Beyond circumstances ;
A Structural-Demographic analysis of France (1950-2023)

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Nicolas Salerno[1,2], Olivier Vidal[1,2,3], Baptiste Andrieu[1,4]

[1] Univ. Grenoble Alpes, 38000 Grenoble, France
[2] CNRS, ISTerre, 38000 Grenoble, France
[3] Univ. Savoie Mont Blanc, IRD, Univ. Gustave Eiffel, ISTerre, 38000 Grenoble, France
[4] University of Cambridge, Cambridge, GB

nicolas.salerno@protonmail.com, olivier.vidal@univ-grenoble-alpes.fr, bla28@cam.ac.uk

Abstract

Structural-Demographic Theory (SDT) offers a systemic and long-term perspective that moves beyond circumstantial interpretations of political events. Rather than focusing on discrete episodes such as protests, reforms, or crises, it seeks to identify the underlying dynamics that shape how societies evolve over time. This approach enables a deeper understanding of political instability and how certain historical configurations repeatedly produce tensions between populations and institutions. This paper introduces a Political Stress Index (Ψ) designed as a retrospective and prospective tool. This index aim to identify periods during which structural stress accumulates and aligns across three dimensions: elite overproduction and factionalism, fiscal fragility of the state, and the potential of the population to mobilize. When these variables rise together, the likelihood of significant institutional change increases. Applying this framework to post-war France, we argue that recent political unrest should be interpreted not as a series of isolated disruptions, but as the cumulative effect of deep structural transformations. Our findings suggest that contemporary France faces increasing demographic changes and institutional misadaptation. By aligning with long-term trends in electoral sociology, this analysis offers a reinterpretation of recent events as part of a broader trajectory of strain. It invites renewed attention to the systemic roots of instability and emphasizes the importance of institutional adaptation in periods of rising structural stress.

1 Introduction

Controversial reforms, political assassinations, or the public disgrace of prominent figures can all spark protests, waves of strikes, riots, or even the resignation of a government. No country is immune to such turbulence, certainly not France. Social and political unrest are constant features of human societies, yet only a few episodes lead to profound institutional reform or state breakdown.

In recent decades, France has experienced several episodes of political unrest.In November 2018, the "Yellow Vests" movement, a series of popular protests distinguished by unusual levels of violence for working-class protests, met with severe repression. In 2020, the Covid-19 pandemic accelerated precarity among the most vulnerable, drove public debt to new heights, and fueled distrust in institutions. In 2023, France endured one of its longest and most massive social movements against a pension reform, passed despite the administration's lack of a parliamentary majority. In 2024, the country saw two government reshuffles, the dissolution of the National Assembly, and a successful motion of censure. France thus had four distinct governments in a single year, a record under the Fifth Republic. Determining whether a political event reflects ordinary social turbulence or deeper institutional transformation is essential for understanding a society's long-term trajectory. Yet in a political landscape shaped by rapid electoral cycles and a media system fixated on immediacy, public and political attention is overwhelmingly directed toward discrete events. As a result, political responses tend to be symptomatic: withdrawals of reforms, leadership changes, or rhetorical adjustments, while the structural conditions that may be at their origin remain unaddressed.

Addressing long-term change is notoriously difficult, as linking events separated in time and space is challenging: correlations abound, and many prove spurious. To build a robust understanding and to act upon it requires causal and contextual explanations grounded in systematic comparison. Crafting and validating such explanations is no easy task. They must accommodate both the inherently non-deterministic, contingent nature of socio-historical processes and the genuine parallels between distinct episodes that justify a comparative approach. One promising strategy is to focus on long-term processes, relying on slowly moving objects that remain relatively stable over short spans but shift significantly over generations. Demographic growth is one such process: it shapes the trajectory of societies without fully determining it, simultaneously constraining and opening pathways for development.
That said, historians have traditionally treated demography as aggregate population change (Le Roy Ladurie 1978), and have widely discredited the idea that demographic shifts alone produce political upheaval. This perspective tends to overlook the disproportionate and heterogeneous impacts that even modest overall growth can have on specific social groups—urban or rural dwellers, wage laborers or landowners, youth or the well-educated, or emerging aspirants to elite status—as well as the far-reaching indirect effects on prices, state revenues, and income distribution. Thus, the key issue is not demographic change per se, but rather the capacity of institutions to adapt: to ensure subsistence, meet emerging aspirations, and sustain governance as population dynamics evolve.

Structural-Demographic Theory (SDT), pioneered by Jack Goldstone and elaborated by Peter Turchin and colleagues (Turchin and Nefedov 2009), (Turchin and Hoyer 2023), offers precisely this type of explanation. SDT views major political upheavals as the release of accumulated strain generated by misaligned institutions across all levels of social life, analogous to how accumulated strains are channeled by and burst forth along seismic fault lines. This "seismology" of society tracks the evolution of three core factors: the fiscal health of the state, the mobilization potential of the commoners, and the overproduction and competition of elites.

Mass Mobilization Potential (MMP reflects a decline in living standards and growing perceptions of inequality, combined with two additional structural factors: the demographic weight of youth (Cincotta and Doces 2012), and the effects of urbanization. When urban growth outpaces the capacity of institutions to integrate new arrivals, it can lead to rising unemployment and radicalization among young people, while also producing pockets of concentrated immiseration.

Elite Mobilization (EMP) is described as being driven by "overproduction": demographic growth generates more elite aspirants than existing channels can accommodate. This rise in the number of elites leads to a non-linear increase in rivalry and competition, resulting in a loss of cohesion and heightened polarization. Elite cohesion is a linchpin of the collective capacity to implement reforms and adapt institutions to changing conditions; its breakdown can therefore transform popular unrest into a systemic crisis.

State fiscal distress (SFD) captures the collective capacity to pursue ambitious policies while simultaneously serving as either a regulator or catalyst of instability via social spending and taxation. Debt crises often coincide with or precipitate major political realignments.

To synthesize these dynamics and track the accumulation of institutional stress, SDT introduces the Political Stress Index (Ψ), a composite measure combining the three components. The theory thus predicts that long-run peaks of Ψ should coincide with periods of significant institutional change, that is to say when social turbulence is capable of producing deeper institutional transformation (see Fig 1).

This prediction of the structural-demographic framework has been successfully verified for a wide array of historical cases, from medieval and Ancien Régime France to the Qing Dynasty and contemporary United States (Goldstone 2017). Goldstone's foundational work examined England (1500–1750), France (1680–1850), the Ottoman Empire, and Ming and Qing China (1500–1800). Turchin and Nefedov further applied the framework to England (1150–1485 and again 150–1800), medieval France (1150–1450), the Roman Republic and Principate (350 BCE–285 CE), Russia (1460–1922). Further literature extended the range of case studies with the Roman Dominate (285–476 CE) (Baker 2011), and most recently the Qing Dynasty (1600–1914) (Orlandi et al. 2023).
The applicability of Structural-Demographic Theory (SDT) to industrial and contemporary societies remains a subject of debate. Peter Turchin extended the framework to the United States in his seminal study (Turchin 2013), but Georgescu (Georgescu 2023) has challenged this extension, arguing that automation, rather than demographic shifts, has been the main driver of wage stagnation. Nonetheless, recent developments in U.S. politics appear to validate Turchin's original

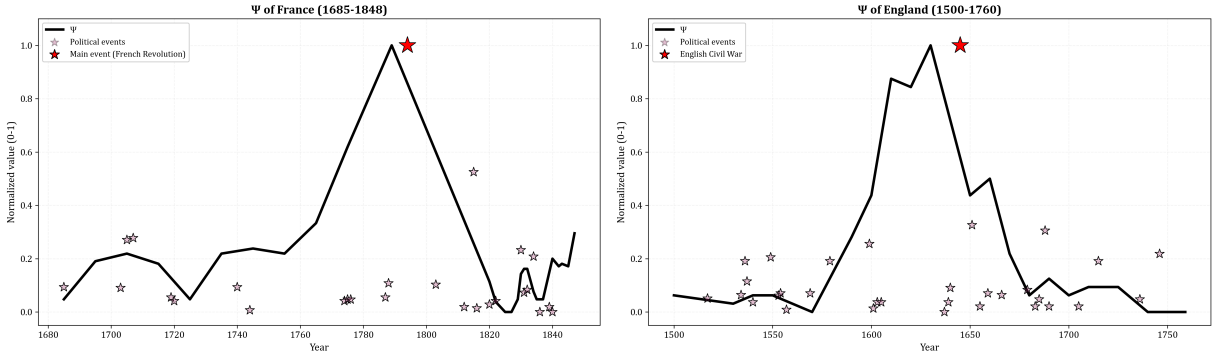

Figure 1: Two examples of validation based on, the Ψ computed by (Goldstone 1991 with the Sorokin index of events reported in (Sorokin 1937).

predictions, lending support to the hypothesis that a rising Political Stress Index (Ψ) may indeed correlate with the occurrence of transformative events.

Applying this framework to recent French history is thus relevant for two main reasons. First, it allows for a critical reassessment of how SDT must be adapted to contemporary contexts. Second, it offers a way to evaluate how the construction and interplay of the theory's three core indicators - MMP, EMP, SFD - can illuminate the influence of long-term structural transformations on recent political events.
Our work leads us to suggest that the political instability observed in contemporary France should be interpreted as the result of demographics changes and institutional misadaptation. Those findings align with recent research in long-term electoral sociology and shed new light on current events, portraying them not as isolated political disruptions, but as the culmination of deeper structural processes unfolding over decades.

2 Method and Materials

Our study employs a quantitative approach serving as a ground to a qualitative discussion grounded in the relevant literature, using both statistical analysis and formal modeling to construct key indicators from diverse datasets drawn from academic and public sources.

2.1 Estimating the Political Stress Index (Ψ)

We combine MMP, EMP and SFD into a composite Political Stress Index (Ψ) using a multiplicative approach. We chose this method over the principal component analysis (PCA) proposed by (Turchin and Hoyer 2023) for its greater interpretability, as our goal is to construct a tool of inquiry rather than a deterministic or predictive function. An additive model was also considered; however, as (Goldstone 1991) noted, the simultaneous presence of mass mobilization and elite fragmentation may produce effects far greater than the sum of their parts. While an additive or PCA-based formulation would not have significantly altered the general results, the key interest lies in the distinct regimes of variation and macro-level trends that the indicators reveal. In the absence of an interpretable absolute scale, and for the sake of visual clarity, we normalize the PSI values between 0 and 1. This choice, also applied to display the other indicators, sacrifices absolute magnitudes in favor of highlighting the dynamics of change over time.

$$\Psi = MMP \times EMP \times SFD \tag{1}$$

2.2 Estimating the Mass Mobilization Potential and Political instability

2.2.1 Estimating the Mass Mobilization Potential (MMP)

We propose computing the Mass Mobilization Potential (MMP) as the sum of two terms. One accounting for the urban components of MMP, and one new term, the lambda components, constructed using multiple proxies of well-being and inequalities to account for the multidimensional nature of MMP.

$$MMP = MMP_{urban} + \Lambda \tag{2}$$

The urban component is derived from a modified version of Turchin's original formula (Turchin 2013), incorporating three key variables: the size of the youth cohort, relative wages, and the degree of urbanization.

$$MMP_{urban} = \frac{A_{18-25} \times U}{s_{50}} \tag{3}$$

The youth cohort is defined here as individuals aged 18–25, rather than the 20–29 range originally proposed, reflecting a life stage typically characterized by limited family responsibilities and heightened ideological receptivity. We estimate the annual share of youth (ages 18–25) by multiplying the number of births for a given year (b) (Breton et al. 2024) by the infant mortality rate per 1,000 births (m) (Papon 2018), to infer the number of children that will reach adulthood. These survivors are then accumulated into 7-year cohorts from ages 18 to 25 to track the number of 18–25-year-olds in the population. Cohorts born between 1925 and 1932 are marginally overcounted due to wartime mortality; however, this distortion starts to disappear by 1951, as survivors reach adulthood according to our definition.

$$A_{18-25}(t) = \frac{1}{P(t)} \sum_{i=18}^{25} b(t-i) \times m(t-i) \tag{4}$$

The urban share of the population, $U(t)$, captures both the administrative strain associated with a rapid influx of rural to urban migrants and the enhanced potential for mobilization that results from increased spatial density and reduced geographic separation among individuals. Data on the urban population share are drawn from INSEE definitions and sources (Évolution de la population et de la superficie des unités urbaines. 2024), which define urban areas as municipalities (or clusters of municipalities) with continuously built-up zones (with no gaps exceeding 200 meters) and a minimum of 2,000 inhabitants. Missing values in the time series were completed using cubic interpolation.

Finally, to approximate Turchin's concept of relative wages while incorporating redistributive effects and addressing critiques such as those raised by Georgescu, we use the post-tax income share of the bottom 50 percent of earners (denoted as s_{50}) as a proxy. The comparison between different versions of relative wage and incomes share are available in the Supplementary Material. The share of the bottom 50 percent of incomes is reported by the World Inequality Database (Alvaredo et al. 2025). Post-tax income data are available only from 1980 onward. For the period 1950–1979, we impute post-tax shares by applying the 1980 differential under the simplifying assumption of a constant effective tax rate. Although this assumption is imperfect, it provides a consistent long-term series suited to our focus on structural evolution. Resulting in the given contribution for the urban component of MMP.

A first account for the multiple dimensions of Mass Mobilization Potential (MMP) was proposed in the seminal work of (Goldstone 1991) on the French Revolution. While not introducing a rural component per se, we account for underrepresented populations such as the urban educated middle class and peri-urban residents through Λ. This index is constructed using Principal Component Analysis (PCA) applied to several proxies, as detailed in Figure 3, with the first principal component - capturing 79 percent of the variance - retained for analysis. Details of the PCA are available in Supplementary Materials. The resulting component is normalized and adjusted using a target parameter $\beta = 12$, calibrated against Sorokin's values for the post-1980 period, to reflect real-value evolution over time. We introduce Λ to stimulate methodological debate regarding the construction of MMP and to contextualize the Yellow Vest protests within a long-term trend supported by relevant socioeconomic indicators.

$$\Lambda(t) = \beta \times \frac{PC_1(t) - min(PC_1(t))}{max(PC_1(t)) - min(PC_1(t))} = \beta \times \rho(t) \tag{5}$$

Multiple proxies related to living conditions were used to construct Λ. Data from the DOSE dataset (Wenz et al. 2023) were extended through inference back to 1950 and forward to 2023 using national GDP figures and linear extrapolation. This allowed the computation of an inter-regional inequality index, defined as the ratio of GDP per capita in the Paris region to the median regional GDP per capita. Additional data were sourced from the OECD, DREES for maternity ward numbers, extrapolate from 1960 to 1950 by the author, World Bank for hospital beds per cap (extrapolate to 1950 by the author from the world trend), the World Inequality Database (WID) for the net national wealth-to-income ratio, and CGEDD for average borrowing length. Λ is designed to capture long-term economic transformation in France, including its geographical expansion and associated inequalities.

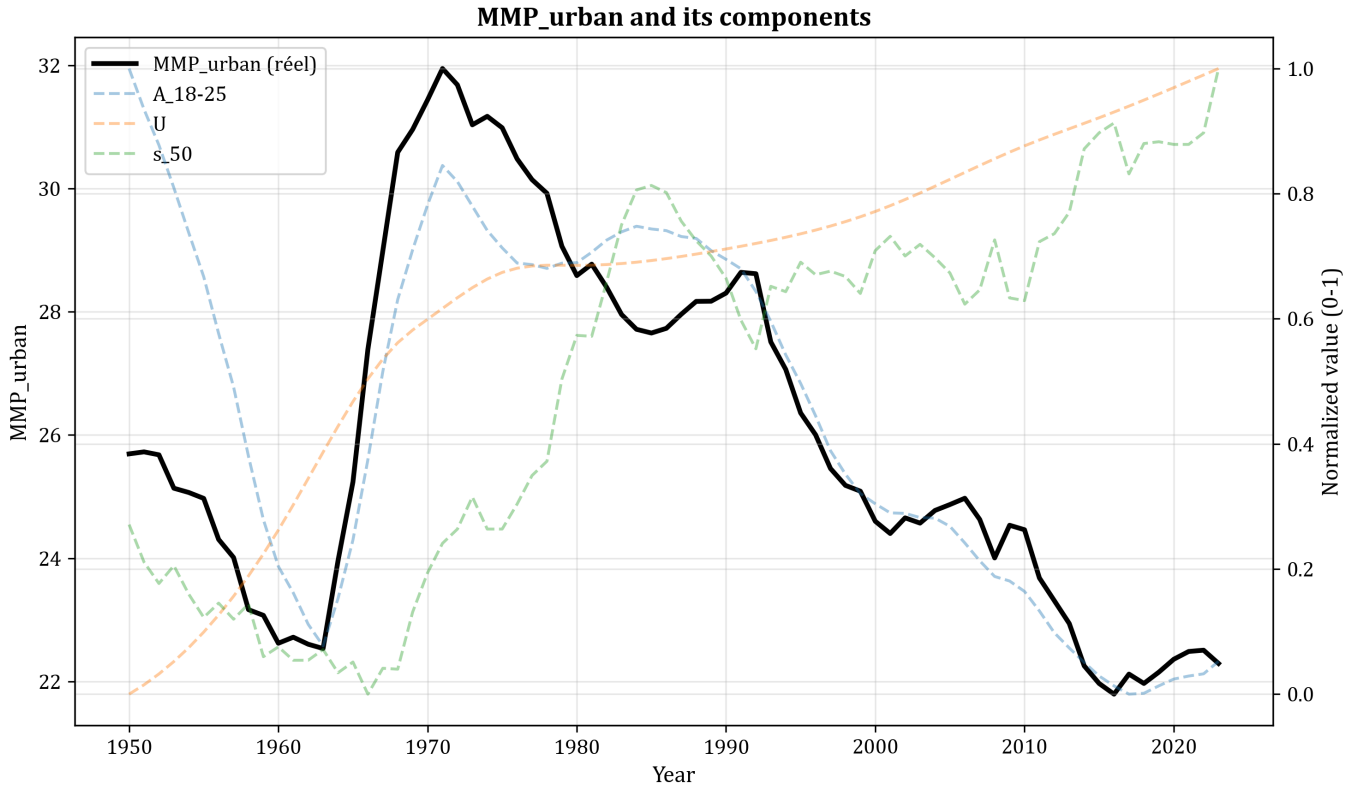

Figure 2: MMP urban with its components, normalized in the range (0-1).

2.2.2 Sorokin Index: Quantifying Political Instabilities

In order to validate our interpretation of Mass Mobilization Potential (MMP), we relate it to the occurrence of political instability. As a "potential," we expect the MMP to provide the envelope for its long-term variation.
Between 1950 and 2023, France experienced numerous episodes of political turmoil. However, the absence of standardized long-term datasets makes it difficult to measure instability in a systematic way. Defining and quantifying political instability remains a contested task, as its meaning varies widely depending on historical and geographic context—an issue illustrated by Shorter and Tilly's study of strikes in France between 1830 and 1960 (Shorter and Tilly 1974). Nonetheless, such events typically share two core features: their collective nature and their subversive challenge to established authority. For this reason, we adopt the Sorokin Index (Sorokin 1937), a composite indicator that aggregates multiple dimensions of political instability as a means of testing the validity of our MMP indicator. Although this form of aggregation imposes a certain equivalence between events with different organizational characteristics, it is justified within our structural-demographic framework.
The Sorokin Index evaluates each episode by scoring four dimensions on a standardized scale (0–5 or 0–100): duration, geographic scope, number and diversity of participants, and intensity of violence and political consequences. These scores are then combined using the geometric average to produce a single value of instability. The precise computational methodology is detailed in the Supplementary Materials.

This method enables systematic comparisons of political turbulence across time and space, making it especially well-suited for long-term historical analysis. In constructing the index for our study period, we have excluded events that occurred in the overseas departments (including Corsica), as well as those related to the Algerian War of Independence, such as the De Gaulle Putsch of 1958, the Generals' Putsch of 1961, the October 17, 1961 massacre, and the repression of the Rue Charonne protest on February 8, 1962. These events are associated with distinct historical dynamics that fall outside the explanatory scope of our structural-demographic approach.

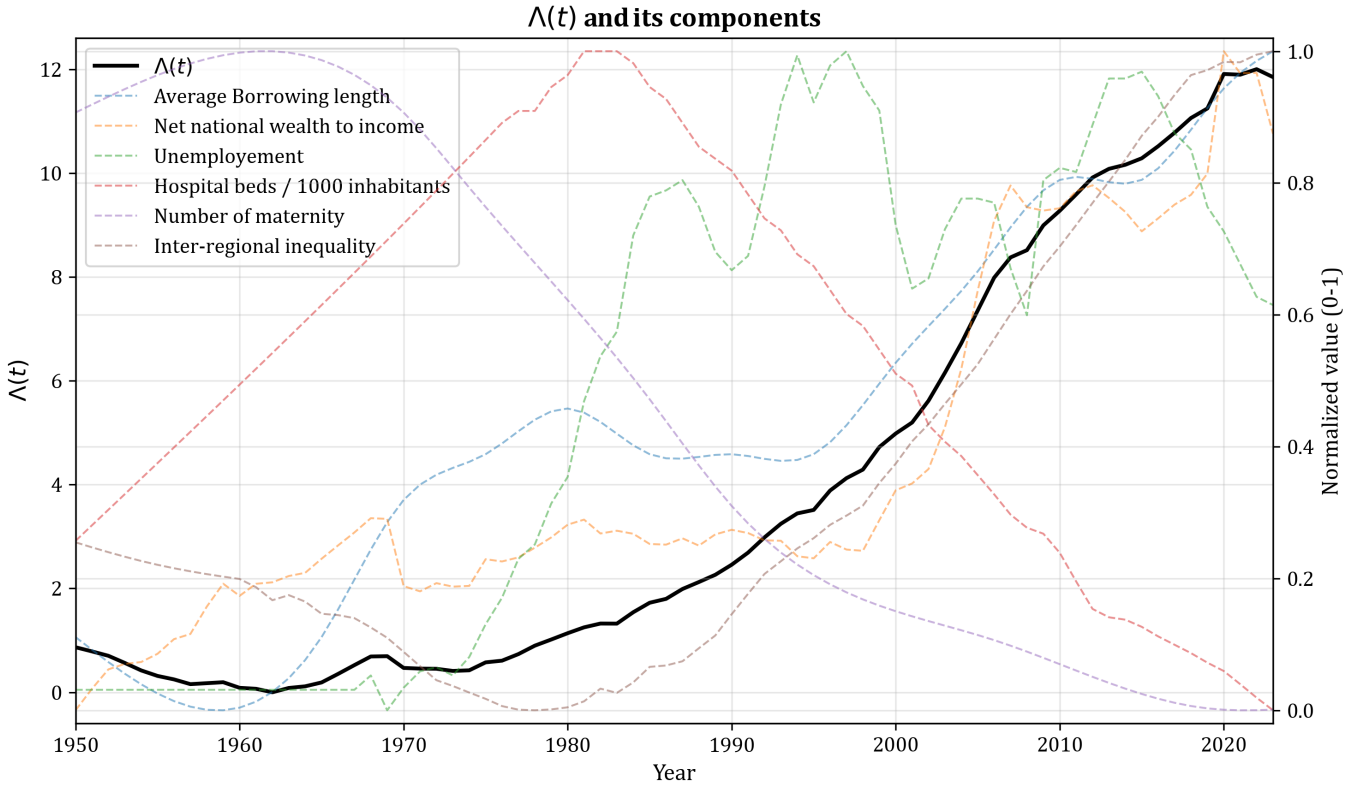

Figure 3: Λ computed using eq 5 and its components normalized in the range (0-1).

2.3 Estimating the Elites Mobilization Potential (EMP)

Estimating EMP requires assessing both the evolution of the number of elites and the resources on which they rely. (Turchin 2013) proposes computing EMP as follows :

$$EMP = \frac{e}{\epsilon} \tag{6}$$

Where e is the share of elites in the population and ϵ the share of elites' resources in the GDP. In this paper, we propose to estimate EMP from the growth of elite aspirants and the associated share of income in national income reported by the World Inequality Database. These estimations, however, require first defining what constitutes an elite.

2.3.1 Estimating the share of elites in the population (e)

Elite dynamics present unique challenges, owing to the inherently subjective and context-specific nature of "elites," which precludes a single, homogeneous definition across the literature (Genieys 2006). Elites in different societies draw their power from four principal sources: military or coercive force, economic wealth, administrative or political authority, and ideological or persuasive influence (Mann 2012). In most contemporary states, the ruling class comprises a blend of economic and administrative elites. In this respect, France occupies an intermediate position between the United States and China, hosting both powerful economic actors and highly influential administrative elites.

The corpus of scholarship on French elites has been notably rich since the 1950s, thanks in large part to the pioneering study by (Bourdieu 1989). Like the American Ivy League system, France's "Grandes Écoles" have long served as premier institutions for elite formation. Among the oldest and most prestigious are the École Normale Supérieure (ENS), École Polytechnique, École des Mines, Sciences Po Paris, HEC Paris, ESPCI, Télécom Paris, and ESSEC, joined more recently by the National Institute for Public Service (INSP, formerly ENA).

We approximate the population of elite aspirants in France by tracking the share of the most prestigious "Grandes Écoles" graduates in the total population. Following (Benveniste 2021), we restrict our definition to the ten most prestigious institutions — École Polytechnique, ENS Ulm, Sciences Po Paris, ESSEC, HEC Paris, Mines, Telecom, Ponts, ESCP and ESPCI. Using Benveniste's annual graduate counts and anchoring the total number of Grande École graduates at 30,000 in 1950, we compute their evolving proportion of the French adult population over 1950–2023. These estimates are expected to

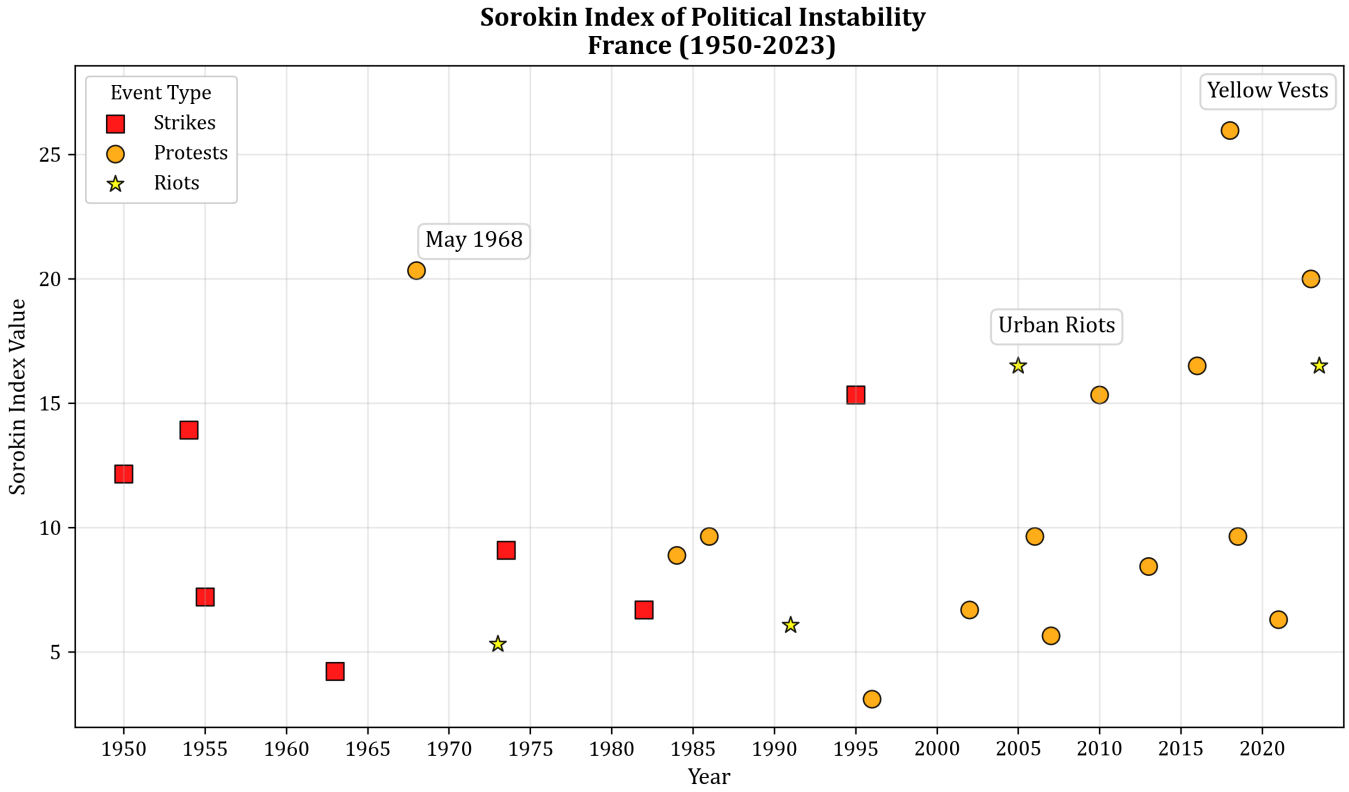

Figure 4: Sorokin index computed for political events related to metropolitan France.

reflect the main trend and order of magnitude related to the share of elite aspirants, rather than a strict measure, and should be interpreted as such. The relation between the number of graduate students per year and their share in the adult population is done using a model (Model 1) detailed in the Supplementary materials.

To capture the growing role of private and business schools since the 1950s, we also include graduates from private tertiary education. We obtain decennial student enrollment figures from the Ministry of Higher Education (MESR 2024) and infer enrollments for 1950 and 1960 from the number of business schools . While not all private education students are in business schools nor aspiring to reach the first centile of income, we believe, based on the number of schools reported by the DEPP (Hérault and Le Cosquer 2012), which evaluated the number of business schools at 44 in 1950, and around 330 today , that their increasing number mirrors the rise in business students and aspiring economic elites. Relying on decennial data, we fill the missing annual values with a cubic interpolation. We further compute the share of people who graduate from private tertiary education in the population using a model relying on a depletion parameter (d), relating the entering student and graduate students, a scaling parameter (a), relating the graduates from private tertiary education and this contribution to the population of elites, and a retirement length (r) accounting for the life expectancy after graduation. Details on this estimation are available, (Model 2) in the Supplementary materials.
We consider that only a small part of the graduates from private tertiary education are actually related to the elites, we fix this part as one-tenth (reflected in the parameter a). Then both types of elites are added and divided by the number of adults in the population to give the following estimations for the evolution of the share of elites in the population.

2.3.2 Estimating the share of incomes of the elites (ϵ)

Quantifying the supply of elite positions presents a significant methodological challenge. The structural shift toward a service-based economy has expanded the demand for highly educated workers, thereby increasing the stock of high-wage, high-prestige occupational roles. Concurrently, inequality within the top decile has intensified, the ratio between the wealth owned by 0.1 percent and the remainder of the top 10 percent has grown markedly in recent decades, a trend well-documented by the World Inequality Database and discussed in a subsequent section.

To operationalize the concept of "elite resources" defined as the material base over which aspirant elites compete, we

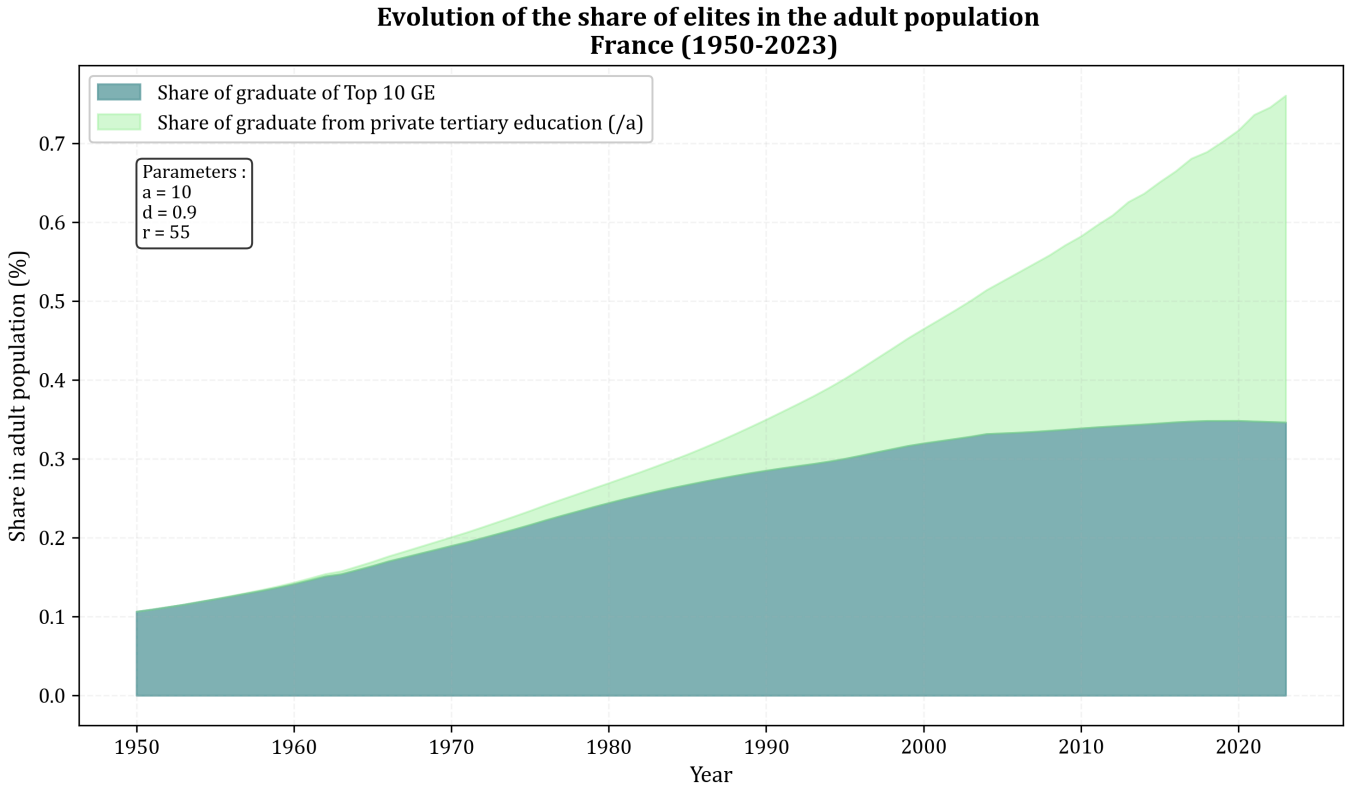

Figure 5: Estimation of the share of elites in the adult population.

employ the post-tax income share of the corresponding percentile of the population. For analytical consistency, the elite group is systematically defined as comprising the top e percent of the population, where e is our measure of elite share in the adult population. Consequently, the share of resources available to this group in a given year is given by the post-tax income share of the top $(100 - e)$th percentile. The procedure is synthetized in Figure 6.

Due to limitations in long-run historical income distribution data, a rounding procedure was applied. For elite shares (e)

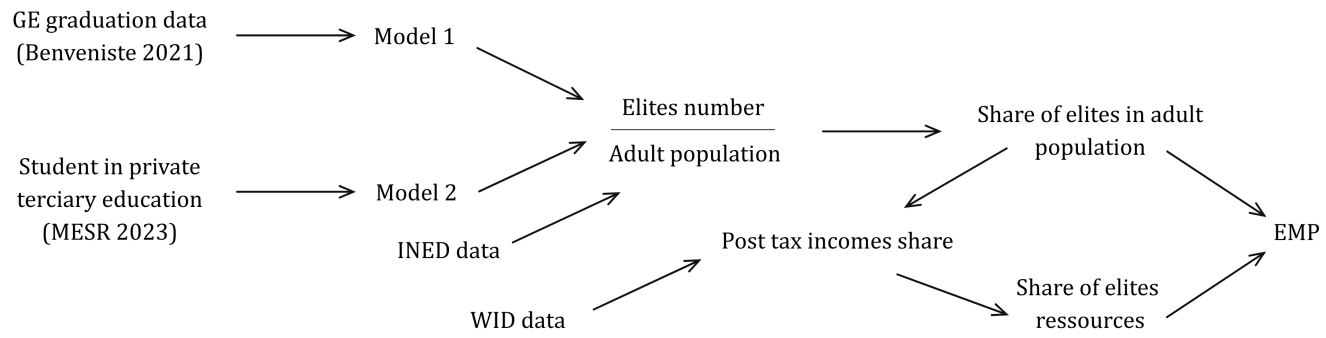

Figure 6: Diagram of the procedure used to estimate the share of resources held by the elites

estimated to be below 1 percent, the resource share was approximated by the income share of the closest corresponding decile (e.g., the top 1 percent for $e \approx 0.9$ percent). For elite shares above 1 percent, the resource share was matched to the nearest percentile (e.g., the top 2 percent for $e \approx 1.8$ percent). This method facilitates a consistent mapping between the estimated volume of elite aspirants and the resources they might contest, overcoming the limitation of analyzing only fixed thresholds like the top decile or centile. Furthermore, post-tax income data for the period 1950–1980 were reconstructed by applying the 1980 ratio of post-tax to pre-tax income shares to the earlier pre-tax data. This extrapolation is justified by

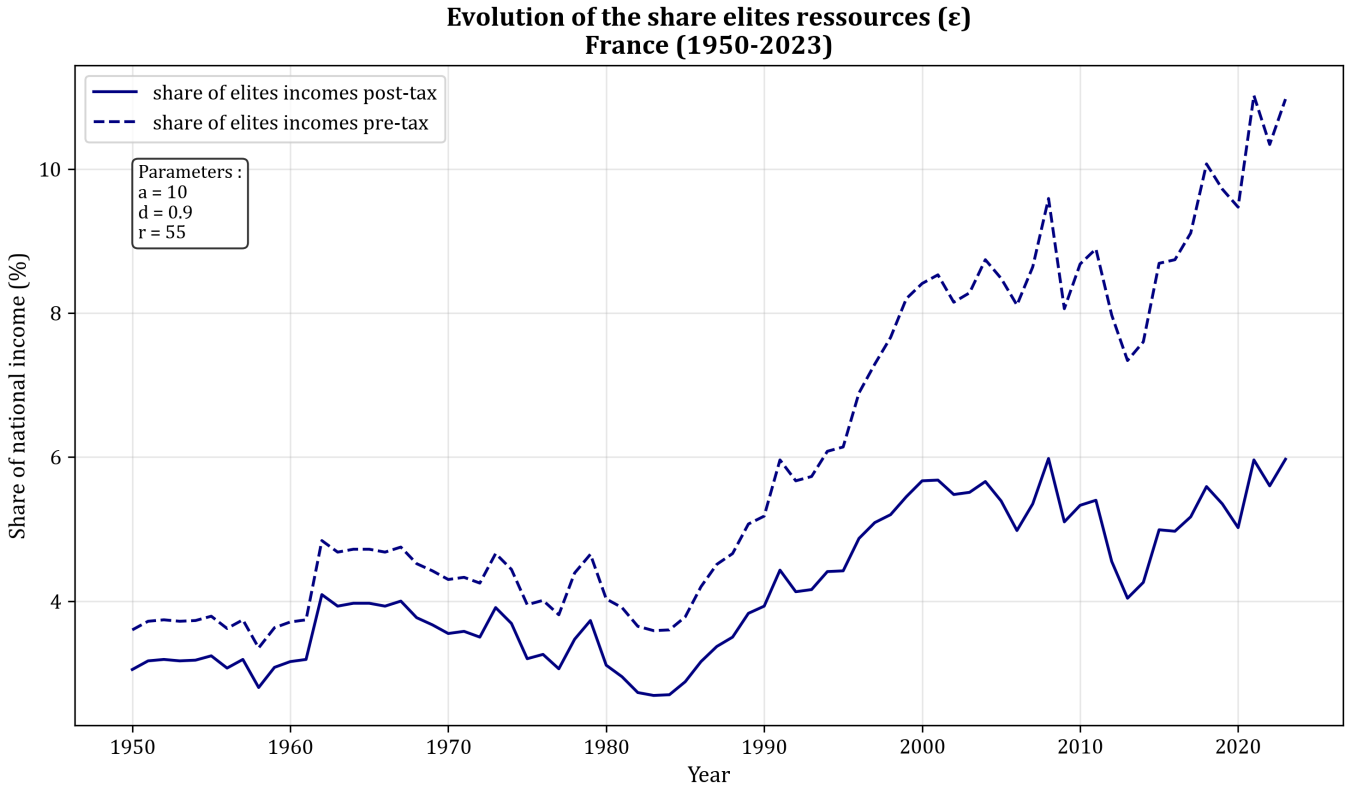

Figure 7: Comparison between the estimated pre-tax and post-tax elites ressources according to procedure detailed in Fig 6.

its negligible impact on the overarching trend and by the necessity of constructing a complete and consistent longitudinal dataset for analysis.

To validate the trend exhibited by EMP, we compare its trajectory with an empirical measure of elite competition, namely, the ratio of candidates to available seats in legislative elections, using candidate counts from (De Boissieu 2024) and seat totals from the National Assembly. Legislative elections serve as a particularly informative proxy for elite contestation for several reasons. Candidate data are consistently available from 1958 onward, the contested prize is clearly defined ; and any individual with sufficient social or financial capital, or party endorsement, may stand for election. While the emergence of electoral alliances (for example, in 2024) can temporarily reduce the number of candidates, such alliances do not alter the long-term upward trend in the subsequent two regimes.

2.4 Estimating State Fiscal Distress (SFD)

In contemporary France, the state plays a dominant socio-economic role. Central government expenditure rose from roughly 5 percent of GDP at the turn of the twentieth century to 10 percent by 1950, and now exceeds 25 percent. When one adds all public spending, including Sécurité Sociale and related welfare outlays, the share climbed from about 10 percent of GDP in 1900 to 30 percent by mid-century (De Villepin 1981) and approaches 57 percent today (Insee 2025). This expansion underscores the state and its institutions as major actors in the economic and social life of the nation.

As suggested by (Turchin 2013), we propose to construct State Fiscal Distress as the combination of both the debt-to-GDP ratio (D) and an indicator of public distrust $(1 - T)$.

$$SFD = D \times (1 - T) \tag{7}$$

We acknowledge that this indicator may carry different implications depending on the historical era and institutional context, and we address these nuances in our discussion of French debt sustainability in comparison to the US. Following Turchin's recommendation to include a legitimacy or trust component in assessments of state fragility (Turchin 2013), we

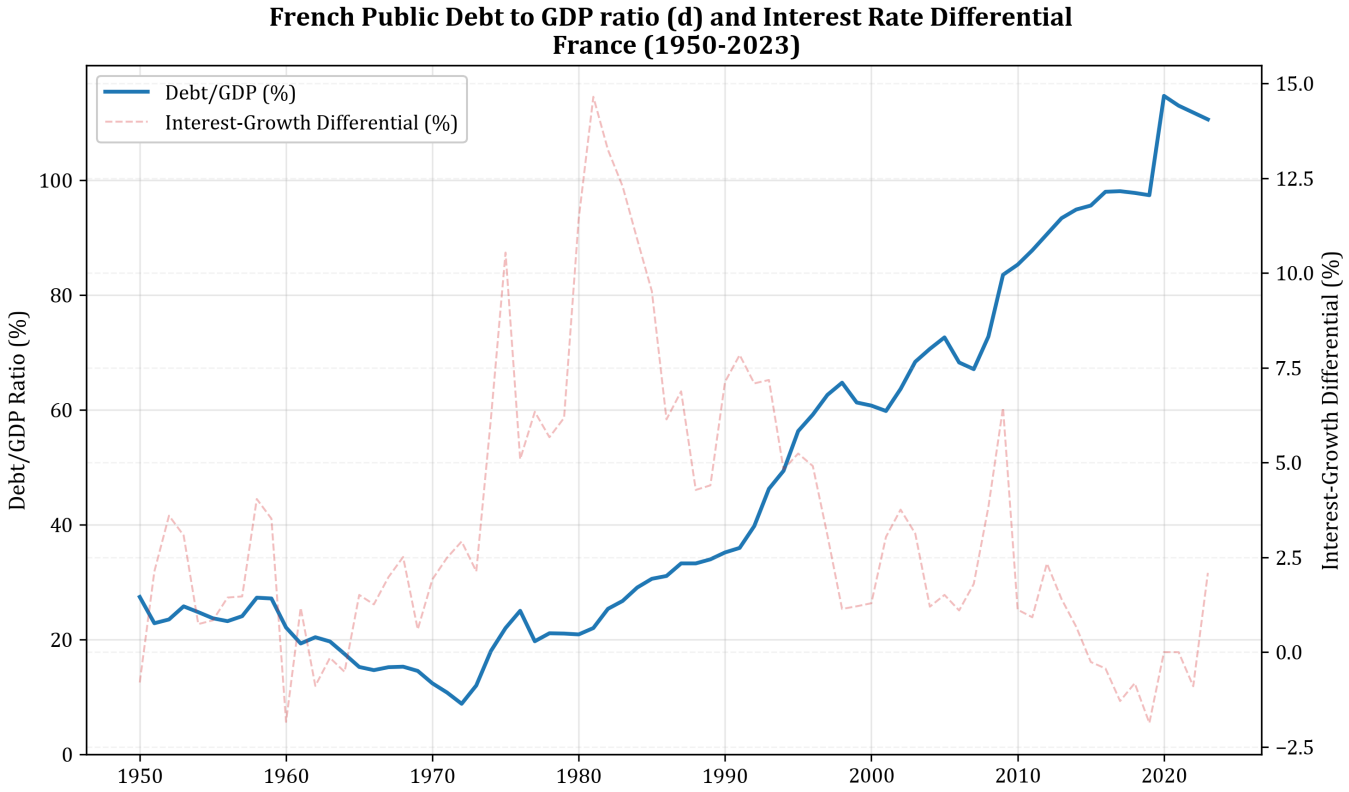

Figure 8: Debt to GDP ratio withe the evolution of long term interest rate accounting for a debt sustainability indicator (Clavères 2023).

augment the debt ratio with a behavioral proxy for public trust in the state apparatus.

Longitudinal public-trust surveys for France are unavailable before 2009, so we approximate trust via electoral participation. Voter turnout reflects citizens' willingness to engage with (and implicitly endorse) the political system. We compile turnout rates for four national-level contests: legislative, presidential (post-1962 only, as there were no direct presidential elections under the Fourth Republic and the election of 1958), departmental (treated as equivalent to the earlier cantonal polls), and municipal elections. Missing annual observations are filled by linear interpolation. For each year t, we compute the geometric average of the four series and divide it by 100 to estimate T(t), yielding a composite trust index. T(t) exhibits the same downward trend in recent decades documented by CEVIPOF surveys from 2009 (Chanvril and Jouffre Lafargue 2025).

$$T = (T_1 \times T_2 \times ...T_i)^{1/i} \tag{8}$$

3 Results

Our empirical analysis begins by analyzing the three core components of Structural-Demographic Theory (SDT) in France (1950–2023): Elite Mobilization Potential (EMP), State Fiscal Distress (SFD), and Mass Mobilization Potential (MMP). While following their own temporality, each metric reveals distinct phases of stability and stress, synthesized in the composite Political Stress Index (PSI). We present these findings incrementally to trace how France's socio-political landscape evolved from post-war cohesion to contemporary fragility.

3.1 Mass Mobilization Potential (MMP)

Post-war France underwent two major structural transformations that critically shaped its Mass Mobilization Potential (MMP). First, the baby boom generated a pronounced youth bulge, rising from approximately 10 percent in 1950 to a

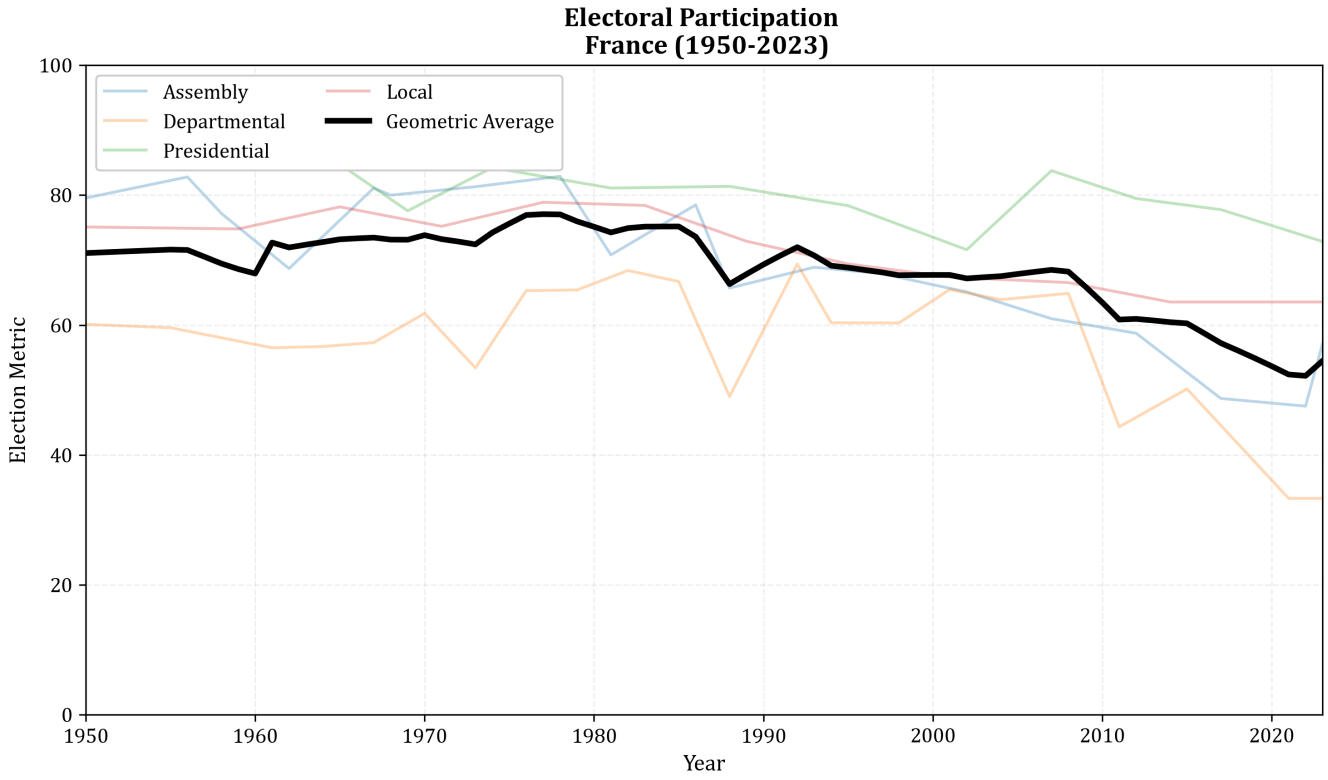

Figure 9: Evolution of the geometric average (eq 8) of electoral participation (T) along with its components (T_i).

peak of 13 percent by the mid-1970s, before declining to around 9 percent by 2000, a level that has persisted through 2023. Second, the country experienced rapid urbanization. The proportion of the population residing in municipalities classified as urban increased from 55 percent in 1950 to roughly 80 percent by 2023. This transformation, which was especially concentrated between the 1960s and 1980s, is robust to alternative definitions of urbanity; for instance, the share of the population living in agglomerations exceeding 100,000 inhabitants nearly doubled over this period (Cagé and Piketty 2023).
Concurrently, the income share accruing to the bottom 50 percent of the population rose modestly, from 27 percent in 1950 to approximately 31 percent by 1983, and has remained above 30 percent since. This trend, facilitated by redistributive policies, suggests a modest but sustained improvement in real wage conditions for the lower half of the income distribution.

The integration of these factors into a composite MMP index (constructed according to Equation 2 and 3) yields the time series plotted in Figure 11. The results reveal a marked increase in MMP from the 1950s, peaking in the early 1970s. This surge corresponds to the concurrent demographic momentum of the baby boom and accelerated urban growth. From the late 1960s onward, MMP declined as the baby boom cohort aged and urban migrations stabilized, while income inequality remained relatively constant. This downward trend was subsequently counteracted beginning in the 1980s by the rise of the Λ components, which captures the increased precariousness of various populations. A salient manifestation of these underlying pressures is the growing economic divergence between Paris and the rest of France, as captured by our inter-regional inequality metric. The gross regional product per capita of Île-de-France rose from approximately 150 percent of the national median in 1980 to nearly 200 percent by 2018 (Insee 2024). This widening core-periphery disparity, exacerbated by the decline of rural manufacturing and insufficient compensatory growth in the service sector as well as the deprivation of public services has reintroduced structural pressures conducive to mass mobilization.

The decomposition of the MMP index helps clarify the temporal alignment between these structural pressures and episodes of political instability. The peak in the urban component of MMP, driven by a large youth cohort and rural-urban migration in the late 1960s aligns closely with the May 1968 protests. Similarly, the rise in Λ during the 2010s provides an interpretive lens for understanding the emergence of the Yellow Vest movement, whose social base and geographical distribution correspond strongly to declining peri-urban and rural territories. Conversely, the temporary attenuation of

the MMP in the 1970s and early 1980s coincided with a period notably devoid of major mass unrest.

Taken together, these findings suggest that the Mass Mobilization Potential serves as a valuable diagnostic tool for assessing the structural preconditions of mass political mobilization. It provides a framework that not only identifies periods of heightened societal susceptibility to unrest but also offers insights into the likely form and geographical locus of such mobilization, as reflected in the historical record of political instability.

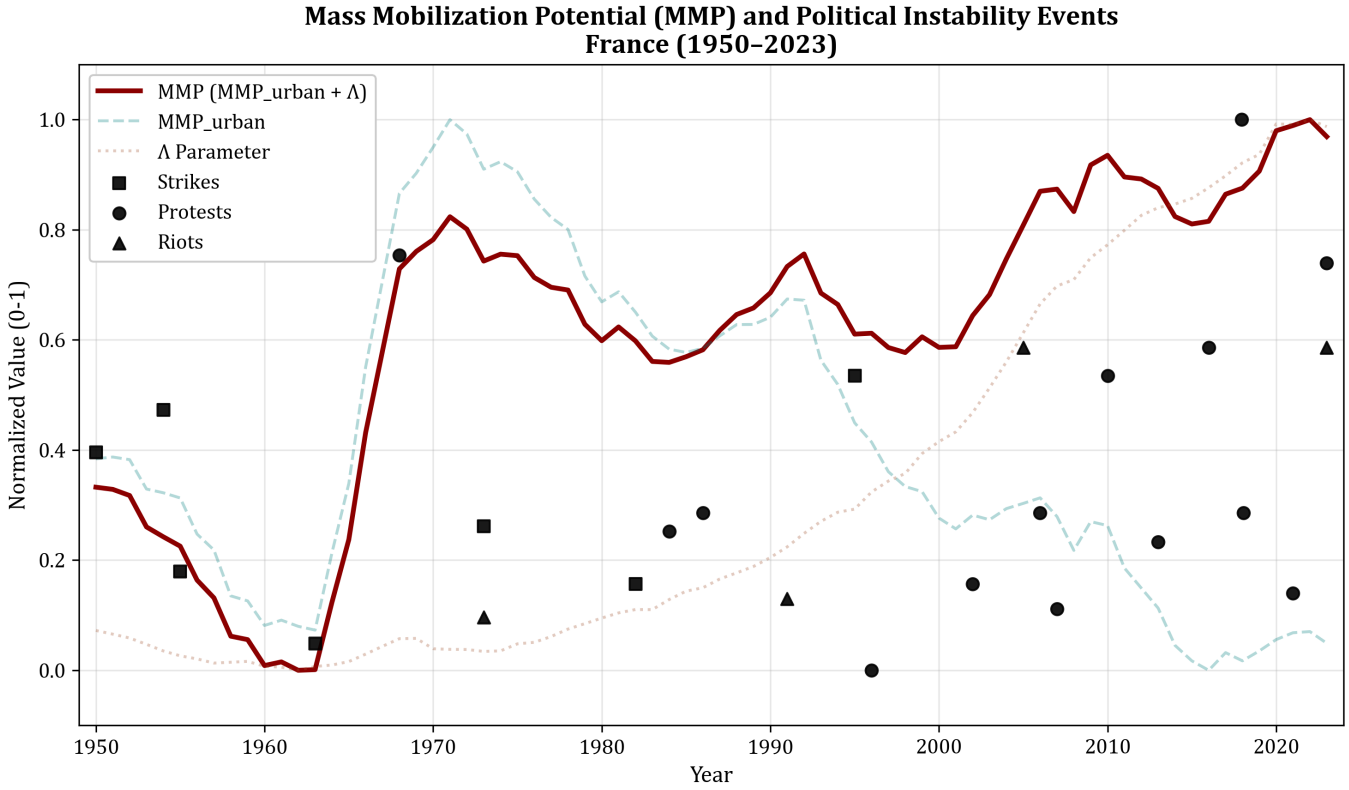

Figure 10: Mass Mobilization Potential (MMP) and political events (display with the normalized Sorokin index).

3.2 Elites Mobilization Potential (EMP)

The Elite Mobilization Potential (EMP) displays a sustained upward trajectory throughout the observed period, primarily driven by the growing share of aspirant elites in the population. This trend has been partially moderated by corresponding increases in the share of resources available to elites, yet it is punctuated by sharp fluctuations linked to economic and financial crises - most notably those of 1979 and 2008 - which precipitated collapses in capital. Over the period, the share of national income accruing to elites rose from 2 percent to 6.5 percent, while their demographic share declined slightly from 0.1 percent to 0.07 percent. The post-2008 phase is particularly marked by the paradoxical combination of a declining income share and a continued expansion in the number of elite aspirants, resulting in a noticeably steeper slope in the EMP curve. A key factor behind this dynamic is the rapid expansion of private higher education: by 2023, private institutions enrolled nearly 30 percent of all higher-education students (MESR 2024).

These results suggest that, while short-term variations in EMP are strongly influenced by fluctuations in elite income shares ε, the long-term upward trajectory is primarily driven by the sevenfold increase in the proportion of elite aspirants (e) within the population. In contrast, the inverse of the elite income share ($1/\epsilon$) has been "only" multiplied by a factor 3 between 1950 and 2023 (see Fig 7).
The normalized EMP indicator is shown in Figure 11, alongside its components and a proxy for electoral competition. Its long-term rise closely parallels the intensification of political fragmentation, as reflected in legislative elections. The mean number of candidates per seat increased from approximately four in the inaugural Fifth Republic elections of 1958 to more than ten by the 2010s, representing a two- to threefold increase between the pre-1990 and post-1990 periods. Although

the magnitude of this growth is smaller than that observed for EMP, both series display strikingly similar upward trajectories, suggesting a structural reconfiguration of the French political landscape around the turn of the millennium.

Given that EMP serves as a proxy for elite overproduction and competition, these two independent indicators converge toward the same long-term trend, with distinct phases of acceleration occurring around the 1990s and 2000s.

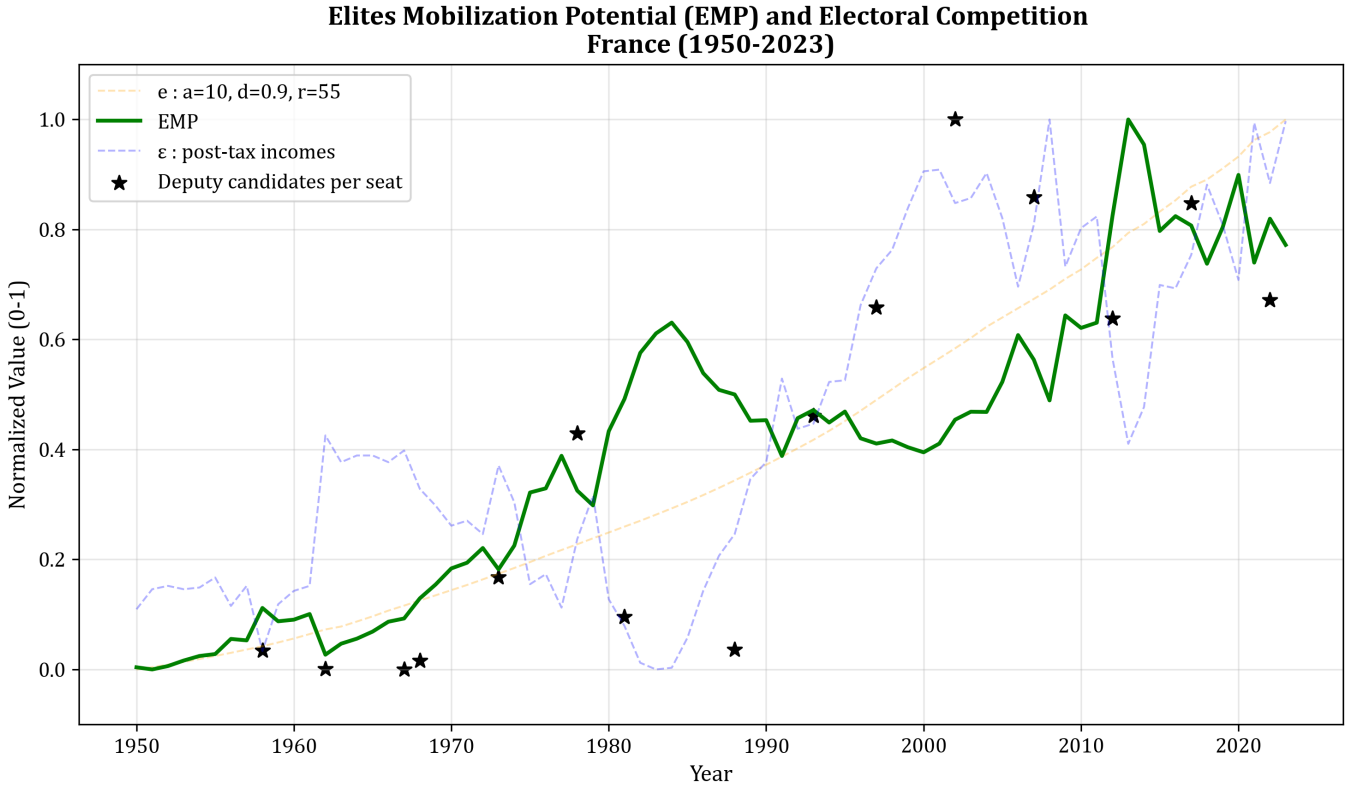

Figure 11: Elites Mobilization Potential (EMP) and its components, with the normalized number of deputy candidates per seat per election reported by (De Boissieu 2024).

3.3 State Fiscal Distress (SFD)

Figure 12 displays the State Fiscal Distress index for France over 1950–2023. During the Trente Glorieuses (roughly 1950–1973), SFD remained low and essentially flat, reflecting both high and stable public trust as proxied by electoral turnout, and a low, declining debt-to-GDP ratio. From 1980 onward, the debt-to-GDP ratio began a sustained rise, while overall electoral participation started to slip in the late 1980s and early 1990s. After 2010, this turnout decline became especially steep in departmental and legislative elections, whereas presidential participation fell more gradually.
Trust, as measured by combined election turnout, shows a gradual downward drift, with an accelerated drop since 2010. In contrast, the debt-to-GDP ratio climbs continuously, punctuated by sharp upticks following the 2008 financial crisis and the COVID-19 shock in 2020. The apparent reversal from 2021 is due to catch-up from the 2020 debt-to-GDP ratio, which was abnormally high due to reduced GDP and extraordinary debt. Similarly, exceptional abstention in the 2020 local elections biased distrust in 2020, while electoral participation has partially caught up, though still not to its previous level.

Overall, the combined effect of rising debt to gdp ratio D and eroding public trust $(1-T)$ yields a marked upward trajectory in SFD since the mid-1970s, reflecting growing expenses and lagging state revenues, alongside increasing institutional discontent from the population.

3.4 Political Stress Index (Ψ)

Combining the three previous indicators into the Political Stress Index (Ψ), using Equation 1, yields the results displayed in Figure 13.

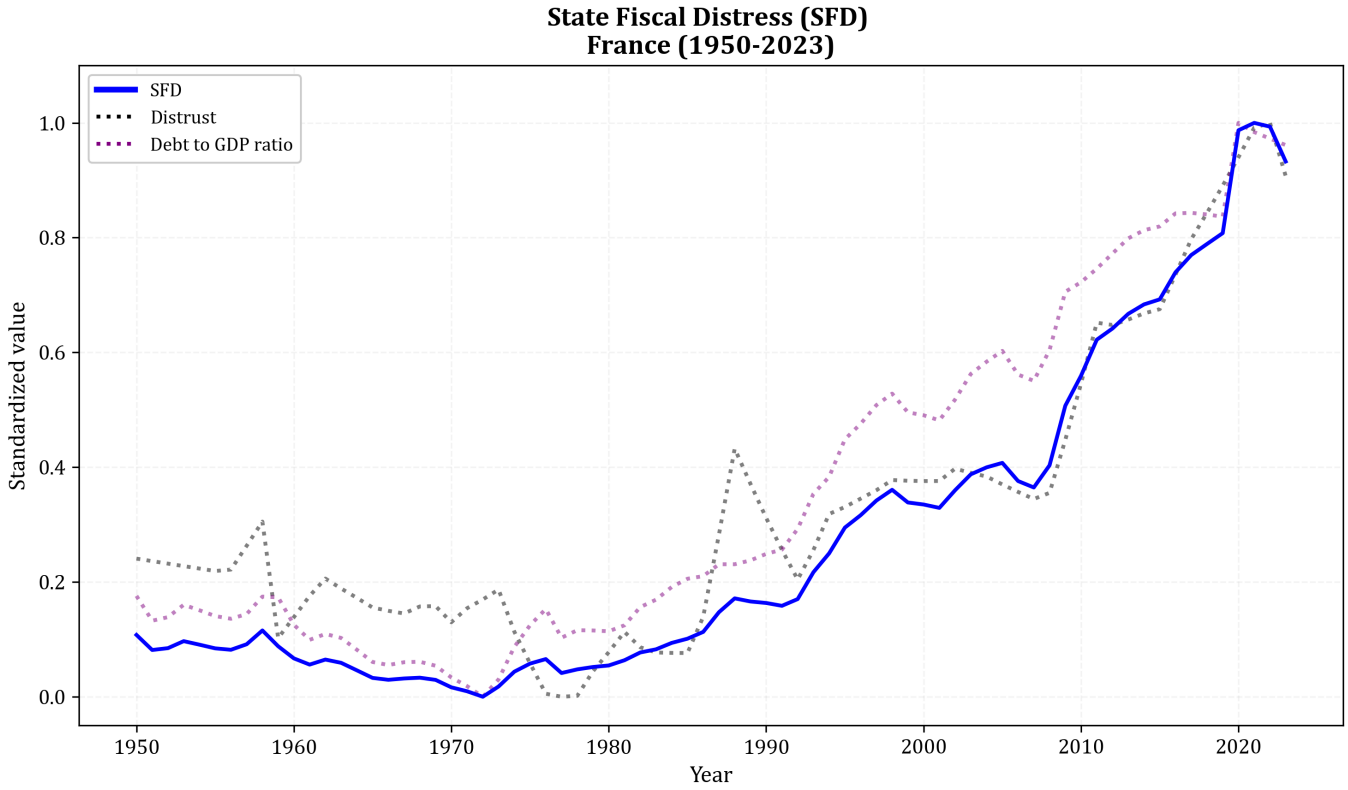

Figure 12: State Fiscal Distress (SFD) computed by combining Debt to GDP ratio and public distrust using eq 7.

Between 1950 and 1975, the Political Stress Index (Ψ) was primarily driven by elevated levels of Mass Mobilization Potential (MMP), a consequence of rapid urbanization and the demographic momentum of the post-war baby boom. However, this mounting structural pressure was substantially mitigated during the same period by comparatively low Elite Mobilization Pressure (EMP) and limited State Fiscal Distress (SFD). From the late 1980s onward, the index rose markedly. This increase was propelled first by a gradual climb in SFD, reflected in a rising public debt-to-GDP ratio, and a concurrent rise in EMP. The growth in EMP was shaped by the expansion of elite-producing institutions, including the proliferation and democratization of business schools from the 1970s and 1980s onward, alongside widening access to the most prestigious Grandes Écoles. The annual number of graduates from these institutions increased from approximately 2,000 to 3,000 between 1960 and 1980, a level that stabilized in subsequent decades (Benveniste 2021).

Concurrently, MMP resumed its upward trajectory, driven by an increase in the component Λ, which captures adverse structural socioeconomic transformations. These transformations manifested in widening territorial inequalities, a gradual diminution of living standards, and increasing difficulties in accessing property for younger cohorts. From 2010 onward, SFD began to accelerate sharply, a trend that mirrors the erosion of institutional trust following the 2008 global financial crisis. The compounded and synergistic rise of SFD and EMP drove Ψ to its highest historical levels, culminating in an unprecedented peak in the recent period. This upward trajectory currently shows no clear signs of reversal.

4 Discussion

Our results show that Structural-Demographic Theory provides a framework for understanding how long-term processes may shape various aspects of contemporary society. While recent trends are clearly visible, understanding exactly what SDT reveals about France's recent history, and how the theory has been adapted to the current case, requires further discussion.

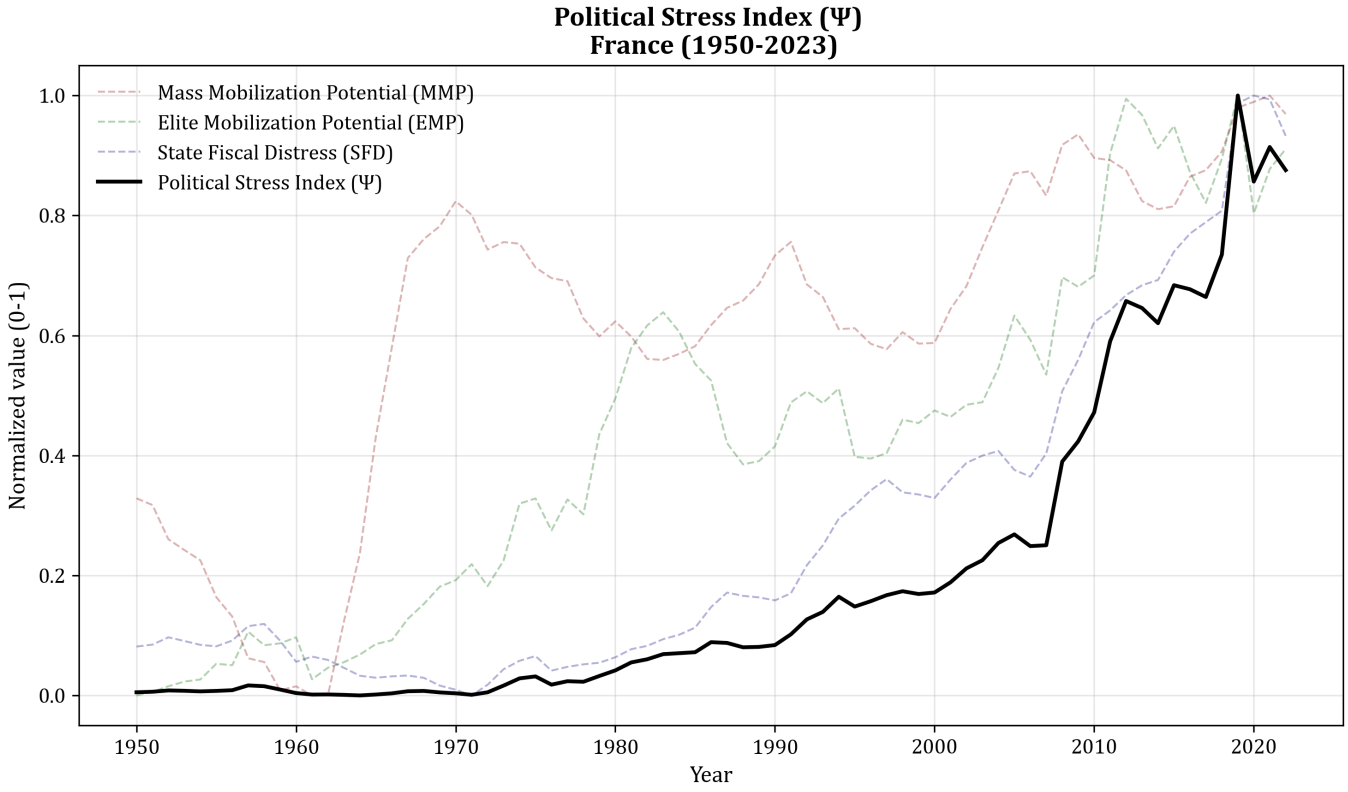

Figure 13: Combination of MMP,EMP and SFD into the the Political Stress Index (Ψ) using eq 1.

4.1 What does SDT teach us about France ?

4.1.1 MMP

The Mass Mobilization Potential, which combines standard urban demographic components with a corrective parameter Λ designed to capture diverse socioeconomic grievances, offers a framework for interpreting political events as manifestations of long-term structural processes, rather than isolated incidents. While the urban component aligns with established definitions in the literature, it fails to account for key episodes of instability since 2000. This limitation arises from the inability of aggregate inequality indicators to reflect the underlying issues faced by various population segments. The introduction of Λ helps address these gaps, allowing the MMP to better align with recorded instances of instability. Although not without flaws, Λ represents a necessary compromise, balancing the need to capture complex, long-term trends with the constraints of historical data availability.

This methodological approach reveals a robust general trend. While it may not fully reflect the situation of every subpopulation, it effectively captures the overarching structural trajectory of mobilization potential. For example, the pre-tax income share of the bottom 50 percent rose from around 20 percent to 30 percent between 1950 and 1983, remaining stable at that level through 2023. The middle 40 percent has maintained a relatively constant share (slightly lower post-tax), with redistributive policies helping to mitigate declines in the lowest income brackets. At the same time, Λ highlights specific pressures on segments of the middle class, particularly the educated urban middle class, whose aspirations are increasingly constrained by rising barriers to homeownership. This is exemplified by the growing average borrowing period required for first-time property acquisition, coinciding with the increasing economic weight of wealth relative to labor income. This trend deepens the divide between an ”income-based” middle class and a ”property-owning” middle class.

Thus, we argue that the MMP remains a valid proxy for capturing long-term structural dynamics, even though further refinements could help identify high-risk populations more precisely and facilitate more targeted policy responses. While imperfect, the MMP effectively traces long-term shifts in mobilization potential and outlines the structural ”envelope” of political instability, as reflected in the Sorokin Index. The primary contribution of the MMP index is its ability to reframe the chronology of post-war instability. It reveals that mid-century unrest was largely driven by the interaction of rapid

urbanization and generational turnover (the youth bulge). In contrast, contemporary conflicts present a different profile. First, they occur in a unique demographic context: the proportion of youth is historically low, while the proportion of older individuals is historically high. Second, internal geographic mobility is limited, and inequalities have become increasingly multidimensional. By integrating our Instability Index with the MMP, we contend that current instabilities are less akin to the generational and urban-centered protests of May 1968, and more akin to the mobilization of diverse populations with fragmented interests, as seen in recent movements such as the Yellow Vests and the Nahel riots.

4.1.2 EMP

In our estimation of Elite Mobilization Potential (EMP), we argued that its primary driver is the expansion of private tertiary education. This dynamic draws attention to the growing competition within the private economic sector. Studies have shown that an increasing share of elites trained in public institutions now enter the private sector early in their careers (Delespierre, Dudouet, and Joly 2022) (Rouban 2010), transforming it into an increasingly contested space. In this environment, a broad cohort of aspirants competes with established elites who benefit from prestigious educational backgrounds (Bauer and Bertin-Mourot 1987) and continue to dominate the most coveted positions (Dudouet and Joly 2010). This competition for top positions is further intensified by the rapid growth of economic inequality within the top 1 percent. Within this group, the share of the 1–0.001 percent has declined, partly due to taxation, while the wealthiest 0.001 percent have seen their share increase fourfold since 1950. As a result, the income share of the broader 1 percent has decreased from 30 percent, as shown in Fig 14, reflecting a growing internal polarization among elites.

This increasing economic competition parallels trends in political competition, particularly in legislative elections, as demonstrated by our measure of the rising number of candidates per seat in the National Assembly. Increased electoral competition can be understood as the result of two processes: (1) the generalization of higher education and the expansion of intermediary professions and executives, which provide the cultural, economic, and social capital needed to participate; and (2) the diversification of the population driven by the transition to a service economy, combined with declining representativity, illustrated by the convergence of the center-left and center-right (Chevallier 1997)(Eymeri-Douzans, Bioy, and Mouton 2015). These trends created new political opportunities and culminated in the 2017 election of Emmanuel Macron, accompanied by strong political turnover in Parliament.

Our findings and interpretation of rising Elite Mobilization Potential align with the sociopolitical divide described by (Piketty 2021) between a "merchant right" and a "Brahmin left." The former is composed of economic elites who advocate for market expansion and reduced state intervention while the latter includes highly educated elites with more limited economic capital, primarily positioned in the public or cultural sectors and committed to defending public services. In their recent work in electoral sociology (Cagé and Piketty 2023) show how evolving political coalitions are shaped by the recomposition of social groups (graduates, property owners, rural and urban populations) and how these shifts contribute to increasing polarization. Their central argument is that French political life alternates between bipolar and tripolar configurations, structured by the intersection of territorial and economic divides. From a structural-demographic standpoint, these patterns reflect deeper transformations in the social ecology of political engagementt - that is, in the institutional and economic conditions that shape individual and collective political behavior.

However, while (Cagé and Piketty 2023) interpret political tripartition as inherently unstable and transitional, a structural-demographic perspective suggests that such a configuration may prove more enduring. Its institutional expression may evolve over time, but the underlying social fragmentation driven by long-term demographic shifts (differentiated access to education, and unequal integration into labor markets) is likely to persist. Unless political institutions are restructured to accommodate the growing diversity of subsistence conditions and status aspirations, these divergent interests will remain misaligned.
The interpretation of EMP thus points to a general decline in elite cohesion, which both reflects and reinforces growing competition within elite strata. In this fragmented context, multiple sociopolitical trajectories can be formulated, and tested through long-term data from electoral and political sociology. One hypothesis interprets the intensification of private-sector competition as reinforcing the divide between merchant right and Brahmin left. The former politically strengthened by its alignment with market logics, the latter emerging in resistance to the liberalization of the public sphere. Another hypothesis suggests a possible porosity between overproduced private-sector elites and the far right, while the radicalization of segments of the Brahmin left could be understood as a reactive dynamic to this realignment.

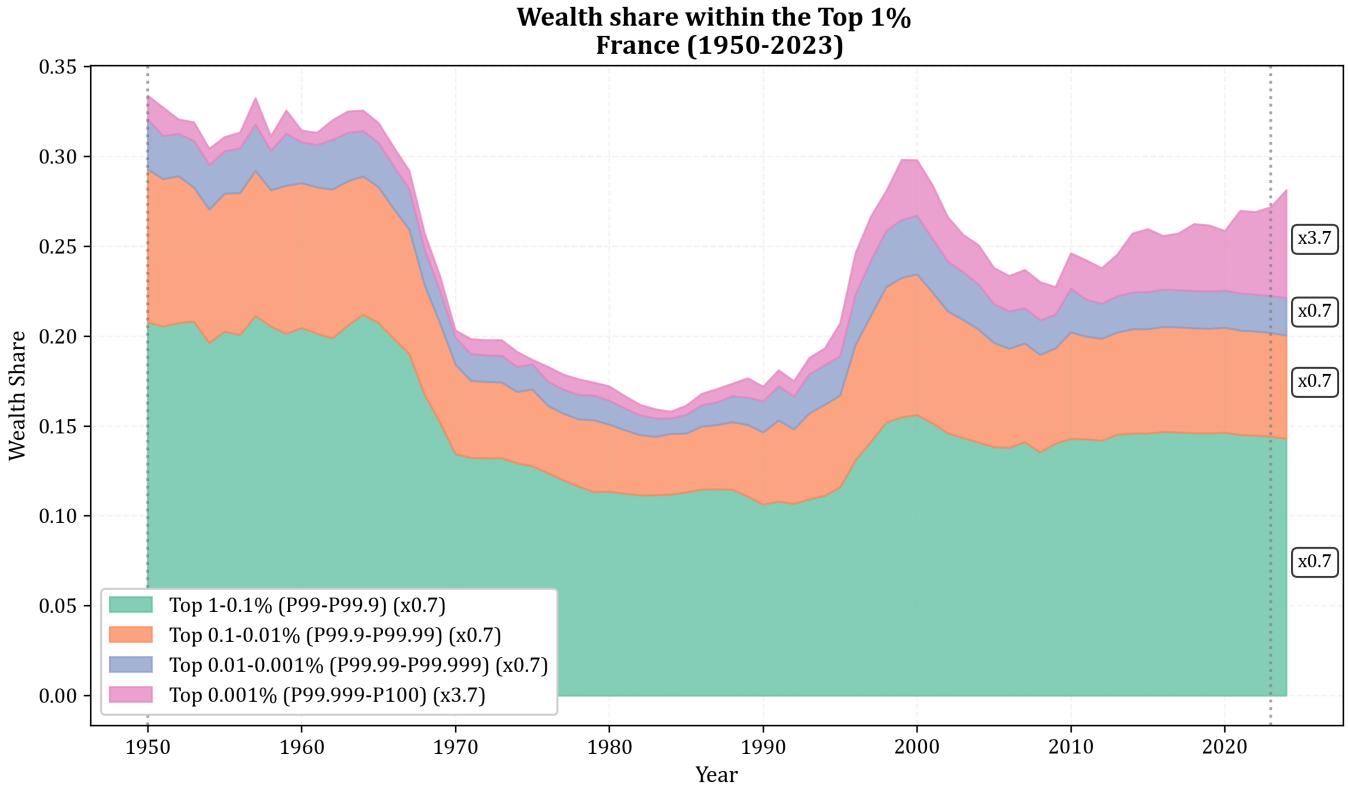

Figure 14: Wealth inequality inside the top 1 percent, from the data of the World Inequality Database.

4.1.3 SFD

The French state, due to its size, finds itself in a configuration where it faces increasing expenditures and variable revenues depending on the economic situation. We have seen that State Fiscal Distress (SFD) is characterized by rising debt and decreasing trust in institutions. This debt is multifaceted, driven by a persistent deficit of 1 to 3 percent of GDP, with demographic changes playing a significant role (DREES 2023). The population is aging, which has led to an increase in pension expenditures from 3 percent to 14 percent of GDP, while public health spending now accounts for 10 percent of GDP. Meanwhile, public revenues have slowed, and other expenses have increased, notably corporate subsidies, which grew fifteenfold from 1974 to 2019 (Abdelsalam et al. 2022), reaching 5 to 9 percent of GDP, depending on the definition and scope (Rietmann and Gay 2025), including social contribution exemptions which alone have an estimated net cost of 50 billion euros, approximately 1.5 percent of GDP as reported by the General Inspection of Finance(Bozio and Wasmer 2024). From a structural-demographic perspective, this phenomenon can be understood as an increasing reliance on the private sector for public resources, exacerbated by growing competition among elites in a private sector marked by variable economic dynamism.

These diagnostics lead us to sketch the portrait of the State as a Condensator in structural-demographic terms, accumulating demographic pressures through population aging, and on the other hand, elites' massive shift to the private sector, manifested in the growth tax exemptions and public subsidies to businesses. Meanwhile, the increasing distrust and the political polarization of elites obstructs the legislative process, making it increasingly difficult to generate new revenues or reduce expenditures.

4.1.4 Political Stress Index (Ψ)

Previous works have generally related the Political Stress Index (Ψ) to political instability. Here, we propose instead to relate MMP and understand PSI as a proxy for the likelihood of significant institutional changes, correlating with the global maximum of the Sorokin Index rather than its local maxima as depicted for the French Revolution and English Civil War in Fig 1. However, deciding on the period for making such an assessment seems arbitrary. Existing studies suggest a time window of 150 to 200 years, related to the secular cycles described by (Turchin and Nefedov 2009).

Thus, while MMP informs us about the occurrence of popular mobilizations, EMP and SFD provide us with information about the capacity of institutions to turn these mobilizations into gradual reform rather than violent institutional changes. Therefore, an increasing Ψ does not solely indicate an increasing occurrence of conflict, but that these conflicts may lead to major institutional reform or, in extreme cases, state breakdown.

France thus appears to be on a perilous path, constrained by increased elite factionalism, state fiscal and political distress, and an heterogenous population exposed to multiple risks with the existing institutions failing to either provide subsistence or the means to fulfill the aspirations of these populations.
Interpreted through the lens of SDT, the recent period constitutes an inverse of the post-war era. The post-war period was characterized by high mobilization potential (MMP) but was stabilized by a cohesive elite and a fiscally robust state. In contrast, the present period is marked by a high MMP driven by different structural factors, yet it is now coupled with a state experiencing significant fiscal distress and a highly fragmented elite, creating conditions favoring structural changes.

At this point, it is important to emphasize that the three assessed indexes are not independent, but rather measures of different aspects of a systemic crisis, which are synthesized in the PSI indicator. This interdependence makes managing a solution difficult because, in the short term, most actions aimed at reducing MMP either result in an increase in SFD or EMP. Similarly, reducing EMP by cutting taxation would undermine state finances, thus increasing SFD, while reducing SFD primarily relies on reducing the deficit while keeping interest rates low. This requires either higher revenues or lower expenses, both of which likely resulting in an increase in EMP or MMP. Further quantitative inquiry into the relationships between these variables is necessary to extend the analysis.

4.2 What does France teach us about SDT ?

The case of France is particularly relevant to such an analysis. First, France boasts long-standing and robust institutions that are dedicated to collecting data on various subjects. Second, few countries have elites as extensively studied as the French elite, with a vast body of literature allowing us to understand how and to what extent the dynamics predicted by the theory manifest. Third, France has had a very strong state since the post-war period; for example, the number of public sector workers increased from 90,000 in 1950 to 5.5 million in 2023, making it a unique case study. Finally, structural-demographic studies on long periods, spanning from 1200 to 1850, provide a broader historical context in which contemporary situations can be placed.

4.2.1 A Quick Comparison with 18th-Century France and Contemporary the USA

In his original work (Goldstone 1991), proposed using Structural-Demographic Theory rather than classical ideological or Marxist frameworks to explain the French Revolution. Unlike his earlier study of England (1500–1650), he emphasized the importance of rural dynamics in France, arguing that ecological and demographic shifts played a key role in the unfolding crisis. Early in the century, population growth and inflation enabled upward mobility, allowing the urban bourgeoisie to access nobility. From 1750 onward, however, mobility declined, competition for royal offices intensified, and economic distress deepened—especially in rural areas where the sword nobility depended on land revenues and grain prices for their status. This tension was exacerbated by a tax system full of exemptions that disproportionately burdened agriculture, already lagging behind industry and trade. Within the First Estate, a similar divide emerged as the curés, tied to local rural economies, increasingly contested the privileges of abbots and cardinals, who were often noble and detached from economic realities. These fractures contributed to a growing cleavage between urban and rural elites across the first and second Estates, culminating in 1789 when the Estates-General split, and the Third Estate asserted itself against a divided elite order.

The differing structural-demographic analyses of 18th-century France and 17th-century England provide a useful analogy between the U.S. case and the present one. While Turchin treated the United States as an aggregate population, France appears to require a more disaggregated approach for the contemporary period, much like the method applied to the 18th century. Understanding the multi-dimensional dynamics behind the MMP components is essential, and the following questions are particularly relevant: Where was the urbanization wave most salient, and what were the needs of the incoming populations? How is the age pyramid distributed across different population segments ? What are the various dimensions of inequality that must be taken into account ?
Examples include the graduate urban middle class aspiring to homeownership but facing rising real estate prices (Frigit 2025) the rural middle class anchored in declining regions where access to essential public services has become more difficult, as evidenced by growing territorial inequalities in education (Flachère and Frénois 2022) and the declining number of maternity facilities (DREES 2022), while also facing increased vulnerability to fuel prices due to longer commuting

distances (Chaumeron and Lécroart 2023). Another example is the suburban population, which includes a larger share of youth (Injep 2012) and is more heavily affected by unemployment and part-time work (ONPV 2018). All of these contribute to the formation of urban zones characterized by high population density, low living standards, and a pronounced youth bulge, despite their limited visibility in national-level indicators.We attempted to capture these various dynamics in our Λ component, but further work will be necessary to construct a more systematic and comprehensive analysis.

4.2.2 The State in France and U.S structural-Demograhic analysis

France and the United States differ most visibly in the role played by the state within the socio-economic sphere, particularly in its capacity to manage rising public debt. In his critique of Turchin's analysis of the United States, Georgescu (Georgescu 2023) argues that the debt-to-GDP ratio is a weak indicator of fiscal distress in the U.S. context, largely due to its monetary sovereignty. This observation does not apply to France, where a substantial portion of public debt is held by foreign creditors, and fiscal policy is constrained by the institutional framework of the European Union. This challenge is further compounded by a recently positive interest–debt differential, coinciding with historically high debt levels (Clavères 2023). Moreover, unlike the United States, France no longer benefits from the institutional opacity that once facilitated debt management (Quennouëlle-Corre 2022).

These constraints reflect deeper structural differences. In 2023, French public spending reached 57 percent of GDP (Insee 2025), with social expenditures rising from 10 percent in 1950 to 30 percent in 2019. By contrast, U.S. social spending increased from 6 percent to 18 percent over the same period - also partly driven by demographic shifts (Congress 2015) - indicating a more limited redistributive scope. This divergence is mirrored in inequality trends: data from the World Inequality Database show that since 1980, post-tax inequality has remained significantly more contained in France, underscoring the state's role in mitigating disparities. This is reflected in our Mass Mobilization Potential (MMP) indicator, which incorporates not only income inequality but also access to essential public goods. While redistribution helps contain MMP, it may simultaneously amplify Elite Mobilization Potential (EMP) by reducing the pool of resources available to elites. Whether these opposing effects offset each other within the Political Stress Index (PSI) remains an open question for future research.

A further point of divergence lies in labor governance. Since the 1980s, France has adopted a more ambivalent regulatory stance, yet labor and wage protections remain considerably stronger than in the United States (Marchand and Minni 2020). These regulations structure capital–labor relations and indirectly shape MMP. However, labor laws are enacted through parliamentary processes increasingly shaped by political polarization and elite competition. As such, they are themselves embedded in the broader pressures identified by structural-demographic theory.

4.2.3 Elite Dynamics and conflicts

A distinct but closely related contrast between France and the United States lies in the configuration of their respective elites. Compared to their American counterparts, French economic elites exert less direct political influence, owing in part to institutional constraints such as stricter campaign finance regulation (Cagé 2019). While informal channels of influence persist, this limitation increases elites' political dependence on electoral alignments. The socioeconomic transformations of the postwar era, coupled with the decline of the traditional left–right cleavage and the proliferation of political parties since the 1990s, reflect this shift. These developments underscore the need to examine elites not only as economic actors but also as political agents navigating an increasingly fragmented institutional landscape.

However, the relationship between elite overproduction and political factionalism is far from mechanical. As the literature on French elites shows, the fragmentation of the party system preceded the most recent wave of elite overproduction. The proliferation of political parties since the 1990s cannot be viewed merely as a response to surplus aspirants; rather, it should be seen as a reflection of broader socio-economic and political transformations—particularly changes in labor market structures (Marchand 2010) and deepening divisions over European integration, as exemplified by the referenda of 1992 and 2005 (Cagé and Piketty 2023).

Elite sociology reminds us that conflict and rivalry are not solely the result of overproduction, but rather intrinsic features of elite interaction (Darviche, Genieys, and Hassenteufel 2023) (Georgiou 2018) (Lebaron 2016). It would therefore be more accurate to view overproduction as laying the groundwork and acting as an indirect cause of elite conflict by creating new sources of tension or by exacerbating existing ones.
These considerations highlight the need to situate elite overproduction within specific historical and institutional contexts.

To account for the link between overproduction, conflict, and polarization, we propose an alternative explanation grounded in sociology: the emergence of counter-elites as a structural outcome of elite heterogeneity and changing social context, rather than merely a psychological response to frustrated ambitions.

4.2.4 An alternative explanation to the rise of counter-elites

Turchin's account of counter-elite emergence emphasizes the psychological frustration of elite aspirants who are blocked from advancement. While this framework may be heuristically useful, it risks oversimplifying the issue. We suggest an alternative sociological interpretation, drawn from theories of deviance and collective action. In the French context, it appears more accurate to view elite overproduction not merely as a source of psychological resentment but as a driver of increasing heterogeneity within the elite class. This heterogeneity is manifested by a pluralization of aspirations, livelihoods, and worldviews, which reconfigures existing conflicts and generates new forms of political contention that existing institutions struggle to absorb or resolve.

The ecological approach embedded in Structural-Demographic Theory (SDT) aligns closely with John Dewey's theory of inquiry (Dewey 1938), which suggests that emergent problem situations lead to the formation of "communities of inquiry" that collectively reassess their beliefs through dynamic interaction with their environment. In the context of SDT, structural-demographic stress can create fertile ground for such inquiries, sparking the reconstitution of social groups and belief systems. These emerging groups are often driven not merely by frustrated ambition but by ideologically distinct views, positioning them to challenge the established order. In this sense, the heightened levels of Ψ computed by (Goldstone 1991) signal opportunities for ideological entrepreneurs to introduce new or repurposed ideologies, thus mobilizing elites and the public against the status quo.

4.3 Perspectives

4.3.1 Taking the best of both world

To enhance our understanding of potentials described by the theory, we must develop more suitable tools to address their multi-dimensional nature. While the availability of additional data and a greater variety of case studies certainly enriches the analysis, it is unlikely to substitute the need for theoretical advancements. The complexity of the forces shaping MMP requires both deeper theoretical frameworks and more precise empirical tools that can capture the interconnectedness of social, economic, and political dynamics over time.
Moreover, the challenge lies in creating a common epistemological framework that enables better articulation between quantitative and qualitative tools. The quantitative approach offers the power of synthesis and, potentially, deductive reasoning, allowing us to observe broad trends and establish general patterns. However, the qualitative approach provides the necessary flexibility to explore the open spaces where socio-historical processes unfold, offering a more nuanced understanding of the specific contexts in which these processes take place. By combining both approaches, we can leverage the strengths of each: the rigor and predictive power of quantitative analysis, alongside the depth and contextual sensitivity of qualitative insights.

4.3.2 Toward new methodological opportunities

From a methodological standpoint, combining elite sociology with public policy sociology through a programmatic approach (Genieys and Hassenteufel 2012) presents promising avenues for advancing the empirical study of elite mobilization. These approaches may help overcome persistent challenges in estimating EMP while linking it more directly to observable social dynamics. The work of Julia Cagé, Thomas Piketty, and their colleagues provides a strong foundation for improving SDT in the context of egalitarian democratic societies, where electoral cleavages are deeply influenced by ecological conditions and contribute to structuring intra-elite conflict, while violent mobilizations of the past appear to have lessened in frequency. Long term electoral sociology may thus open the door to new testable assertions from the theory. Furthermore, elite partitioning can now be studied at near-individual scales, thanks to innovations in social network analysis (Hautefeuille and Jouve 2012). Platforms such as social media offer valuable empirical insights into elite dynamics, as shown by (Gaumont, Panahi, and Chavalarias 2018), who documented a shift from bipolar to tripolar cleavage configurations between the 2016 and 2017 French presidential elections. Network analyses resonate with the seminal theory of weak ties proposed by (Granovetter 1978), which highlights the structural significance of indirect or weak social connections. This offers a fruitful intersection with Bourdieu's conception of social capital as a defining feature of elite status (Bourdieu 1986) as well as a potentially fruitful methodologies to investigate elite sociology and dynamics.

4.3.3 Refining the Theoretical Framework

The theoretical framework originally developed by Goldstone and later extended by Turchin to contemporary societies such as the United States offers valuable insights into political instability. However, to increase its operational relevance, especially for modern democracies, this framework may require finer granularity, both in terms of regional scale (e.g., suburbs, metropolitan zones) and sociological distinctions like income source and occupational identity. As previously discussed in the context of the middle class, it may be meaningful to compute differentiated Mass Mobilization Potentials (MMP) for more localized or demographically specific populations. Similarly, a more refined typology of elite incomes and orientations could improve the analysis of Elite Mobilization Potential (EMP), although the increasing permeability between elite subgroups reinforces the notion of "the elite" as a cohesive class. This may complicate attempts at disaggregated group-level analysis, unless approached through detailed monographic studies.
It's also important to remember that these evolving elite dynamics do not unfold in isolation. Rather, they are deeply embedded within the broader institutional landscape, with the modern state occupying a pivotal role. In the French context, the state is not merely a neutral mediator of competing interests, but a structuring force that mediates, absorbs, and often amplifies both elite and popular tensions. Thus, the state functions as both an arena and an actor within the structural-demographic processes : shaped by elite rivalries, mass demands, and demographic constraints, yet simultaneously shaping these forces in return. This reciprocal entanglement positions the state as a central node in the structural-demographic framework, where demographic pressures, fiscal stress, and the reconfiguration of social cleavages

5 Conclusion

The systemic and long-term perspective offered by Structural-Demographic Theory allows us to move beyond a purely circumstantial interpretation of political events. It shifts our focus from individual episodes, such as protests, reforms, and crises, to the underlying dynamics that structure how societies evolve.This approach helps explain not only when instability emerges but also why certain conditions produce recurring patterns of strain between populations and institutions.
The Political Stress Index (Ψ) developed here serves as a prospective tool rather than a forecasting instrument. It does not predict when crises will occur but helps identify when different dimensions of structural stress begin to align. When elite competition, fiscal strain, and the potential of the population to mobilize increase together, the risk of deeper institutional changes becomes more pronounced.
While SDT provides a robust framework, it must be complemented by attention to other historical dynamics, particularly technological shifts and energy constraints. These factors significantly shape the long-term viability of social systems and the distribution of power within societies. A more holistic understanding of structural change will require incorporating these dimensions into future research.
This study should be viewed as a starting point, not a conclusion. Its purpose is not to close a debate, but to open one. By reconnecting population structures, ecological conditions, and political institutions, it offers new tools for inquiring into the long-term transformations of society and the origins and outcomes of institutional change in the twenty-first century.

6 Acknowledgement

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