus de confiance", et donc un sous-thème important de mon travail consiste à examiner quelles politiques peuvent être propices à la construction de la confiance. Dans de nombreuses circonstances, cependant, il existe des contraintes fondamentales sur la mesure dans laquelle les parties peuvent se faire confiance. Dans ces cas, la question pertinente devient donc "comment les politiques peuvent-elles atténuer les conséquences négatives du manque de confiance ?".

Title : Essays on the construction and consequences of trust

Keywords : Trust, Commitment, Corruption, Infrastructure, Land, Contact

Abstract : A large share of important economic interactions take place in a non-simultaneous fashion – i.e. one party takes an action in the expectation that another actor will behave as promised in the future. Such transactions occur between individuals, firms, and states. For these transactions to be undertaken, participants must believe that the counterparty will behave as promised – i.e. they need trust. The central question running through my work is "how should policy respond to a lack of trust?" Part of the answer to this question is clearly "build more trust", and hence an important sub-theme of my work is examining which policies may be conducive to trust-building. In many circumstances, however, there are fundamental constraints on the extent to which parties may trust one another. In these cases the relevant question therefore becomes "how can policy mitigate the negative consequences of lack of trust?"

For Clotilde, Anna, Lucie and Téo

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1. Introduction

A large share of important economic interactions take place in a non-simultaneous fashion – i.e. one party takes an action in the expectation that another actor will behave as promised in the future. Such transactions occur between individuals, firms, and states. For these transactions to be undertaken, participants must believe that the counterparty will behave as promised – i.e. they need trust.

In some circumstances, trust can be generated by the rule of law. Parties to a transaction could, for instance, write a formal contract such that they will be sanctioned by the legal system if they break the contract. Yet it is rare that such solutions generate sufficient trust on their own. Often, the relevant transaction might be too small or too complex to be worth the costs of writing a contract. In other cases, the transaction might be too large, with a concern that one of the parties – e.g. the government - might disrupt the rule of law in order to break their promise. In these circumstances, trust relies on other factors, such as a concern for reputation or a belief in the intrinsic motivations of the other party.

The central question running through my work is “how should policy respond to a lack of trust?” Part of the answer to this question is clearly “build more trust”, and hence an important sub-theme of my work is examining which policies may be conducive to trust-building. In many circumstances, however, there are fundamental constraints on the extent to which parties may trust one another. In these cases the relevant question therefore becomes “how can policy mitigate the negative consequences of lack of trust?”

The centrality of trust to many parts of the economy means that my research is spread over several domains. A large portion of my work is focused on developing countries, since here institutions have been relatively unsuccessful in fostering trust, and trust in the government can be particularly lacking (Dearmon & Grier, 2009). My work on developing countries has focused on two areas where trust in government is crucial: infrastructure and land.

Infrastructure construction is a key part of development, with economic research suggesting that firms and consumers can benefit greatly from access to high quality transport and power infrastructure (e.g. Lipscomb, Mobarak & Barham, 2013; Ghani, Goswami & Kerr, 2016). Yet private investment in such services is limited by a lack of trust in the government to allow them in the future to reap a sufficient return (Levy & Spiller, 1994). Meanwhile, government investment is constrained by a lack of trust from lenders and consumers who do not believe that user fees will lead to better service provision (Levy & Palale, 2014).

My work on trust in infrastructure in developing countries is described in Section 2. It has focused on two key institutional weaknesses related to trust that are often determinant in explaining poor performance and investment in developing countries: weak government commitment, and weak control of corruption. My past work has analysed, mainly theoretically, how infrastructure regulation should be adapted to consider these institutional weaknesses. More recently, I am currently working on how the two issues interact in a more general theoretical framework, and am trying to understand the impacts of infrastructure investment in India. I also describe future projects I aim to pursue analysing the impact of national policies which can build trust by committing a government to constrain future corruption.

Like infrastructure, rural land use is typically regulated by some kind of governance institution. Such regulation serves at least two important functions. First, land for private use is regulated with the aim of ensuring it is clear who has the right to use the land. This may simply involve the enforcement of private property rights, although in many developing countries agricultural land is still regulated in a way that puts important restrictions on the right of landholders to use and transfer the land (Byamugisha, 2013). Second, some land with important public benefits is regulated in a way to ensure optimal use. This is often the case with forests, for instance, where it is important trees are preserved to provide both local and global public goods. As with infrastructure regulation, trust in the institutions that govern land regulation is crucial to ensure appropriate investment and preservation. Yet, in many developing country contexts, trust is lacking, resulting in lower agricultural productivity and the over-exploitation of forests.

My work on trust in rural land regulation is described in Section 3. I summarize my previous work on land rights, which focused on investigating the impact of a reform which formalized rural land use in Benin on nearby deforestation. I then describe my planned future projects in this area, which include further work on the reform in Benin and an analysis of the ability of private certification schemes to substitute for government regulation.

While developed countries have managed to solve some of the trust issues related to regulation, trust is still a first-order issue when it comes to interactions that are difficult to constrain with formal institutions. This includes, notably, citizens trusting politicians to act as they promised, and inter-personal trust. Indeed, in many developed countries democracy is increasingly under threat from populism, with Guriev & Papaioannou (2021) arguing that “the rise of populism goes hand in hand with a crisis of trust”. Given that this lack of trust is most often correlated with anti-immigrant or nativist parties (Dustmann et al. 2017; Guiso et al. 2019), a key component of this is likely to be a lack of trust of people of different ethnicities. Indeed, Alesina and Zhuravskya (2011) find that more ethnically segregated countries have lower levels of generalized trust. It is therefore important to understand ways in which inter-ethnic trust can be increased or ways in which societies can mitigate the impact of its absence.

My work on inter-ethnic trust is described in Section 4. I summarize my previous work which has looked at how contact between blacks and whites in US schools impacts the attitudes and behaviour of whites when they are adults. I then describe several research projects which look to extend this work by considering the impacts of mixing between immigrants and non-immigrants in European schools. I also describe briefly my ongoing work on ethnic diversity, decentralization and healthcare use in Kenya, as well as future projects analyzing integration programs in France.

Finally, in Section 5 I briefly detail my other relevant research activities. This includes a brief discussion of work I have done on the topic of income inequality, as well as mentioning students I have supervised and grants I have obtained.

2. Trust in infrastructure regulation in developing countries

Infrastructure is crucial for economic development. Recent well-identified empirical work suggests that there can be transformative effects of constructing infrastructure to provide electricity (Lipscombe, Mobarak & Barham, 2013), transport (Donaldson, 2018), and telecommunications (Jensen, 2007; Jensen & Miller, 2018). Beyond construction, appropriate pricing and maintenance of infrastructure can also be critical – Dupas et al. (2020) find child health substantially improves when clean water is cheaper, while Ashraf et al. (2017) show that short-term water outages cause increased disease prevalence. Ensuring infrastructure is built, priced, and maintained effectively depends on government regulation, since it is implausible for the government to stay out of these sectors when they are both strategically important and naturally monopolistic. Yet the form regulation should take is often very uncertain, since the varying models that exist were often designed in developed countries within very different institutional contexts.

One aspect of the institutional context that is crucial for regulation is trust in the government. Trust is critical for effective regulation in at least two ways. First, regulated firms must trust the government to stick to its commitments. Second, citizens must trust the government and its regulators to act in their interest – i.e. to be accountable rather than captured by the regulated firms.

Weak government commitment is a major issue in infrastructure regulation in developing countries. Guasch, Straub, & Laffont (2003) find, for instance, that, excluding telecommunications, 40% of the concession contracts they study in Latin America were renegotiated, often within the first few years, and mostly at the request of governments. In most developing countries, large-scale investment is required, but regulated firms will not invest if they do not trust that they will be allowed to reap the rewards of their investments. This can be partly mitigated by public investment in infrastructure, but this does not solve the problem since the value of many types of investment may be known only to the regulated firm, public or private.

Weak accountability is also a major problem in infrastructure regulation in many developing countries. Institutions that are designed to serve on behalf of the government or the people, including regulatory agencies, may in fact not be answerable to their principals and, hence, are free to carry out their own objectives. Where accountability is lax, collusion between the government and various interest groups, including regulated firms, is more likely to occur (Guasch & Straub, 2009; Ryan, 2020). Such collusion is likely to be welfare-reducing in itself, but is also likely to have a knock-on impact on trust. Martimort and Straub (2009), for instance, find in Latin America that infrastructure privatization saw the greatest declines in popularity in countries with the highest levels of corruption. This decline in trust can then lead to demands for an overturning of the existing regulatory system, and hence may worsen commitment issues.

It is therefore crucial to understand how policy can be designed in developing countries to improve commitment and accountability, or to work best within a context where these attributes are lacking. In this section, I will describe my various research projects – past, present, and future – which relate to this agenda.

2.1 Past work on regulatory policy in contexts of weak commitment and weak accountability

My PhD focused on the research question “how should infrastructure regulation be different in developing countries?”. In two survey pieces co-authored with Antonio Estache (Université Libre de Bruxelles), we concluded that a key reason policy should be different was a need to address to institutional weaknesses commonly present in developing countries (Estache & Wren-Lewis, 2009; 2010). We identified limited commitment and limited accountability as two key weakness to which regulations may need to adapt. In the remaining three chapters of my PhD I then analysed how various regulatory policies interacted with these institutional weaknesses in impacting the behaviour of regulated firms (Wren-Lewis, 2013a; 2013b; 2015).

After my recruitment at INRAE, I reduced the proportion of my research spent studying regulatory policy in order to make time for work on issues relating to land rights that I had been asked by INRAE to prioritize (see the next section). Nonetheless, I continued to develop ideas constructed in my PhD through a number of projects stimulated by the evolution of regulatory policy. In particular, in several pieces I have taken the framework set out in Estache & Wren-Lewis (2009) – itself based on the work of Jean-Jaques Laffont – and extended it to a particular policy question of relevance. In the remainder of this subsection I will briefly summarize each of these pieces which applies the theory to different policy questions.

One question that was notably absent from previous work was “how should infrastructure in developing countries be financed?” Existing models of regulation in developing countries typically focused on infrastructure that had already been built, and when private involvement was considered it related to operation rather than financing. This was understandable in a context where infrastructure was typically publicly financed, but increasing access to international finance has raised the prospect of alternative financing arrangements for many developing countries. Yet the costs and benefits of public-private partnerships in infrastructure finance were relatively poorly understood. Recent work had helped to develop theoretical frameworks for analysing the impacts of private finance (e.g. Engel, Fischer, and Galetovic, 2013; Iossa & Martimort, 2015), but this typically focused on private equity rather than debt and did not explicitly focus on developing countries. With Antonio Estache and Tomas Serebrisky (Inter-American Development Bank), we therefore set about constructing a model to try to synthesize how financing questions could relate to the key institutional weaknesses in developing countries.

One important novelty in Estache, Serebrisky, and Wren-Lewis (2015) is that it focuses on understanding why governments might be interested in using private debt in infrastructure investment even when this is typically much more costly than public debt. In the model developed, we demonstrate that problems of commitment or corruption could be central motivations behind the decision. In terms of commitment, developing country governments often struggle to commit to charge infrastructure users sufficiently high prices when the infrastructure is publicly owned – private ownership may therefore be a way for the government to commit to appropriate user fees. In terms of corruption, forcing governments to use private financing may reduce corrupt governments’ inefficient investment in projects that benefit their interest groups. Of course, private debt financing may be used for less benevolent reasons. Indeed,

a key motivation of the paper is that, by clarifying the assumptions that justify the use of private debt, it makes it easier for actors to recognise whether they are likely to hold in a given context.

The continent in which a focus on institutional weaknesses is perhaps most relevant is Africa. In Wren-Lewis (2014), I analysed the extent to which regulatory innovations that had taken place in the UK thirty years earlier were relevant for Africa today. This article was commissioned as part of a journal's special issue reflecting on lessons learnt since the major shake-up of infrastructure in the UK in the 1980s that had influenced regulation globally. Through reviewing the literature discussing Africa's recent experiences with infrastructure regulation, I concluded that evidence suggested the UK's experience had little relevance. Although there had undoubtedly been some success in many countries following the 1980s reforms, the severity of institutional weaknesses in many African countries meant that policy needed to be focused on mitigating these weaknesses rather than pursuing efficiency gains as the UK had done.

One potential policy that is becoming increasingly relevant both in Africa and other developing regions is the 'supranationalization' of infrastructure regulation. The increased scope for international trade in infrastructure services, observed in the last 20 years, has induced the case for their regulation at a supranational level. This is because, when regulated services cross borders, local regulatory decisions have non-local impacts. In Auriol, Estache, and Wren-Lewis (2018), we extend the model of Estache and Wren-Lewis (2009) in a number of ways to answer questions relating to supranational infrastructure regulation. In doing so, we argue that while there are theoretically reasons why supranational regulation may ease institutional weaknesses, these same weaknesses are likely to undermine the process of going beyond national governments. Supranational regulation is therefore unlikely to be the panacea that many have argued.

Anti-corruption policy has been an important focus of my more policy-oriented work. In several book chapters (Estache and Wren-Lewis, 2011; Wren-Lewis, 2011; 2013; 2016b), we categorize different types of regulatory capture and theories of how various policies can help to reduce capture or its impacts. These chapters serve mainly to synthesize the literature rather than advance it theoretically or empirically, but they have been useful in identifying gaps in existing knowledge and helping to define a research agenda.

A final area where I have aimed to build on my PhD thesis is in extending lessons from the theory of utility regulation to other relevant policy areas. In Wren-Lewis (2016a), for instance, I consider how the type of theory used in utility regulation could be applied to contracts between the Global Fund, an important international donor, and the institutions it funds (typically national governments). In Clarke and Wren-Lewis (2013), we analyse potential costs and benefits of public-private partnerships in index insurance when governments face a limited ability to commit. As with infrastructure regulation, applying a basic theoretical framework allows us to go beyond ideological biases and understand how private sector involvement can improve or worsen outcomes when trust is an issue.

2.2 Current work on collusion in relational contracts and the dual-sided nature of trust

After several years working on problems of commitment and corruption in the context of infrastructure regulation, it became increasingly clear to me that these two issues interacted in important ways. Perhaps most strikingly, policies designed to mitigate one issue were often the contrary of those advocated for to help the other. For instance, in contexts where the government couldn't commit, it was often recommended that regulation should be implemented by an independent agency with which a regulated firm could build up a relationship of trust (Henisz, Zelner & Guillén, 2005). Only then would the regulated firm undertake investments without fear of expropriation. At the same time, however, anti-corruption advocates stressed the importance of ensuring regulators didn't have long-term relationships with regulators (Lambsdorff & Teksoz, 2005). In this view, staff should be rotated regularly to prevent them trusting each other enough to undertake successful collusion (Martimort, 1999). Within the literature, this apparent tension was occasionally alluded to anecdotally but there appeared to be no clear way of thinking about this potential conflict.

Upon further investigation, it became clear that this issue extended far beyond infrastructure regulation and was also an issue in developed countries. I set about working on the topic with Marta Troya Martinez (New Economics School) who had become interested in the same issue through a different channel. Her background had been in studying inter-firm trade, where the economics literature was increasingly recognising the fundamental role of *relational contracts*. These are contracts where parties trust each other not because of the threat of third-party enforcement, but instead because they are in mutually beneficial long-term relationships that will be disrupted if either party breaks their promises. This trust facilitates productive effort and investments, but Marta was aware of situations where procurement officers took kickbacks from supplying firms in exchange for price-inflation which cost the purchasing firm. Again, the striking thing about this context is that it appeared to be the same trusting relationship between procurement officer and supplier that both facilitated the gainful trade and the collusion against the interest of the firms' owners.

The result of our work on this topic is the paper *Managing Relational Contracts*, which we have been asked to revise and resubmit for the Journal of the European Economic Association. In the paper, we develop a theory of relational contracts where a contract with an agent is managed by an intermediary on behalf of a principal. We show that managed relational contracts differ from principal-agent ones in important ways. First, kickbacks from the agent can help solve the manager's commitment problem. When commitment is difficult, this can result in higher agent effort than the principal could incentivize directly. Second, making relationships more valuable enables more collusion and hence can reduce effort. We also analyse the principal's delegation problem and show that she may or may not benefit from entrusting the relationship to a manager.

The paper relates the results to a number of relevant empirical examples. We highlight a recent case of procurement fraud in the US where a manager was found guilty of colluding with one of their suppliers. Notably, though the courts found the manager and supplier guilty, the judge concluded that it was possible that the purchasing company didn't lose money from the kickback scheme, since the manager's "*conduct may have reduced transaction costs*". We also argue that our model relates to the practice of *guanxi* a system of trust-based informal social-relationship in China, and is consistent with

evidence that, in Russian government, procurement, kickbacks were *“linked to performance and facilitated the quality of service”*. While we assemble a large amount of qualitative evidence consistent with our theory, the next step will be to find an empirical setting where we can test some of the model’s predictions.

2.3 Current work on the impacts of infrastructure in India

An important implication of lack of trust in infrastructure regulation is that firms will be less willing to invest for fear that the government will renege on promises it has made. Yet how damaging is this lack of investment? Economists have long been aware that infrastructure is an important part of economic development, but credibly identifying the gains that result from infrastructure investment is made difficult by endogeneity concerns. Over the past two decades, increasing evidence on infrastructure impacts has gradually built up, taking advantage of natural experiments and, less frequently, randomized control trials. While this evidence has shown infrastructure investments can be transformative (e.g. Lipscomb, Mobarak, and Barham, 2013), it has also demonstrated that at times the impacts can be quite small (e.g. Lee, Miguel, Wolfram, 2020). Understanding what drives heterogeneity in the impacts of infrastructure programs is therefore a first-order question.

One potential explanation behind the heterogenous impacts of infrastructure investment is that there are important complementarities between the impacts of different types of infrastructure. For instance, electricity could be an important input in a particular form of economic production, but it may only provide benefits when producers have a road to trade the good. Consistent with this view, policy makers often bundle different types of infrastructure together (Moneke, 2020). However, concentrating infrastructure investments geographically worsens spatial inequalities (Kanbur and Venables, 2005). Evaluating the size of any complementarities is therefore important, but evidence is sparse because infrastructures’ non-random placement makes it difficult to credibly identify interactions. In particular, in many contexts, the size of the overlap between infrastructure programs makes it difficult to consistently identify both the individual and combined impacts of different programs.

My recent paper with Oliver Vanden Eynde (PSE) evaluates complementarities in infrastructure programs in rural India (Vanden Eynde & Wren-Lewis, 2021). We exploit the independent roll-out of three major programs across the country between 2005 and 2014: PMGSY (roads), RGGVY (electrification), and USOF (mobile telecommunications). These programs’ management and deployment were independent, allowing us to analyse potential complementarities. Because of the almost unprecedented scale of these programs, which covered a substantial share of India’s more than 600,000 villages, we are able to provide plausibly causal estimates of the separate and joint provision of different infrastructure types.

Our main outcome of interest is dry season agricultural production. While Indian agricultural productivity rose sharply during the Green Revolution, it has stalled in recent years. Improved dry season cropping is an important potential source of agricultural productivity growth (Saksena et al., 2020; Jain et al., 2021). To the extent that it goes hand in hand with crop diversification, dry season production could also help mitigate climate change impacts (Lal et al., 2017; Sambasivam et al., 2020). Two additional features make dry season cropping particularly well-suited to serve as the main outcome of our current study. First, it is measured at high frequency, so we can use plausible exogeneity in the timing of

infrastructure projects to estimate their effect. Second, it benefits from a combination of inputs and market integration, meaning complementarities could be important. Dry season cropping requires water-management which is facilitated by the use of electric pumps. At the same time, access to input markets (in particular, high quality seeds of varieties well suited to the dry season) and output markets boost the returns to irrigation investments (Saksena et al., 2020). Both road access and mobile phone coverage could strengthen market integration and hence could spur dry season cropping through this channel.

We find that the joint provision of an electricity and road connection boosts dry season cropping beyond the effect of each type of infrastructure on its own. These two types of infrastructure are hence complementary in driving rural development. We also present suggestive evidence that the combined provision of electricity and road access increases market crop production and raises asset ownership. These results are consistent with the hypothesis that the joint provision of electricity and road access is necessary to make dry season cropping profitable. Electrification in isolation may not provide the market access needed to grow market crops, while road connectivity on its own may not allow for improved water management. For mobile phone coverage, we do not find consistent evidence of complementarities with either electrification or road access.

2.4 Future work on corruption and commitment in Mexican infrastructure insurance

In addition to financing infrastructure construction, governments also play an important part in financing infrastructure maintenance. This is particularly true in countries where natural disasters mean that infrastructure often needs to be repaired or reconstructed. Indeed, in disaster prone countries, governments provide broader disaster relief. This can provide large benefits when private insurance markets are underdeveloped, but can also lead to inefficiencies. In Clarke and Wren-Lewis (2016), we develop a simple model that elucidates issues that can arise when governments cannot commit to the aid they will provide. One of these relates to corruption – if governments cannot commit to distributing aid as due process dictates, actors will not trust the effective insurance the government can provide, leading to inefficient investments.

When the government cannot be trusted to provide disaster relief as it has promised, it may want to tie its hands by involving the private sector. This was the case of the Mexican Federal government disaster insurance scheme, FONDEN, which provides finance to states to reconstruct infrastructure in the case of a natural disaster. The FONDEN scheme in Mexico has been hailed as a model for other developing countries (Clarke and Dercon, 2016; de Janvry et al. 2020). In 2011 FONDEN purchased a private indemnity reinsurance policy, with the hope that this would reduce misallocation and political interference. Together with Laura Boudreau (Columbia) and Alejandro del Valle (Georgia State University), we aim to test whether the private reinsurance policy succeeded in this regard. This is an important question since misallocation of disaster relief is a crucial problem for many developing countries. PPPs have frequently been pushed as a method of ‘disciplining’ the government to reduce corruption, both in disaster relief and other sectors. Yet there exists little rigorous evidence of this effect, and none in the domain of environment risk mitigation.

The empirical analysis of private sector involvement in FONDEN will exploit variation in which events private sector loss-adjusters are involved in. After July 2013, the private reinsurance policy had a 'deductible' element, so that the reinsurance company was only liable for events above a certain threshold. This threshold varied across years and across sectors (i.e. education, housing, transport, etc.) and private sector loss-adjusters were only sent to audit when estimated damages were close to this threshold. For instance, if a disaster was estimated to have caused 270 million Pesos worth of damage to roads in a given state in 2015, private sector loss-adjusters would verify this claim, but they wouldn't verify such a claim in 2014, nor would they verify a claim of this size in the water sector in 2015. We will use this contract information to code whether each FONDEN spending item has been audited by the private sector. The variation in private sector involvement over time and sector will allow us to control for confounding variables including municipality fixed effects, event fixed effects, sector fixed effects and the amount of damage. The dependent variable in this analysis will be the total amount of FONDEN spending on a given sector in a given municipality for each event. To identify political manipulation, we will regress this variable on measures of political influence, such as whether the municipality is ruled by the same political party as the state governor.

To pursue this project we require data from FONDEN on spending by sector, municipality and disaster. We have this data going up until 2015, but to gain sufficient power in our analysis we will also need more recent years. The change of government and then COVID crises has delayed us in our attempts to get this data from the Mexican government, but we aim to resume these efforts shortly. We hope to obtain the data with the informal cooperation of the Mexican government – since Alejandro and Laura worked with them before and got them to share data. If this is unsuccessful, we plan to submit freedom of information requests, which have been shown to be a successful way of getting Mexican government data previously.

2.5 Future work on corruption in India's public health infrastructure

An important conclusion of the literature on corruption is that asymmetric information is a key component facilitating collusion. Many anti-corruption policies therefore aim to reduce information asymmetries, and transparency can be a key component of this. In this light, a number of countries have passed 'freedom of information' laws which give citizens the right to demand information from government officials. Advocates of these laws claim that, in addition to simply providing information to the public, they can provide a mechanism through which citizens can hold the government accountable. Indeed, a major potential attribute of freedom of information laws is that they can simultaneously bring transparency across a huge range of government services. Governments may be interested in using them as, similarly to a free media, they provide a way of collecting information on bureaucrat behaviour (Egorov, Guriev, and Sonin, 2009).

To date, however, there is little quantitative evidence as to whether freedom of information laws can improve governance, and through which mechanisms they might be effective. While RTIs are thought to be a powerful tool to improve governance (U4, 2014), the existing literature on the effect of RTI laws

is mostly descriptive (e.g., Dokeniya, 2013).¹ Our intervention aims to fill this gap by evaluating the impact of submitting RTI requests for attendance data from Primary Health Centers in rural India in partnership with the NGO Getup4change. This NGO aims to facilitate use of the Right To Information Act by submitting requests on citizens' behalf, thus effectively anonymizing the requests. We have chosen rural Primary Health Centers (and their associated subcenters) since they represent an important public service where abuse is substantial – in particular, worker absenteeism is frequently high (Banerjee et al., 2008).

The basic intervention will consist of simultaneously submitting RTI requests to hundreds of PHCs requesting information on previous staff attendance, both at the PHC and associated subcentres. Surveyors will collect information on attendance both prior to and after treatment. The prior attendance information will serve as a baseline as well as enabling us to measure the accuracy of the attendance information recovered. We can consider a number of variations on this intervention which may help us to measure spillovers and understand mechanisms. This might include asking about an individual's attendance (if possible) rather than for everyone's, or asking about an individual subcentre rather than asking about all subcentres. If information is available for both treatment and control groups, for instance through administrative data, we may also consider publishing the information publicly to analyse complementarities between this and submitting an RTI request.

In 2018 we piloted the intervention. Results suggested that PHCs take these information requests seriously and that it is possible to receive independent responses at the PHC level, meaning a future RCT could exploit a large number of independent clusters. Moreover, the significant number of responses denying the request for information suggest that there is some sensitivity about providing this information in at least some PHCs. We also undertook spot checks on a number of the PHCs. This showed that collecting data on healthcare worker attendance is feasible and can be carried out independently from the Health Department. We also confirm that there appears to be a large amount of absenteeism making the potential for studying impact feasible. Budget constraints mean that the pilot sample was unlikely to be sufficiently large to pick up significant treatment effects. Nonetheless, a simple analysis of the survey data is encouraging. Treated PHCs were more likely to have a doctor present than control PHCs, while treated subcenters were less likely to be closed and had a larger number of staff in attendance on average.

Before the COVID pandemic, we were exploring avenues for funding this research project at scale. This has obviously been put on hold during the pandemic, which has made visiting health centres to undertake health checks clearly impossible. Nonetheless, the pandemic has made even clearer the importance of the rural health network and the failings in the current system. We are therefore planning

¹ To our knowledge, the only randomized control trials involving evaluating freedom of information request are those undertaken by Peisakhin and Pinto (2010) and Peisakhin (2012). In each of these studies, the authors followed around 100 Indian citizens in their applications for a ration card or voter registration. They submitted RTI requests asking about the applications for a randomly chosen third of the individuals and found that these individuals received positive responses significantly faster than the control group. These studies thus demonstrate that RTI requests can have a significant impact on public service delivery, but it is unclear whether they have the potential to improve the average quality of service received amongst the whole population. Moreover, the studies relied on asking for information related to particular individuals, which may be dangerous when the magnitude of corruption is relatively high. Evidence suggests that RTI requests are not made more frequently due to fears of reprisal. Case studies of RTI requests often include stories of public officials threatening civilians if they do not withdraw the RTI. Indeed, Pande (2015) estimates that 50 people were killed in retaliation for submitting RTIs over the period 2007 to 2014. There is thus still a large gap in understanding whether RTI requests can effect important change without negative reprisals.

to submit the proposal to relevant funding sources as soon as the situation in the country permits the necessary data collection.

3. Trust in regulating rural land

Trust is crucial for the successful regulation of infrastructure because assets are typically immovable and hence at risk of expropriation. For the same reason, trust is essential in the regulation of the ultimate immovable asset – land. Many development experts have argued that land rights reform is key to agricultural development. In particular, there has been a large push to “formalize” existing land rights and bring them into government legal systems (Putzel et al. 2015). Yet reform efforts are typically controversial, partly because individuals may trust local institutions more than formal rule of law (e.g. Bromley, 2009). This is particularly true when weak accountability means formal institutions may be corrupted. In this context, it is important to understand how trust in land rights can be improved.

The regulation of land use is not just important for agriculture, but also for public goods such as forestry. Again, trust plays an important role here – often communities would like to preserve forests, but might cut them down if they fear losing control to others. Governments often place regulations on the ways in which forests can be used, particularly in “protected areas” of high biodiversity. But in developing countries, there is often weak trust in governments to enforce these regulations, either because they lack the capacity or because they are captured by interest groups interested in deforesting. It is therefore of first-order importance to understand how land regulation can be designed to most effectively reduce deforestation in developing countries.

3.1 Past work on land rights

Upon joining INRAE, I was assigned the topic of rural land rights to work on as a chargé de recherche. Before beginning, I therefore wrote a couple of policy oriented pieces about corruption and land rights, with a particular focus on Malawi where I had been working (Chinsinga & Wren-Lewis, 2013; Wren-Lewis, 2013b). After arriving at PSE, I began to work with Karen Macours (PSE) and Jérémie Gignoux (PSE) on a randomized control trial of a formalization of rural land rights in Haiti with the Inter-American Development Bank (IADB). The project eventually collapsed due to the Haitian governments unwillingness to undertake the evaluation, but as part of the process we were commissioned by the IADB to provide a synthesis of the existing literature and guidelines for evaluating land administration interventions. The resulting article (Gignoux, Macours & Wren-Lewis, 2015) argued that, although investment in land administration projects is often considered key for rural development, rigorous evidence of the effects of such interventions is lacking. In addition to the major endogeneity concern, a key problem that we identified is that interventions typically bundled together several components which could have countervailing impacts. While a key part of interventions often focused on increasing trust in the persistence of land rights, they also frequently explicitly or implicitly facilitated the transfer of rights and/or individualized them. Predicting the results of any individual intervention was therefore very difficult.

Given the poor evidence on the impact of land rights intervention, I was therefore keen to work with Kenneth Hounbedji (IRD) on the evaluation of a randomized control trial he had been a part of in Benin. In 2009, the government of Benin rolled out an experimental scale-up of the Plans Fonciers Ruraux (PFR) program with the objective of both increasing agricultural production and protecting natural resources.

The program is a bundle of several interventions broadly serving to formalize and support traditional local land governance systems, lying at the frontier of new land policies being developed in Africa. His initial work had demonstrated that the program appeared to increase farmers' trust in the persistence of their rights since they were more willing to invest in perennial crops (Goldstein et al, 2018). The overall impact on land use was, however, uncertain. It was possible that the increased security led to intensification, but there was also evidence that some farmers were now more willing to leave their secured land fallow and hence work on plots outside of the village. Understanding the environmental impacts of the program was crucial, since Benin has one of the highest deforestation rates in the world. Determining the impacts of the program on nearby forests was therefore a key part in understanding the cost-benefit analysis of this kind of program.

In Wren-Lewis, Becerra-Valbuena and Hounbedji (2020), we evaluated the impact of the randomised rollout of the PFR programme across the country on forest cover. The rollout selected 575 eligible villages and then organised 80 lotteries to randomly pick 300 treatment villages. Activities began in these villages in 2009, and to this date the programme has not been expanded to the control villages. Our estimates suggest a reduction in tree cover loss of around 20% and a reduction in fires of 5% in the areas containing treated villages. Using the Landsat measure, we estimate that the programme helped avoid 600 Ha of extra tree cover loss by the end of 2017.

Evidence from the pattern of tree cover loss and survey data suggest three likely mechanisms through which the PFR programme reduced tree cover loss. First, the programme may have increased farmers' investments in existing plots, increasing productivity, and hence, reducing the need to clear further land. This is supported by the results of two other studies which found that the programme led to increased investment (Goldstein et al. 2018, Yemadje et al. 2014). Consistent with this, we find that community leaders in treated villages are significantly less likely to report land clearing, and that there is a significant reduction in tree cover loss directly adjacent to agricultural plots.

Second, the increase in tenure security may have guaranteed farmers that their claims to forested land were secure, and hence reduced their incentive to safeguard such land through clearing. Indeed, treated villages are significantly less likely to experience border conflicts, which is corroborated in our qualitative survey, where one interviewee responded that "since the project placed markers, everybody knows their parcels and there are no more land problems".

Third, the delimitation of landholdings and creation of local land committees is likely to have eased commons management. Treated villages reported a significantly higher level of trust in institutions to resolve land conflicts and were significantly more likely to say that communal areas were managed by a local committee such as the 'conseil du village', rather than an individual. This is consistent with the PFR programme's stated aim of encouraging participation in land governance. Treated villages are also significantly more likely to restrict access to communal forests than control villages.

3.2 Future work on land rights in Benin

The previously mentioned work on the PFR program in Benin therefore suggests it has important impacts on the operation of land rights and peoples trust in the system. Kenneth Hounbedji and I plan to continue working on the evaluation of this program topic together, focusing on two specific questions

which remain unresolved. First, how did the program impact people's trust in the system? Second, what were the long term consequences of the program?

The impacts of the program found to date can be seen as surprising given that the program didn't provide certificates to most landholders and was not supposed to change rights in any way, only to formalize them. It is therefore natural to ask whether the formalization process actually did change people's land rights *de facto*, or whether changes were just brought about by changes in beliefs about those rights. To test this, we will first analyse data from the household surveys, including the as of yet unused 2015 wave, exploring whether there are "losers" and "winners" as a result of the process – is it the case, for instance, that new households in the village find it more difficult to obtain land as a result of the process? We also plan to combine this with data we will collect from local courts. According to a report by MCA-Benin (2009), more than 1000 conflicts are brought to the regional courts annually, constituting over 90% of the courts' total caseload. A key idea behind the program was that it would formalize land rights in a way that would then facilitate their just resolution within the formal legal system. The possibility of using this data to evaluate the reform has been demonstrated by Yemadje et al. (2014) who collected data for one commune containing 10 treated villages, but the scale of the data they collected means it is not possible for them to evaluate impacts. By collecting data on all of the treatment and control villages, as well as over a long duration of pre- and post-treatment years, we will be able to rigorously answer questions that are not possible using the existing survey data. We are working on this together with Sarah Deschenes (Northwestern) and are currently applying for funding to collect data in 2022.

One notable finding in Wren-Lewis, Becerra-Valbuena, and Hougbedji (2020) was that impacts on deforestation appeared to be persistent over time. This is despite the fact that political support for the program waned substantially after implementation and hence there was some concern effects could be short-lived. A key question therefore is to what extent impacts that are found in the short run persist in the long-run. We aim to test for this using the court data, but also using remote sensing data on agricultural practices. We have begun to work with Casey Maue (Stanford) on using data from the 2015 plot survey to calibrate remote sensing measures to detect impacts such as an increased use of perennials. This will then allow us to provide an alternative way of measuring impacts of treatment that we can use to look at the extent to which treatments persist. Moreover, we will be able to measure impacts in villages that are not surveyed and over a greater scale, potentially developing new insights. Finally, if we find that impacts are persistent, we are considering looking at long-term impacts using a new household survey. Moreover, advances in remote sensing mean that we could consider combining this with crop-cuts to measure whether the program impacted agricultural productivity.

3.3 Future work on regulating forests through private certification

When governments cannot be trusted to regulate forests, people may turn to forms of 'private regulation'. Private certification schemes, where firms voluntarily subject themselves to a set of rules monitored by a third party, can play an important role in regulating firm behavior (Dragusanu, Giovannucci and Nunn, 2014; Hart and Zingales, 2017). This is especially true when firms operate in countries with weak state capacity or when the benefits of compliance accrue internationally. Such certification schemes are becoming increasingly important as globalization outpaces governmental regulation, and economists

are beginning to gather evidence on their effectiveness (e.g. Dragusan & Nunn, 2018; Boudreau 2021). Yet it is unclear to what extent such schemes can substitute for government regulation, and in particular whether they can incentivize firms to undertake actions that may substantially restrict their operations.

Together with Kenneth Hounghbedji, I will study the effectiveness of a flagship private certification scheme in a context where there is serious concern that it might have reached its limits. In particular, we will look at a recent modification of the rules within the Forest Stewardship Council (FSC). Founded in 1993 after more than a decade of failed interstate efforts to improve global forestry management, the FSC is frequently highlighted in the literature as one of the most ambitious and successful transnational non-governmental regulatory schemes in the world today (Moog, Spicer & Bohm, 2015). In 2014, under pressure from international NGOs including Greenpeace, FSC members passed Motion 65, which required the FSC to strictly regulate the activities that concessionaires could undertake in Intact Forest Landscapes (IFLs). These are areas of high conservation value which have as of yet been little disturbed by humans. Those in favour of the motion argued that it would be effective in protecting remaining natural forests. Others, however, argue that the rule change could do more harm than good since it would make it extremely difficult for concessionaires to operate in IFLs, and hence would lead to a reduction in FSC certification (Karsenty, 2019). Keinschroth et al. (2019), for instance, argues “it has become apparent that the IFL definition collides with forestry practices in several regions... The activities of logging companies are thus not compatible with, or are otherwise severely constrained by, the IFL status if such companies are certified under FSC standards”. Haurez et al. (2017) therefore argues that the impacts “could be far reaching” and that “FSC certificate holders have threatened to revoke their certification because of the reduction in timber supply that could result”. Indeed, Rotherham (2016) argues that the FSC may already have seen a reduction in certification as a result. If tighter certification regulations induce a decrease in firms signing up to the certification scheme, then it is possible the overall impact of the rule change on global forests could be detrimental.

The project aims to study two potentially major impacts of the FSC rule change. First, did it reduce deforestation or forest degradation in IFLs within FSC certified forests? Second, did it reduce the number of concessions with IFLs that were certified by the FSC? Studying the answers to both of these questions is crucial to consider the potential trade-offs in making private certification schemes more constraining. Moreover, understanding the selection into or out of certification is necessary in order to understand any effect (or lack of) on forest outcomes.

To answer the first question, we will employ a diff-in-diff analysis at the concession level whereby we will compare deforestation and forest degradation in IFLs that are in FSC concessions to those in non-FSC certified concessions. Since in this part of the analysis we want to abstract from selection effects, we will compare concessions based on their certification status prior to 2014. The key assumption here is that, while FSC concessions are likely to be different to non-FSC concessions in a number of ways, any change in relative deforestation rates in the years when the regulation came into effect can be attributed to the rule change. We can investigate this assumption by looking at deforestation rates in concessions without IFLs as a placebo, and, if necessary, use a triple-difference approach.

To answer the second question, we will employ a diff-in-diff analysis at the concession level whereby we will compare certification choices amongst those concessions without important IFLs to similar concessions that contain a large area of IFL. Again, we do not require that certification rates of the two types of the concessions were the same prior to the rule change, but that without the rule change

the trends would have remained parallel. Such an assumption seems reasonable since the precise definition of an IFL is somewhat arbitrary and hence concessionaires are likely to have been ignorant of the share of their concession which was an IFL prior to the rule change. It should therefore be possible to find concessions without IFLs similar to those with IFLs that could form a credible control group.

We are currently working with a research assistant on compiling the necessary global database of forestry concessions, which we can then merge with databases of certification and maps of IFLs. Since no set global dataset of forestry concessions currently exists, we also envisage that compiling such a dataset will open up possibilities for other research projects.

3.4 Future work on sustainable agriculture in the DRC

One way in which governments can regulate land use is through providing economic incentives through cash transfers. Paying landholders not to deforest has, for instance, been shown to be an efficient way to reduce CO₂ emissions (Jayachandran et al. 2018). Together with Sylvie Lambert (PSE), Karen Macours (PSE), Patrick Premand (World Bank), Margaux Vinez (World Bank), I will be working on the randomized evaluation of a large World Bank funded project implemented by the government of DRC to improve agricultural productivity in an environmentally sustainable way. An important component of this involves giving farmers cash if they keep land fallow, a mechanism that is likely to require trust to work successfully. We aim to test the impacts of different forms of conditionality, including developing mechanisms to reduce corruption amongst the organizations responsible for verifying farmer behaviour. The project is planned to start in DRC in late 2021.

3.5 Future work on migration and deforestation in Africa

A final related project which I plan to work on is with Clement Imbert (Warwick) looking at the impact of urbanization on deforestation in rural areas. Demographic pressures and extensive agriculture are important drivers of deforestation worldwide (Curtis et al. 2018). One may expect that by reducing land and fire-wood use, rural emigration could increase forest cover in those areas where people migrate from. On the other hand, urbanization may increase the demand for charcoal or facilitate the development of logging or large-scale agriculture. We plan to investigate this issue by combining census data on migration from various African countries with satellite data on deforestation. We hope to combine data on historic migration patterns and urban “pull-shocks” to cleanly identify the impact of migration. We are currently applying for funding to hire a research assistant to help compile the necessary data.

4. Inter-ethnic trust

In considering trust in the regulation of infrastructure and land, I have generally focussed on the trust in institutions. Yet trust of other people can be equally important in determining economic outcomes. Lower interpersonal trust may lead to reduced cooperation and a reduction in preferences for redistribution or public good provision. In many societies, inter-ethnic trust is a key component of interpersonal trust. We can see this in both the manifestation of racial tensions within the US and the rise of anti-migrant sentiment in Europe. As globalization and urbanization increases inter-ethnic mixing, societies must learn to increase inter-ethnic trust or mitigate the consequences of its absence.

The focus of my research on inter-ethnic trust is on how government policy can be used to best respond to issues of low trust. So far, I have mostly been investigating the extent to which exposure to minority ethnicities in schools can impact behaviour related to inter-ethnic trust. I am broadening my agenda in this field by beginning work on several related policies, such as decentralization in Kenya, service civique in France and immigrant integration policies. These projects are detailed below.

4.1 Past work on the impacts of racial mixing in US schools

A key indicator of inter-ethnic trust is interracial marriage rates (Kalmijn, 1998; Fryer 2007). It may therefore be concerning that, in the United States the marriage rate between blacks and whites is low—according to the 2015 American Community Survey (Ruggles et al. 2015), only 7.8% of married blacks intermarry with whites. Such assortative matching is likely to have important implications for labour market outcomes (Pencavel 1998), intergenerational income mobility (Chadwick and Solon 2002), and income inequality (Greenwood et al. 2014). Racial preferences appear to play an important role in explaining this sorting (Wong 2003; Fisman et al. 2008; Hitsch, Hortaçsu, and Ariely 2010). Yet little is known about what determines these racial preferences or to what extent they are influenced by individuals' experiences.

Social interaction has long been postulated as a potential means of reducing racial prejudices (e.g., Williams 1947; Allport 1954). Indeed, recent studies have shown that white students and teachers exposed to a greater number of black students adjust their stated attitudes or choose to interact more frequently with blacks in schools (Boisjoly et al. 2006; Marmaros and Sacerdote 2006; Dobbie and Fryer 2015; Carrell, Hoekstra, and West 2015). Baker, Mayer, and Puller (2011) find evidence, however, that this effect may be limited, since in their study exposure does not appear to impact students' broader social networks. Moreover, these papers study the impact on stated attitudes or limited interactions, such as emailing or sharing a dorm. Hence, it is yet to be demonstrated that such social interactions affect major life decisions, such as marriage and cohabitation.

In a paper with Luca Merlino and Max Steindhard, we investigate whether exposure to racial diversity at a young age partly explains assortative matching by race. In particular, we explore how plausibly exogenous variation in a white student's school peer group influences the romantic relationships that they later undertake as an adult. To do so, we use the National Longitudinal Survey of Adolescent Health (hereafter, Add Health), which collects information on the race of all students within surveyed

schools in the United States and then more than a decade later surveys a sample of these students on their romantic partners. These data allow us to exploit idiosyncratic variation in grade composition within schools, a methodology pioneered by Hoxby (2000) and widely used to identify causal peer effects (Sacerdote 2014). A number of tests confirm that the variation we use is as good as random and uncorrelated with other variables that might influence adult relationships. Moreover, we show that a higher share of black students in a grade stimulates diversity in social interactions both within and outside the classroom.

The main contribution of this paper is to provide evidence that the racial composition of students' school cohorts impacts romantic relationships later in life. This is not simply the result of students having more potential black partners in school, since the peer groups that impact adult relationships are students of the same sex in the same grade. The importance of same-sex peers is consistent with young people forming closer friendships with individuals of their own gender (Kalmijn 2002). The magnitude of the effect is important—going from the average of 8% blacks of the same gender in the cohort to 10% would increase the probability of dating a black as an adult by approximately 0.6 percentage points, which is 13% of the mean.

We then give evidence that the most likely mechanism behind this impact is a change in racial preferences or attitudes. First, we find significant effects on reported attitudes in several waves of the survey. Second, we document evidence suggesting that an increase in indirect meeting opportunities—that is, meeting a partner through school friends—is unlikely to play a major role. In particular, if our result stemmed mainly from increased meetings with blacks through school-based social networks, we would expect it to be stronger for those relationships formed in school, at a younger age, and geographically closer to school. We find no evidence for such a differential impact. Finally, we show that any impact of cohort racial composition on educational performance or labor market outcomes would unlikely be large enough to explain our measured effect. Overall, therefore, our results suggest that racial diversity in schools impacts individuals' attitudes or beliefs, which in turn affect their decisions regarding relationships.

4.2 Current work on the impacts of childhood immigrant contact in Europe

Our work described above has demonstrated that, in the US, inter-ethnic contact in schools has important long-term impacts on inter-ethnic relations consistent with an increase in inter-ethnic trust. I am currently working on research projects using administrative data on schools in European schools to extend this research in two important ways. First, do we see similar impacts in Europe? Although we might believe the “contact hypothesis” is fairly universal, racial relations in the US are very different from inter-ethnic relations in European countries where most minority groups are first or second-generation immigrants. Second, do we see impacts on variables beyond inter-ethnic marriage? As highlighted above, inter-ethnic trust is an important factor in many areas of the economy and society. It is therefore important to establish to what extent contact in schools has impacts beyond the marriage market.

My project in this area that is most advanced is with Aino Kalmbach and Matti Sarvimaki at Aalto University. We are using Finnish registry data to analyze whether growing up in an area with more

immigrants *born in the same year* leads to more contact with immigrants later on in life. Similarly to my work on US schools, the key identification assumption is that, within a given location, the share of children nearby of the same age is random once we condition on location-specific trends. A key novelty of the paper is that we use the precise location of Finnish residents between the years 1988 and 2005 and therefore make comparisons of individuals within a given building or 250m x 250m grid cell. With such precise location information, we can construct measures of immigrant shares by birth cohort within small radiuses around each child's address. In this way, we have a very good proxy for the children that a given individual is most likely to interact with growing up. We do not have data on ethnicity, so instead we focus on first- and second-generation immigrants whose background country is in Africa or Western Asia, since these are the immigrant groups who face most discrimination in the Finnish context.

We are still in the process of writing up our results into a working paper, but so far our findings are as follows. Similar to our results from the US, we find that children who go up with a greater share of immigrants in their nearby birth cohort of the same sex are more likely to cohabit with an immigrant as an adult. Consistent with this being driven by a change in attitudes or trust rather than networks, we find that the result remains when we restrict to relationships begun with people who have never lived near to the individual's childhood location. Exploiting the registry data then allows us to go beyond this outcome measure and analyse whether other forms of inter-ethnic adult contact are increased. In contrast with our results on cohabitation, we find no impacts of childhood exposure on the immigrant share of an adult's residential location or workplace. This therefore suggests there are important limitations on the extent to which ethnic segregation can be mitigated through childhood exposure.

One potential reason why there is no impact of childhood contact on one's adult colleagues is that most employees do not choose their colleagues. Employers and plant managers typically do choose who they hire, however, and previous research has clearly established that ethnic prejudice can play an important role in hiring decisions. An important question, therefore, is whether exposure to immigrants as a child might increase the rate at which employers hire immigrants. This is not possible to answer using the Finnish data, unfortunately, since the timing of immigrant arrivals and in Finland and our data constraints means that a very small share of employers were exposed to immigrants in their childhood. To answer this question, therefore, Luca Merlino, Max Steindhart, and I have begun working with Philip Rosenbaum (Copenhagen Business School) on Danish registry data. Here we have constructed data on the immigrant share of all Danish primary schools going back to the cohort born in 1968. This, combined with the greater number of immigrants, will allow us to look for potential impacts of childhood immigrant exposure on adults' hiring decisions.

A final key area I aim to investigate is the impact of childhood exposure on people's political preferences and behaviour. Several recent papers have estimated the effect of immigrant arrivals on elections, but the literature has, however, typically not been able to disentangle the potential impact of contact from that of other channels such as perceived rivalry for jobs or public services. Those that come closest are two recent articles which look at heterogeneity in the impact of immigrants on voting behaviour and find a reduction in far-right voting in areas where contact was likely greater (Dustmann et al. 2019; Steinmayr, 2020). I aim to look at potential political impacts in Denmark and Finland by analysing decisions to stand for political parties in local elections, and by using survey data linked to the registry data. Such data is limited, however, and therefore I have begun working with Simon Burgess (Bristol) and Lucinda Platt (LSE) on analyzing data from the UK. This is a particularly interesting context to work on given the Brexit vote and the high quality survey data available. We have submitted our application to the

Department of Education to get access to the necessary administrative data (the National Pupil Database) and link it to the survey data we will be using (Understanding Society).

4.3 Current work on ethnic fractionalization, decentralization, and healthcare in Kenya

One potential driver of a lack of inter-ethnic trust is the conflicts that can arise when ethnic groups are relatively under-represented within the state. When ethnic groups are spatially clustered, one potential solution to reduce such conflicts is to decentralize power to levels of government that are more ethnically homogenous (Alesina and Zhuravskaya, 2011). In work with Camille Hémet (PSE) and Jessica Mahoney (OECD) we are studying the impact of a flagship decentralization policy undertaken in Kenya in 2013. The policy resulted in the creation of 47 new county governments led by a directly-elected governor and county assembly. In so doing, the eight provinces - the jurisdictions which had thus far been the highest level of sub-national government - were disbanded. Following devolution, the new county governments took over the roles of the provincial authorities in addition to new responsibilities.

One of the most critical sectors affected by devolution was healthcare: county governments were now in charge of running all public health clinics, including overseeing staffing. Healthcare is also a particularly interesting area to study from the view point of inter-ethnic trust since individuals are less likely to take up healthcare services when they are associated with the other ethnic group (e.g. Alsan et al. 2019; 2020). This project uses a difference-in-differences-type of methodology to identify the combined impact of devolution on treated individuals and counties, in terms of their use of public health clinic services.

Our results so far using data from DHS surveys are quite striking. Prior to devolution, we find no relationship between a county's ethnic fractionalization and the share of births which take place in a public clinic. After devolution, however, births are more likely to take place in public clinics in counties that are relatively more ethnically homogenous. We also find similar results looking at visits to clinics using the Afrobarometer data. What explains these results is, however, currently unclear. One potential explanation is that more ethnically homogenous counties have less corrupt governors and as a result are better able to ensure facilities operate as they should. Alternatively, the result may be explained by demand-side effects, particularly since there is some evidence of ethnic sorting within healthcare centres after devolution. This may be particularly likely since devolution occurred alongside the institution of the removal of fees for births at public clinics, meaning that healthcare could potentially be expanded to a population that may have been more sensitive to ethnic concerns.

We are currently in the process of recruiting an RA to help us collect further data to push this project further. In particular, we aim to collect data on the distance of individuals to health clinics to understand better heterogeneous take-up and information on the ethnicity of county governors. This will allow us to better exploit individual level ethnicity which is likely to be key in understanding changes in the ethnicity-healthcare use relationship that occurred during the period.

4.4 Future work on contact with diversity in France

While schools can be an important place where people are exposed to other ethnicities, governments may be limited in their ability or willingness to force mixing within schools. Governments have therefore turned to other avenues to increase social mixing, such as the *service civique* program in France. The *service civique* is a national program run by the French government to enable young people to undertake voluntary activities in the public interest for up to a year with some financial support and orientation. A key stated objective of the program is that participants “become aware of the diversity of our society” and hence that the program reinforces “national cohesion and social diversity”.² Yet how successful these programs can be in changing attitudes and behaviors is unknown.³

Prior to the pandemic, I worked with Dylan Glover (INSEAD), Hillel Rapoport (PSE) and Sarah Schneider-Strawczynski (PSE) to set up a randomized control trial with the French NGO Unis Cité. Unis Cité currently has over 10000 young people every year undertaking service civique with them across France. A key objective of the organization is to encourage contact within diverse groups that would not normally meet. We had planned to randomize the small groups into which people were allocated to ensure varying levels of diversity on several characteristics including proxies for ethnicity. We then aimed to measure impacts both on measures of group performance and individuals attitudes, including trust. The experiment was supposed to start in October 2020, but had to be postponed given the pandemic.

We hope to implement the experiment or something similar in the near future, but current conditions make this uncertain. On the positive side, the service civique program is in the process of a large expansion and Unis Cité have indicated they would be interested in evaluating the impact of their overall program. We are therefore continuing to speak to them regularly and are currently involved in analyzing new data they have collected linking their administrative data to three waves of survey data that they collect on their participants.

4.5 Future work on compulsory military service in Europe

The *service civique* program and others like it – such as the new “service national universel” – have partly been designed to replace compulsory military service programs which historically existed for men in many European countries. Yet while many have contended that compulsory military service helped to create a sense of national unity and create trust between groups, little rigorous evidence exists on the extent to which this occurred (Gonzalez et al. 2020). Together with Benjamin Michallet (PSE), I have begun a project which will investigate the impact of compulsory on attitudes and trust using surveys such as the European Social Survey. We plan to exploit discontinuities in the probability of undertaking military

² <https://www.culture.gouv.fr/Nous-connaître/Emploi-et-formation/Service-civique/Documentation-generale/Le-service-civique/Le-service-civique-c-est-quoi-Principes-et-objectifs>

³ Studies of similar programs elsewhere have showed varied results. In the US program Americorps, Frumkin et al. (2009) find that participants in the program experienced a decrease in appreciation for cultural and ethnic diversity, compared to a non-participating control group. On the other hand, Al Ramiah & Hewstone (2012) find no change in intergroup relations amongst those engaged in the Malaysian National Service Programme. Most recently, Laurence (2019) finds participants in the UK National Youth Engagement Scheme experienced an increase in inter-ethnic relationships compared to a matched control group.

service by birth cohort which exist in France, Italy, Belgium, Spain, Portugal, Germany and the Netherlands.

4.6 Future work on immigrant integration

Finally, an important way in which governments may foster inter-ethnic trust is through the successful integration of new immigrants. Together with Benjamin Michallet and Hillel Rapoport, I am working on evaluating a couple of new flagship policies undertaken by the French state to aid immigrant integration. With Marine Haddad (Ined) and Clement Imbert (Warwick), we are working with Mission Locale Paris to design a randomized control trial of their ALLERO program, which aims to give young refugees additional holistic support to aid them in integration. Then, with Sarah Schneider-Strawczynski (PSE) we are planning to evaluate a major change in the main French integration program, the “contrat d'intégration républicaine”, which dramatically increased the amount of French lessons available as well as the amount of “formation civique” and personal interview time. This was given to all new immigrants who “signed the contract” after 1st March 2019, an arbitrary date not open to manipulation, allowing us to use a regression discontinuity design. For the evaluation of both programs, we will use a combination of survey data and administrative data to look at both short-term impacts on attitudes and competences as well as long-term impacts on economic integration.

5. Other research related activities

5.1 Research on inequality

In addition to the research related to trust which I described above, I have also undertaken a number of research projects related to economic inequality. This most important output from this is Brewer and Wren-Lewis (2016, *Oxford Bulletin of Economics & Statistics*) "Accounting for changes in income inequality: Decomposition analyses for Great Britain, 1968-2009". This paper uses a number of decomposition techniques to understand the changes in income inequality that took place in the UK over four decades. Related work with Mike Brewer includes Brewer and Wren-Lewis (2011), which decomposed changes in median income over the period, and Brewer, Sibieta and Wren-Lewis (2008) which focused on changes in high incomes in the UK. I also worked with Alex Cobham (then at Christian Aid) trying to understand the cross-country correlation between growth and income inequality (Cobham & Wren-Lewis, 2011).

5.2 Master's student supervision

In my time at PSE, I have supervised the following students M2 dissertations:

- Will Lobo, 2014-2015. Supervision percentage: 100%
- Hurbertus Wolff, 2014-2015. Supervision percentage: 100%
- Luis Becerra, 2015-2016. Supervision percentage: 70%
- Claire Boxho, 2015-2016. Supervision percentage: 70%
- Pierre Cayet, 2016-2017. Supervision percentage: 60%
- Margaux Jutant, 2017-2018. Supervision percentage: 100%
- Chloe Stutzmann, 2018-2019. Supervision percentage: 100%
- Mathilde Col, 2018-2019. Supervision percentage: 100%
- Samantha Ndiwalana, 2018-2019. Supervision percentage: 100%
- Adrien Dautheville, 2019-2020. Supervision percentage: 100%
- Ucindami Mafeni, 2019-2020. Supervision percentage: 100%
- Julia Helie, 2019-2020. Supervision percentage: 80%
- Julius Goedde, 2019-2020. Supervision percentage: 100%
- Jessica Mahoney, 2019-2020. Supervision percentage: 40%
- Mridul Joshi, 2019-2020. Supervision percentage: 30%
- Sumit Parashar, 2019-2020. Supervision percentage: 70%
- Loris André, 2020-2021. Supervision percentage: 100%
- Nathan Barzola, 2020-2021. Supervision percentage: 100%
- Julia Girard, 2020-2021. Supervision percentage: 100%
- Kim Lan Mallon, 2020-2021. Supervision percentage: 100%

5.3 Participation in PhD students' supervision

I am currently the main supervisor of Julius Goedde, who started his PhD at PSE in 2020 and is formally supervised by Olivier Tercieux. In his PhD proposal, he set out to research the way in which online platforms can help improve trust, and in particular how the design of such platforms can facilitate transactions built on trust. Together with Gabrielle Fack (Paris Dauphine), we are in the process of acquiring data from the largest global home exchange website, which will allow him to work on several interesting projects. In particular, he plans to write a single-authored paper exploring how ratings for one kind of transaction (being a host or hostee) can facilitate other transactions. We also plan to write together with Gabrielle a paper which explores the role reciprocity plays in establishing trust, and whether introducing a currency into a transaction potentially reduces trust.

I have also been on the PhD committee of several PSE students. For these students, I have made myself available to have regular discussions on their work and have aimed to complement the advice they receive from their supervisor. At times, this has involved fortnightly meetings and multiple rounds of detailed comments on PhD chapters.

PhD students who I am/was on the thesis committee of:

- Margaux Vinez, 2012-2018. Advisors: Sylvie Lambert & Karen-Marcours. Now Young Professional at the World Bank.
- Victor Pouliquen, 2015-2019. Advisor: Marc Gurgand. Now doing postdoc at the University of Oxford.
- Luis Becerra Valbuena – 2016-2021. Advisor: Katrin Millock. Now doing postdoc at Dauphine Université.
- Melanie Gittard – 2018 - . Advisor: Denis Cogneau.
- Nina Rapoport – 2019 – . Advisor: Nicolas Jacquemet.
- Claire Lepault – 2020 - . Advisor: Helene Ollivier.
- Julia Helie – 2021 - . Advisor: Jérémie Gignoux.

5.4 Administrative responsibilities

Between 2013 and 2015, I co-organized the the Public Economics Seminars at PSE. I have also been a member of the Ethics committee since 2019. I have also taken part in recruitment committees for Maitre de conferences positions at Paris 1 (2018, 2020, & 2021) and Paris Saclay (2020).

5.5 Grants

I have been a principal investigator on the following grants (in addition to several grants for less than \$10,000):

- **Agence Nationale de Recherche, 2021-2025, €339,407:** Co-PI with Hilel Rapoport on project entitled “The role of intergroup contact in political reactions to immigration: Quantitative analyses from across Europe”

- **Institut Convergences Migrations, 2019-2022, €106,000:** Work on migrant integration in France, including a randomized control trial to evaluate the impact of a national service program.
- **Economic Development & Institutions (EDI), CEPREMAP & OSE, 2017-2018, £26,000:** Project to pilot a randomized intervention using Right to Information requests to reduce corruption in India
- **Fulbright Scholarship, 2016, \$25,000:** Awarded to work as visiting scholar at UC Berkeley on public-private partnerships in disaster insurance
- **GloFoodS, 2015-2017, €53,000:** Project to use remote sensing data in impact assessments in developing countries

5.6 Other research related activities

I am currently acting as a mentor for Benjamin Michallet, a postdoc recruited at PSE in 2020 – he is working with me on several projects that I have developed. I have also supervised around ten research assistants working for me on various projects, typically for a couple of months over the summer or part-time during their masters dissertation.

Research work cited in press: TES, The Economist, The Financial Times, The Guardian, The Independent, The Sunday Times, The Times, The Telegraph

Refereeing work: 3ie; American Economic Journal: Microeconomics; Agricultural Economics, British Journal of Political Science; Canadian Journal of Economics; Economica; Information Economics and Policy; International Journal of Industrial Organisation; International Tax and Public Finance; Journal of African Economies; Journal of Development Economics; Journal of Economic Behavior and Organization, Journal of Economic Inequality; Journal of Economic Surveys; Journal of Public Economic Theory; Journal of Public Economics; Land Economics; Land Use Policy; Overseas Development Institute; Oxford University Press; Policy Studies; Public Administration; Review of Economic Studies; Revue Economique; Utilities Policy; World Bank Economic Review

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Wren-Lewis, Liam. (2013). Hold-up problems in international energy trade

7. List of published and unpublished works (with hyperlinks)

7.1 Selected publications in academic journals

Wren-Lewis, Liam, [Becerra-Valbuena, Luis](#) and [Houngbedji, Kenneth](#). (2020) **“Formalizing land rights can reduce forest loss: Experimental evidence from Benin”**
Science Advances, 6(26). Summary for VoxDev [here](#).

[Merlino, Luca](#), [Max Steinhardt](#) and Liam Wren-Lewis. (2019). **More than just friends? School peers and adult interracial relationships**
Journal of Labor Economics, 37(3): 663-713. Gated version [here](#).

[Brewer, Mike](#), and Liam Wren-Lewis. (2016). **Accounting for changes in income inequality: Decomposition analyses for Great Britain, 1968-2009**
Oxford Bulletin of Economics & Statistics, 78: 289–322.

Wren-Lewis, Liam. (2015) **Do infrastructure reforms reduce corruption? Theory and evidence from Latin America and the Caribbean**
World Bank Economic Review, 29(2):353-384.

[Estache, Antonio](#), [Tomas Serebrisky](#) and Liam Wren-Lewis. (2015). **Financing infrastructure in developing countries**
Oxford Review of Economic Policy, 31(3-4): 279-304. Gated version [here](#).

Wren-Lewis, Liam. (2013) **Commitment in utility regulation: A model of reputation and policy applications**
Journal of Economic Behavior & Organization, 89:210-231. Gated version [here](#).

[Estache, Antonio](#) and Liam Wren-Lewis. (2009). **Toward a theory of regulation for developing countries: Following Jean-Jacques Laffont’s lead**
Journal of Economic Literature 47 (3): 729-70. Gated version [here](#).

7.2 Working papers

[Troya Martinez, Marta](#) and Liam Wren-Lewis. (2020). **Managing relational contracts**
R&R at the Journal of the European Economic Association. [CEPR Discussion Paper 12645](#)

[Vanden Eynde, Oliver](#) and Liam Wren-Lewis (2021) **“Complementarities in infrastructure: Evidence from rural India”**
[CEPR Discussion Paper 16139](#)

7.3 Other publications in academic journals

[Auriol, Emmanuelle, Antonio Estache](#) and Liam Wren-Lewis (2018) [Can Supranational Infrastructure Regulation Compensate for National Institutional Weaknesses?](#) *Revue Economique*, 69(6): 913-936. Gated version [here](#).

[Gignoux, Jérémie, Karen Macours](#) and Liam Wren-Lewis. (2015). **Impact of land administration programs on agricultural productivity and rural development: existing evidence, challenges and new approaches** *Revue d'Études en Agriculture et Environnement*, 96(3):467-498.

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7.4 Chapters in books

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