Appendix

Forecasting the 2022 French Presidential Election: From a Left–Right Logic to the Quadripolarization of Politics

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Contents

A Data sources

A.1 Election results

– **1965–1995 French presidential elections.** First and second round results were retrieved from the data.gouv.fr website.

– **2002–2017 French presidential elections.** First and second round results were retrieved from the France Politique website of Laurent de Boissieu.

A.2 Economic data

– **1965–1969 French presidential elections.** Unemployment rates were retrieved from Lefournier (1996).

– **1974 French presidential election.** Unemployment rates were retrieved from various issues of the *Bulletin mensuel des statistiques du travail*.

  – **October 1972.** France, Ministère d'État chargé des affaires sociales. 1972. *Bulletin mensuel des statistiques du travail*, October (no 8).
  – **November 1972.** France, Ministère d'État chargé des affaires sociales. 1972. *Bulletin mensuel des statistiques du travail*, November (no 9).
  – **December 1972.** France, Ministère d'État chargé des affaires sociales. 1972. *Bulletin mensuel des statistiques du travail*, November (no 10).
  – **October 1973.** France, Ministère du travail, de l'emploi et de la population. 1973. *Bulletin mensuel des statistiques du travail*, October (no 20).
  – **November 1973.** France, Ministère du travail, de l'emploi et de la population. 1973. *Bulletin mensuel des statistiques du travail*, November (no 21).
  – **December 1973.** France, Ministère du travail, de l'emploi et de la population. 1973. *Bulletin mensuel des statistiques du travail*, November (no 22).

– **1981–2022 French presidential elections.** Unemployment rates were retrieved from the website of the Institut national de la statistique et des études économiques (INSEE).

  – **1975 Q1 – 2016 Q2.** INSEE. 2016. "Activité, emploi et chômage en 2015 et en séries longues." https://www.insee.fr/fr/statistiques/2388200?sommaire=2045174.
  – **1982 Q1 – 2021 Q3.** INSEE. 2022. "Taux de chômage localisé par région – France métropolitaine." https://www.insee.fr/fr/statistiques/serie/001515842.

A.3 Popularity data

– **1965 French presidential election.** IFOP. 1966. *Sondages : revue française de l'opinion publique* (no 1).

– **1969 French presidential election.** IFOP. 1971. *Sondages : revue française de l'opinion publique* (nos 1–2).

– **1974 French presidential election.** IFOP. 1974. *Sondages : revue française de l'opinion publique* (nos 1–2).

– **1981 French presidential election.** *Pouvoirs, revue française d'études constitutionnelles et politiques* (no 16). https://www.revue-pouvoirs.fr/-16-.html; *France-Soir* (16/1/1981; 13/2/1981; 20/3/1981).

– **1988 French presidential election.** *Journal du dimanche* (25/10/1987; 22/11/1987; 20/12/1987; 27/12/1987; 24/1/1988; 21/2/1988; 20/3/1988).

– **1995 French presidential election.** *Journal du dimanche* (29/10/1994; 20/11/1994; 18/2/1994; 1/1/1995; 22/1/1995; 19/2/1995; 19/3/1995).

– **2002 French presidential election.** *Journal du dimanche* (10/21/2001; 18/11/2001; 16/12/2001; 20/1/2002; 17/2/2002; 17/3/2002).

– **2007 French presidential election.** IFOP. 2007. *Les indices de popularité*, January 19. `https://www.ifop.com/wp-content/uploads/2018/03/popujdd0107.pdf`.

– **2012 French presidential election.** IFOP. 2012. *Les indices de popularité*, April. `https://www.ifop.com/wp-content/uploads/2018/03/1833-1-study_file.pdf`.

– **2017 French presidential election.** IFOP. 2017. *Les indices de popularité*, April. `https://www.ifop.com/wp-content/uploads/2018/03/3733-1-study_file.pdf`.

– **2022 French presidential election.** IFOP. 2022. *Les indices de popularité*, December. `https://www.ifop.com/wp-content/uploads/2021/12/117823-Indices-de-popularite-Decembre-2021.pdf`.

A.4   Polling data

– **1965 French presidential election.** Wikipedia. 2022. "Élection présidentielle française de 1965." `https://fr.wikipedia.org/wiki/Election_presidentielle_francaise_de_1965`.

– **1969 French presidential election.** Wikipedia. 2021. "Élection présidentielle française de 1969." `https://fr.wikipedia.org/wiki/Election_presidentielle_francaise_de_1969`.

– **1974 French presidential election.** Wikipedia. 2021. "Élection présidentielle française de 1974." `https://fr.wikipedia.org/wiki/Election_presidentielle_francaise_de_1974`.

– **1981 French presidential election.** Wikipedia. 2022. "Élection présidentielle française de 1981." `https://fr.wikipedia.org/wiki/Election_presidentielle_francaise_de_1981`.

– **1988 French presidential election.** Wikipedia. 2021. "Élection présidentielle française de 1988." `https://fr.wikipedia.org/wiki/Election_presidentielle_francaise_de_1988`.

– **1995 French presidential election.** Wikipedia. 2022. "Élection présidentielle française de 1995." `https://fr.wikipedia.org/wiki/Election_presidentielle_francaise_de_1995`.

– **2002 French presidential election.** Wikipedia. 2022. "Élection présidentielle française de 2002." `https://fr.wikipedia.org/wiki/Election_presidentielle_francaise_de_2002`.

– **2007 French presidential election.** Wikipedia. 2022. "Élection présidentielle française de 2007." `https://fr.wikipedia.org/wiki/Election_presidentielle_francaise_de_2007`.

– **2012 French presidential election.** Wikipedia. 2022. "Élection présidentielle française de 2012." `https://fr.wikipedia.org/wiki/Election_presidentielle_francaise_de_2012`.

– **2017 French presidential election.** Wikipedia. 2022. "Élection présidentielle française de 2017." `https://fr.wikipedia.org/wiki/Election_presidentielle_francaise_de_2017`.

– **2022 French presidential election.** Wikipedia. 2022. "Élection présidentielle française de 2022." `https://fr.wikipedia.org/wiki/Election_presidentielle_francaise_de_2022`.

B   Dependent variables

Table B1. Dependent variable for each equation in the SUR model

Election	Incumbent (INC)	Opposition (OPP)	Challenger (CHAL)	Diverse right (DR)	Far right (FAR)
1965	De Gaulle (CON)	Total left	Lecanuet (CEN)[2]	–	Tixier-Vignancour
1969	Pompidou (CON)	Total left	Poher (CEN)[2]	–	–
1974	C.-Delmas (CON)	Total left	Giscard (CEN)[3]	DR	J.-M. Le Pen
1981	Giscard (CEN)	Total left	Chirac (CON)	–	–
1988	Chirac (CON)[1,6]	Total left	Barre (CEN)[3]	–	J.-M. Le Pen
1995	Balladur (CEN)[1,6]	Total left	Chirac (CON)	DR	J.-M. Le Pen
2002	Jospin (PS)[1,6]	CON + CEN	Non-PS left[4]	DR	J.-M. Le Pen
2007	Sarkozy (CON)	Total left	Bayrou (CEN)[2]	DR	J.-M. Le Pen
2012	Sarkozy (CON)	Total left	Bayrou (CEN)[2]	DR	Marine Le Pen
2017	Hamon (PS)	CON	Non-PS left + CEN[5]	DR	Marine Le Pen
2022	Macron (CEN)	Total left	Pécresse (CON)	DR	Marine Le Pen

CON = Conservative. CEN = Center. PS = Socialist Party. DR = Diverse right.

Note. (1) Prime minister. (2) In opposition. (3) In majority. (4) Non-PS left = Far left + Communist Party (or Front de Gauche or France insoumise) + Ecologists. (5) In 2017, the Socialist Party had two challengers: the non-PS left and the center with François Hollande's former minister of the Economy, Emmanuel Macron, allied with François Bayrou. (6) According to the constitution, in case of cohabitation, the prime minister leads and conducts the economic policy (and homeland policy) of the country. Therefore, the new majority applies the program on which it was elected. The president only covers international affairs (which usually do not weigh much on the French vote) and simply convenes the Council of Ministers. In 1986 and 1995, the Socialist Party found itself in opposition to the government, as did the right in 2002. The prime minister is then accountable for its record, not the president.

C   Raw and normalized forecasts (first round)

Forecasts were normalized to make sure they would add up to 100. The standard errors of the regressions (SER) were also adjusted to fit with the normalized forecasts. First, the upper error limit was adjusted by multiplying the normalized forecast with the unadjusted upper error limit and dividing the product by the raw forecast. Second, the adjusted SER was computed by subtracting the adjusted upper error limit from the normalized forecast. Finally, from this adjusted SER, we computed the adjusted lower error limit (by subtracting it from the normalized forecast).

Table C2. 2022 presidential election first-round raw forecasts

Bloc	SER	Raw forecast	Lower error limit	Upper error limit
INC	4,47	25,10	20,63	29,57
OPP	2,40	35,80	33,40	38,20
CHAL	2,26	21,20	18,94	23,46
FAR	1,21	17,00	15,79	18,21
DR	1,04	14,30	13,26	15,34

Table C3. 2022 presidential election first-round normalized forecasts

Bloc	Adj. SER	Normalized forecast	Adj. lower error limit	Adj. upper error limit
INC	3,95	22,20	18,25	26,15
OPP	2,12	31,60	29,48	33,72
CHAL	1,98	18,60	16,62	20,58
FAR	1,07	15,00	13,93	16,07
DR	0,92	12,60	11,68	13,52

D   Seemingly unrelated regressions

Seemingly unrelated regressions models (see Zellner 1962) have already been applied to British, German, and French legislative elections (Arzheimer and Evans, 2010; Jérôme, Jérôme-Speziari and Lewis-Beck, 2013, 2017; Quinlan, Schnaudt and Lewis-Beck, 2022; Mongrain, 2021) and offer the possibility to forecast the results of multiple parties. As Timm (2002, 316) indicates, "[t]he advantage of the SUR model is that it permits one to relate different independent variables to each dependent variable using the correlations among the errors in different equations to improve upon the estimators." The SUR model therefore takes into consideration the possibility that the determinants of voting for one party may also help to determine the vote for other parties.

If distinct OLS equations are proposed for each party, then it must be assumed that the error term of an equation is not correlated with the error term of the other equations. This is highly improbable when using election results data. The SUR model attempts to correct this problem by taking into account the correlations between the errors of the different equations. In general, the use of a SUR model for election forecasting should be approached with some caution. Since the samples used in this type of analysis are generally very small, the SUR method can increase prediction errors. Therefore, in systems that are essentially dominated by two parties the use of a SUR model should be avoided. Since more than two parties are able to obtain respectable proportion of votes and seats in France, relying on the SUR methodology is thus a worthwhile option. In the case at hand, the individual models used to estimate each bloc's first-round vote share take the following form:

- INC = f(U6, INCPOP, COHAB)

- OPP = f(U6, ΔU, OPPOLL, COHAB, CONSOPP)

- CHAL = f(INCPOP, CHALPOLL, MODEM, DUMHOLL)

- FAR = f(U6, COHABRP, DUMMLP, DUMTIXIER)

- DR = f(DRPOLL, DUMCONS)

Independent variables (see Table B1 for dependent variables):

- U6 = Unemployment rate in December (March in 1965) $t-1$, where t is the election year.

- ΔU = Change in the unemployment rate between December $t-1$ and December $t-2$.

- INCPOP = Quarterly average of incumbent satisfaction rating two quarters before the first round.

- OPPOLL = Opposition vote intentions in January of the election year.

- CHALPOLL = Challenger vote intentions in January of the election year.

- DRPOLL = Diverse right vote intentions in January of the election year.

- COHAB = Cohabitation (1986–1988, 1993–1995, and 1997–2002) (dummy).

- COHABRP = Cohabitation between a right-wing president and a left-wing prime minister (1997–2002) (dummy).

- CONSOPP = Conservatives in opposition (dummy).

- DUMCONS = Conservative incumbents (dummy).

- MODEM = Disappearance of the UDF in favour of the creation of the MoDem in 2012 (dummy).

- DUMMLP = Electoral premium of "personalization" enjoyed by Marine Le Pen following the reorganization of the movement from 2012 to 2017 through the policy of *dédiabolisation* (dummy).

- DUMHOLL = François Holland's decision not to seek a second term as president of France (dummy).

- DUMTIXIER = Jean-Louis Tixier-Vignancour's candidacy (dummy).

- DUMLP81 = Failed Jean-Marie Le Pen's candidacy in 1981.

E   Replication

An EViews file (jer_mon_nad_frcst2022-def.wf1) is available in the online supplementary materials to replicate the analyses.

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