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Voting and turning out for monetary integration: the case of the French referendum on the Maastricht treaty

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11 **December 2006**
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16 Pierre-Guillaume Méon*
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34 view that the voting behaviour of individual agents depended on their self-interest. The
35 impact of economic characteristics on the abstention rate is less clear. Indeed, the variable that
36 is most significantly correlated with abstention in the referendum is average abstention in
37 other elections.
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I. INTRODUCTION

European monetary integration is in many ways an unparalleled event. For the first time in history, a group of democratic countries freely agreed to forego their monetary sovereignty. Even more unprecedented is the fact that some of them chose to ratify the treaty leading to the abandonment of their national currency by referendum. In other words some European countries chose to directly let their people make the decision to replace their national currencies by the euro. Among others, France did so, on 20 September 1992.

The existence of referenda is in general a godsend for the scientific community, because they are not only opportunities for politicians to check the electorate's mindset, but also the closest to a real life-size experiment social scientists can dream of. The results of such polls have therefore attracted a lot of attention from researchers, and economists in particular,

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3 so as to tally the vested interests in the issues addressed by those referenda. Needless to say,
4 although the referenda that benefited from a systematic investigation were devoted to issues
5 so diverse as trade policy, as in Weck-Hanneman (1990), or the participation of the US in the
6 Gold Standard, as in Eichengreen (1995), European integration recently attracted a special
7 attention. Thus, Vlachos (2004) focused on the results of the Swedish EU-membership
8 referendum. Doyle and Fidrmuc (2006) also studied voters' behaviour in referenda about EU-
9 membership but concentrated on candidate countries. Related studies, such as Gärtner (1997)
10 or Gabel and Palmer (1995), provided similar analyses using survey data on public support for
11 European integration.
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14 Those papers, though insightful, share a common drawback. That is, by studying the
15 support for EU integration, be it in referenda or in surveys, they end up studying an issue that
16 is, to say the least, multi-faceted. Jonung's (2004) analysis of the Swedish referendum on
17 EMU stands as an exception, but relies mostly on exit polls instead of true votes, and only
18 performs casual descriptions of bivariate associations. The aim of the present paper is
19 precisely to focus on the more specific issue of monetary integration. The paper's basic
20 presumption is therefore that the French referendum was in essence a referendum on
21 monetary integration. In other words, it assumes that the way voters cast their votes in the
22 French referendum was for the most part driven by the impact of the adoption of a European
23 single currency on their well-being. As will be argued below, this assumption is warranted,
24 because the public debate in France mainly revolved around the issue of monetary integration.
25 Namely, the costs and benefits of relinquishing monetary independence were central to the
26 discussions that surrounded the poll. Therefore, comparing the results of the referendum
27 among French departments may help to assess the impact of monetary union on voters'
28 welfare, and to distinguish the key characteristics that shape voters' support for EMU.¹
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31 Another specificity of the present paper is that, unlike previous studies like
32 Méon (2002) or Mixon and Tyrone (2004), it not only analyses the share of favourable
33 answers in the referendum but also the abstention rate. Participation in the referendum may
34 indeed be instructive because it reflects the strength of the interests related to monetary
35 integration. This additional information has only rarely been analysed so far. In the present
36 paper, the abstention rate is therefore studied jointly with the share of yes-votes to determine
37 to what extent they were influenced by considerations pertaining to monetary integration.
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¹ In France, *départements* are the most important administrative units between municipalities and regions.

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That analysis may then cast a new light on three distinct strands of the literature. First, it relates to the general literature on the political economy of monetary integration. Relevant theoretical arguments can be found in Giovannini (1993), Frieden (1991, 1994), or Eichengreen (1995). The latter also provided an empirical contribution to that literature by analysing the voting pattern in the 1896 U.S. presidential election on the assumption that its main issue was the participation of the United States in the Gold standard. Second, the present paper is also naturally related to the literature on European integration. It thus extends the existing literature on the support for the process of European integration by focusing on one of its specific aspects. In so doing, it may shed some light on the distributive implications of EMU, thereby possibly providing some advice as to the policy measures likely to ease the process. It also has shorter-term clear political implications after the French and Dutch 2005 rejection of the European Constitutional Treaty, and insofar as more referenda on monetary union are ahead in the UK, Sweden, Denmark, or in new members of the EU. Third, this piece of work is also connected to the research on the theory of voting and abstention. It should in particular help weighing the importance of issue-specific and structural determinants of the turnout rate.

With this end in view, the rest of the paper is organized as follows. The next section describes in which context the referendum was held, and argues that the issue of monetary integration was central to the public debate preceding the poll. Section 3 discusses the theoretical determinants of the approval and abstention rates. Section 4 describes the econometric specification that is employed, as well as the data set on which it is applied. Section 5 displays and comments the results of our estimations. Section 6 concludes.

II. THE CONTEXT OF THE REFERENDUM

Before turning to the analysis of the determinants of the vote and abstention in the referendum, it is necessary to put it into perspective and to recall the context in which it was held. The importance of the issue of monetary union in the public debate will then appear more clearly.

1. Some history

The Treaty on European Union, also known as the Maastricht Treaty, is the result of the negotiations that were closed with the forty-sixth European summit, held in Maastricht, Netherlands, on December 9 and 10, 1991. That treaty made provision for the evolution of the then European Economic Community in the political and economic fields. In particular, it

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3 paved the way to European monetary union. It was signed on February 7, 1992, but had to be
4 ratified in all member countries by the end of that year to come into full force. In France,
5 François Mitterrand, the French president, opted for a referendum to ratify the treaty, although
6 there was no formal requirement to do so. The poll was planned for September 20, 1992. The
7 official electoral campaign accordingly took place between September 7 and September 19.
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12 The campaign's economic context was marked by the EMS crisis that was partly
13 ignited by the uncertainties pertaining to the ERM's future. The last days preceding the vote
14 had proved particularly troubled. Namely, on September 16, the Spanish peseta had been
15 devalued, while the pound Sterling and the Italian lira, that had already left the ERM, had
16 markedly depreciated. In an attempt to defend the French franc, the French central bank had
17 had to raise the daily interest rate to twenty percent, only two days before the poll.
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22 From a political point of view, the Danish referendum had preceded the French one. It
23 had delivered a negative decision, thereby dramatizing the French poll, not to mention that the
24 Danish result was in part responsible in the stress on the EMS. Moreover, the issue of the
25 ratification of the Maastricht Treaty had cut through traditional French political lines.
26 Namely, only three parties had taken a unanimous stand: on either extremes of the political
27 spectrum, the Communist Party and the National Front firmly opposed ratification, while on
28 the centre former president Valéry Giscard d'Estaing's Union pour la Démocratie Française
29 (UDF), a traditional pro-European party, defended it.
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34 Other parties were divided. Thus, on the right, future president Jacques Chirac's neo-
35 gaullist Rassemblement Pour la République (RPR) was split between partisans and opponents
36 of a yes-vote. The former were led by future Prime Minister Edouard Balladur, while the
37 latter followed Charles Pasqua and Philippe Séguin. On the left, the Socialist Party, following
38 François Mitterrand, clearly supported the treaty. However, that party's official stance caused
39 some of its members to secede around Jean-Pierre Chevènement, who took advantage of it to
40 become the herald of left-leaning eurosceptics. Finally, the situation was even more complex
41 in the two green parties. One of them, Génération Ecologie, which lost influence soon
42 afterwards, supported the ratification, while the other one took no position at all, as a result of
43 not being able to find an agreement among its leaders. That situation made the results of the
44 referendum particularly unpredictable.
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49 Unsurprisingly, the results proved close, with the treaty being ratified by a hair's
50 breadth.² More precisely, 51.04% of voters voted "yes" while the opponents of the ratification
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² This was however unexpected at the time, as De Boissieu and Pisani-Ferry (1998) or Franklin et al. (1994) recall.

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3 gathered 48.95% of expressed votes. However, significant heterogeneity was observed among
4 departments. Namely, yes-votes scored highest in Bas-Rhin with 68.59%, while Somme
5 proved to be the most eurosceptic department with only 44.92% of yes-votes. Similarly,
6 abstention rates differed markedly from one department to another. Thus 44.92% of voters did
7 not turnout in Haute Corse whereas abstainers were only 24.23% in Dordogne. This is
8 precisely those heterogeneities that will be exploited in the rest of the paper.
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10 11 12 13 14 15 16 2. *Monetary union as the key issue of the referendum*

17 The central assumption of the present analysis is that voters were influenced, at least
18 partly, by considerations pertaining to monetary union. To be sure, EMU was not the sole
19 provision of the Maastricht treaty, since it also regulated the Community's common foreign
20 policy, and justice. Moreover, non-economic considerations were not absent from voters'
21 preoccupations. Thus, de Boissieu and Pisani-Ferry (1998) mention an exit poll according to
22 which the "loss of national sovereignty", "Brussels technocrats", and "German dominance"
23 were the chief motives put forward by voters who claimed they had voted against ratification.
24 Similarly, partisans of the treaty put forward "peace", the "building of Europe", and the "need
25 to withstand competition with Japan and the United States" as their main motivations.
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28 Nevertheless, it can be convincingly argued that, at least in the French case, the debate
29 over monetary union was at least one of the key issues that shaped the results of the
30 referendum. Thus, Eichenberg and Dalton (1993) compare the debate preceding the
31 referendum to a "public seminar" on the relationship between common policies and national
32 economic performance. Moreover, opponents to the treaty concentrated their criticisms on
33 monetary union, presented as an unacceptable loss of sovereignty. This was true of right-
34 oriented leaders, such as Philippe Séguin, as well as of left-leaning leaders, like Jean-Pierre
35 Chevènement.
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37 There is furthermore strong evidence that economic issues related to the process of
38 European integration receive in general considerable attention in the media. Thus, Eichenberg
39 and Duval (1986) observe that the 60% of the news coverage of European integration in Great
40 Britain involved economic issues. While such a statistic is not available for France, one must
41 admit that a glance at the French press reveals a dominance of economic issues in the news
42 related to the EU. More to the point, one must recall that the EMS crisis had started in the
43 summer of 1992 and was going through renewed fury at the time of the campaign for the
44 referendum. That crisis therefore gave monetary issues strong priority in the public debate.
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3 There is consequently little doubt that French voters were well aware of the monetary
4 implications of the referendum.
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7 Another argument emphasizing the weight of monetary issues in the referendum is the
8 fact that other economic dimensions of the process of European integration were not at stake.
9 Thus, the Maastricht treaty contains no reference to the Common agricultural policy, or to the
10 structural and cohesion funds. The magnitude of intra-European public transfers was therefore
11 to remain unchanged regardless of the result of the referendum. Moreover, the European
12 single market had been completed at the time the treaty was signed, and its existence was not
13 jeopardized. The 1992 referendum can therefore only be compared with great caution to the
14 referenda on EU-membership held in applicant countries and studied by Doyle and
15 Fidrmuc (2006), because their scope was significantly larger. Therefore, beside institutional
16 and symbolic issues, monetary union was by far the most salient issue in the French
17 referendum.
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28 III. FACTORS BOUND TO INFLUENCE THE VOTE AND THE DECISION TO VOTE

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30 The previous section put forward that monetary union played a prominent role in the
31 referendum on the TEU. Understanding the results of that referendum therefore implies
32 determining how that issue affected voters' choice to cast a "yes" or "no" ballot, as well as
33 their decision to participate in the poll. As the analysis is carried out at the level of
34 departments, this ultimately means relating departments' characteristics to the share of 'yes'
35 votes and the participation rate. We must therefore list a set of determinants of voters' attitude
36 towards monetary union that may be measured, or proxied, at the departmental level. In what
37 follows, we focus on the economic implications of monetary union, expressly leaving aside
38 attitudinal factors, such as partisan identifications, political opinions, or general posture
39 towards European integration. We motivate that choice in the first sub-section. The two
40 subsequent sub-sections are devoted to the expected determinants of voting behaviour and
41 abstention, respectively.
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53 *1. A focus on economic characteristics*

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55 The first motivation of the choice to refrain from using attitudinal variables is that, as
56 argued above, the role of partisan affiliations was bound to be limited by the fact that most
57 parties were divided on the issue at stake. Second, as Doyle and Fidrmuc (2006) argue, the
58 correlation between attitudes and voting behaviour is not very informative, in spite of its usual
59 statistical significance. In the context of our study, observing a correlation between, for
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3 instance, the proportion of respondents of the Eurobarometer survey who declared themselves
4 supporters of European integration in a department and the share of “yes” votes in that
5 department would not reveal much, bar the fact that voters tend to vote according to their
6 opinion. What matters indeed, are the underlying factors that determine voters’ opinions.
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10 Furthermore, as Frieden (1994) puts it, what we usually refer to as ideology is not
11 necessarily a black box, but something that can be explained by more fundamental factors,
12 where economic considerations play a key part. As an example, he further argues that the
13 same notion of “national pride” is ironically sometimes used in some countries to oppose
14 devaluations, while it is pretext to criticizing the national currency’s overvaluation in others.
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18 Third, it can be argued that the causality between attitude and votes is unclear. Thus,
19 Wlezien et al. (1997) observe that causality may well run from vote choice to attitudinal
20 variables. We therefore exclude attitudinal factors from our analysis and focus on economic
21 characteristics in this study.
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25 This choice can be further defended on the ground that economic variables are known
26 to impact citizens’ opinion or voting behaviour. For instance, Eichenberg and Dalton (1993),
27 Gärtner (1997), or Erlandsson (2002) observe a significant impact of economic evolutions on
28 the support for European integration, as measured by the Eurobarometer survey. Regarding
29 actual referenda, a significant and theoretically sensible influence of economic factors on
30 votes is reported by Weck-Hanneman (1990), Eichengreen (1995), Vlachos (2004), and Doyle
31 and Fidrmuc (2006). Strikingly, whereas Vlachos (2004) and Doyle and Fidrmuc (2006) focus
32 on European membership, only the studies of Eichengreen (1995) and Jonung (2004) are
33 devoted to the more specific issue of monetary integration as such. However, the former’s
34 focus is the late XIXth century United States, while the latter performs no econometric test.
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45 46 *2. The determinants of the approval rate*

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48 As regards the specific factors that may have influenced voters’ behaviour in the 1992
49 referendum, four broad sets of factors are traditionally pointed out in the literature. Those are
50 individual mobility, macroeconomic shocks, openness to European trade, and the sensitivity
51 of voters to inflation. The first two sets of indicators stem directly from Mundell’s (1961)
52 theory of optimum currency areas.
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56 According to that theory, since monetary integration implies foregoing the
57 independence of monetary policy, its cost will accrue chiefly to those areas that are more
58 exposed to macroeconomic shocks. A first set of factors influencing the support for monetary
59 union in a department should therefore be the characteristics that determine its exposure to
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3 shocks. However, the same shock may have different consequences if it hits different regions
4 or departments that may absorb it differently. Mundell (1961) underlines the role of the
5 geographic mobility of workers as the main way to absorb those shocks. We should therefore
6 expect more mobile voters to support monetary integration and vote in favour of the
7 Maastricht treaty. At the level of individual voters, mobility takes another dimension,
8 pertaining to the ease with which a worker who is laid off may find another job. For instance,
9 an unskilled worker may find it more difficult to get a new position than a skilled worker.
10 Overall, this means that the share of yes votes should be greater in departments where voters
11 are more mobile, both geographically and socially.
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14 The third factor that we take into account is openness to European trade. Arguably,
15 monetary union allows a series of efficiency gains due to the reduction of uncertainty and
16 transaction costs in international transactions. The benefits a voter can expect from EMU
17 therefore depend on the volume of his/her transactions with other European countries.
18 Moreover, Mac Kinnon (1963) showed that a greater openness to international trade would
19 lower the cost of giving up the possibility to use the exchange rate to absorb asymmetric
20 shocks by enhancing the flexibility of nominal wages. For those two reasons, we should
21 expect greater openness to European trade to be associated with greater support for the TEU
22 in French department.
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25 The fourth factor should measure the exposure of voters to the cost of inflation. This is
26 due to the specificity of EMU that implies that price stability be the chief objective of the
27 European central bank. Thus Maastricht treaty's famous article 105 stipulates that "the
28 primary objective of the ESCB shall be to maintain price stability". As inflation has many
29 distributive effects, the ESCB's strong official anti-inflationary commitment was bound to
30 raise support from some voters while attracting the opposition of others. More specifically,
31 voters who hold liquid assets should benefit from monetary integration, whereas those whose
32 wealth consists of real assets should not be affected.
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34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 *3. The determinants of the abstention rate*

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53 Whereas the rational choice model has proved useful when applied to study voters'
54 behaviour in the voting booth, it has run into the "paradox of not voting" when used to
55 understand voters' participation. The rationale of that paradox is that the probability of
56 influencing the result of an election is so close to zero that no voter should find it optimal to
57 vote, however small the cost of doing so may be. This conclusion not only blatantly
58 contradicts empirical observations, but should also prevent any attempt to link participation
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3 and economic phenomena. However, several arguments surveyed by Dhillon and
4 Peralta (2002) or Feddersen (2004) have been used by vote theorists to overcome that
5 difficulty.
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9 The first possibility, put forward by Riker and Ordeshook (1968), is to directly assume
10 that voters get a consumption benefit from voting. This consumption benefit should help
11 compensate at least partly the cost of voting. Therefore, participation should be positive but
12 also depend on the importance of the election in the eyes of voters. Another strand of
13 explanations of turnout behaviour rests on the assumption that some party or faction leaders
14 can spend resources on mobilizing the electorate, as in Shachar and Nalebuff (1999). The
15 importance of the vote for those leaders determines the volume of resources spent on that
16 mobilization effort. Finally, group-based ethical models, such as Harsanyi (1977), contend
17 that voters assess the result of a vote not only by the mere result of the vote but also by the
18 number of voters that took part in that vote. One may moreover add that the legitimacy of an
19 election, and most of all of a referendum, is usually measured not only by the margin of the
20 result but also by the rate of participation. A casual glance at the media coverage of the 2004
21 election of the members of the European Parliament should suffice to convince the sceptical
22 reader of the empirical relevance of this argument.
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33 All those theoretical arguments have the same implication for the issue at hand in this
34 paper. Namely, voters' participation in the referendum should depend on the same factors as
35 those that influence their voting behaviour. Indeed, those theories explain why the cost of
36 voting should usually not deter all voters from turning out. However, the decision to turnout
37 should ultimately depend on each voter's overall assessment of the importance of his/her vote,
38 which in turn depends on the issue at stake. Conversely, each voter's net benefit from voting
39 depends on the cost of voting he/she faces. Therefore, one should complement the set of
40 factors already mentioned by a measure of the cost of voting. Since such a statistic is bound to
41 be very difficult to gauge directly, a solution is to estimate it through each department's
42 average turnout rate in other elections. In the empirical analysis, we therefore add a measure
43 of average abstention in each department to the set of explanatory variables mentioned above.
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53 Another justification of the inclusion of average abstention among explanatory
54 variables stems from the psycho/sociological approaches of the act of voting. Those
55 approaches emphasize the role of structural factors over contextual factors mentioned above
56 in shaping turnout rates. Opp (2001) for instance argues that the decision to vote is motivated
57 by an overestimation of one's personal influence on the election's outcome, in addition to
58 moral and social incentives. Empirically, those factors may be captured by average abstention.
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More recent contributions that depart from the assumption of perfect rationality point toward the same direction. For instance, Demichelis and Dhillon (2001) have thus used learning models of behaviour. An interesting feature of their model is that they could generate hysteresis in the turnout rate. Abstention rates should therefore be correlated across elections.

IV. METHODOLOGY AND DATA

Before describing the data on which it was applied, this section presents the general econometric strategy employed in the analysis.

1. The empirical strategy

The analysis is performed at the level of departments. This allows to use a sufficient number of observations for a meaningful regression analysis, while resulting in a tolerable data constraint. The variables to be explained are the approval rate and the rate of abstention in each department. As those variables are by construction bounded, our regressions are based on a logit model. Accordingly we do not directly use the approval rate nor the rate of abstention as the dependent variable, but transform them in unbounded variables. More precisely, the general specification of our equations, respectively for the share of yes-votes and for the rate of abstention is the following:

$$\text{logyes}_i \equiv \ln(\text{yes votes}_i / \text{no votes}_i) = a_1 + a_2 X_i + u_i \quad (1a)$$

$$\text{logabs}_i \equiv \ln(\text{abstainers}_i / \text{registered voters}_i) = b_1 + b_2 Y_i + v_i \quad (1b)$$

Where X_i and Y_i are vectors of department i 's characteristics. u_i and v_i are error terms.

As the basic units of the analysis are aggregate observations, we can resort to an OLS method to estimate the logit model. However, the error term is heteroskedastic. To balance that heteroskedasticity phenomenon, Maddala (1983) proposes to use the minimum chi-square method, where each observation is multiplied by the following weight, in estimation (1a) and (1b) respectively:

$$w_{yes}_i = [\text{yes votes}_i \times (1 - \text{yes votes}_i / \text{total votes}_i)]^{1/2} \quad (2a)$$

$$w_{abs}_i = [\text{abstainers}_i \times (1 - \text{abstainers}_i / \text{registered voters}_i)]^{1/2} \quad (2b)$$

Moreover, as both equations refer to two successive decisions, namely the decision to vote and the vote itself, observed in the same departments, residuals u_i and v_i may be correlated. To take advantage of that property, relationships (1a) and (1b) were consequently estimated jointly thanks to the SURE method.

2. Data

All French mainland departments were used in the computations. Corsican and overseas departments were excluded, because of both their institutional peculiarities and specific data limitations. Overall, this left us with 93 departments for which the data described below could be gathered.

Both left-hand-side variables were computed from the results published in *Le Monde*, on September 22nd, 1992. Since that newspaper is an evening paper, the printed results were those announced by the ministry of the Interior, and not simple survey results. Abstention in other elections were obtained from the same source. More precisely, we used the two presidential elections preceding and following the Maastricht referendum, namely the second rounds of the 1988 and 1995 polls. We chose to gauge average abstention using those elections because, in the French system, presidential elections are the only ones that are held at the national level, like referenda. Moreover, the Maastricht referendum occurred approximately halfway between the two presidential elections, which is a desirable feature of those polls.

Table 1: Descriptive statistics

	Mean	Std. deviation	Minimum	Maximum
Yes	50.178	5.335	41.06	68.59
Abstention	28.41	2.28	24.23	34.33
Average abstention	16.56	2.07	10.97	23.19
Same department	84.62	5.13	70.20	93.40
Mortgage	19.08	9.03	6.73	75.95
Unemployment	10.21	2.14	5.80	15.90
No degree	26.82	3.60	18.07	34.32
Long-term unemployment	26.68	4.65	16.10	34.60
EC-trade	0.67	0.11	0.36	0.90
Liquidities	79.73	31.53	19.63	313.16
Agriculture	0.081	0.052	0.0002	0.25
Naturalized Frenchmen	0.029	0.019	0.003	0.079

The first explanatory variable is intended to measure the importance of macroeconomic shocks in each department. That characteristic is assessed by the

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3 unemployment rate of the third quarter of 1992 (*unemployment*), that was kindly put at our
4 disposal by INSEE, the French national institute of statistics.
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7 The second set of right-hand-side variables assesses geographic mobility, and was
8 drawn from two sources. The first source is the 1990 census as provided by INSEE. It directly
9 measures the share of the population that has been living in the same department for at least
10 ten years (*same department*). The second source originates from the French central bank that
11 let us use its local and regional financial statistics dataset. We extracted per capita outstanding
12 mortgages (*mortgage*) to measure geographical mobility. The interpretation of that variable is
13 that voters with outstanding mortgages have recently acquired their residence, and therefore
14 do not intend to move out in the short run. It should therefore be interpreted as a measure of
15 geographic immobility.
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19 We expect those indicators to be negatively correlated with the approval rate, since
20 more immobile voters should be more exposed to macroeconomic shocks. One may
21 nevertheless contend that those indicators indeed take past mobility into account.
22 Accordingly, they may as well reflect workers' true mobility as their past fortune of not
23 having had to move because of adverse shocks. If voters form their opinions on the basis of
24 their past experiences, the sign of the relationship between those indicators and the approval
25 rate may then be reversed. The empirical analysis that follows should help establish the
26 relevant interpretation of those variables.
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30 To complement the assessment of the sensitivity of voters to shocks, we supplement
31 geographic mobility by two measures of social mobility. We thus include the rate of long-
32 term unemployment (*long-term unemployment*), defined as the share of the unemployed who
33 have remained jobless for more than a year, and the share of the population that has no degree
34 (*no degree*) in the set of explanatory variables. Both variables were drawn from the 1990
35 census.
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38 Openness to European trade, defined as the ratio of EC imports and exports to total
39 trade (*EC-trade*), is computed thanks to the database that the French customs put at our
40 disposal. Eichenberg and Dalton (1993) used a similar ratio in their cross-country study of the
41 support for European integration. In his study of the Swedish referendum on EU-membership,
42 Vlachos (2004) also included such a variable. We expect that ratio to be positively correlated
43 with the approval rate.
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47 To proxy voters' sensitivity to inflation, we add per capita individual liquid savings
48 (*liquidities*) to our explanatory variables. That statistic comes from the Banque de France's
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3 local and regional credit database. It is expected to be positively associated with the approval
4 rate.
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7 Finally, we complement our set of explanatory variables with two control variables.
8 The first one is the share of gainful employees in agriculture in each department (*agriculture*).
9 The motivation for the inclusion of that variable is that French farmers had regularly voiced
10 their discontent with European integration and the Common agricultural policy. They may
11 therefore have rejected the treaty on the rebound. Moreover, common wisdom about the
12 results of the referendum was that more agricultural departments had tended to vote against
13 ratification of the treaty. However, as Frieden (1991) stressed, farmers are also producers of
14 tradable goods, and may therefore benefit from the elimination of intra-EC exchange-rate
15 uncertainty.³
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18 The second control variable included among the regressors is a dummy variable
19 accounting for the existence of a frontier between the department studied and European
20 country (*border*). This variable is set equal to one when such a variable exists and otherwise
21 takes the value zero. This variable controls the positive, or negative, effect that the proximity
22 of other Europeans may have on the approval rate in the referendum. One may also view that
23 dummy as complementing the intra-EC trade variable, which, according to the French
24 customs themselves, is not perfectly accurate.
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36 37 V. RESULTS

38 This section presents the main findings of our estimations, and provides an assessment
39 of their significance, followed by robustness checks.
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42 43 1. Findings

44 We ran several regressions following the method described above. According to the
45 SURE method, we estimated the relationships by pair. Namely, the relationship for the
46 approval rate and the one for the abstention rate were estimated jointly with the same set of
47 right-hand-side variables. However, a SURE estimation would be equivalent to a simple OLS
48 estimation if the sets of regressors were the same in both relationships. The inclusion of the
49 average abstention rate on the right-hand-side of the abstention relationship in all estimations
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58 ³ In line with Frieden's (1991) argument, stands a survey commissioned by the « Mouvement des citoyens », a
59 private pro-European association (Institut Louis Harris, 1993). According to that survey, in 1993, 81% of French
60 farmers declared that they viewed the fluctuations of the French franc vis-à-vis other European currencies as
detrimental to their activity. More to the point, 72% of French farmers stated that they were favourable to the
adoption of a common currency.

avoids this drawback. From system of regressions (1) to (4), the other sets of variables were entered consecutively in the estimations. Control variables are taken into account in systems (5) and (6), while system (7) limits the set of explanatory variables to those that exhibited a significant coefficient in previous regressions.

Table 2

Determinants of the approval and abstention rates in the referendum
Weighted SURE estimates

	(1)		(2)		(3)		(4)	
	yes	abstention	yes	abstention	yes	abstention	yes	abstention
Intercept	-0.0636 (0.21)	-1.63 (11.51) ***	-0.33 (1.13)	-1.61 (10.7) ***	-0.31 (1.04)	-1.68 (11.09) ***	-0.578 (1.79) *	-1.55 (11.32) ***
Average abstention		0.0325 (8.81) ***		0.0336 (8.52) ***		0.035 (8.94) ***		0.043 (12.07) ***
Same department	0.00464 (1.32)	0.00362 (2.66) ***	0.02 (4.63) ***	0.0034 (1.73) *	0.0202 (4.62) ***	0.00305 (1.58)	0.0216 (4.96) ***	0.00125 (0.72)
Mortgage	0.00929 (4.89) ***	-0.00071 (0.99)	0.00647 (3.98) ***	-0.00084 (1.12)	0.00637 (3.85) ***	-0.00063 (0.85)	0.0137 (3.42) ***	-0.00867 (5.05) ***
Unemployment	-0.047 (5.38) ***	-0.00145 (0.44)	-0.0329 (4.29) ***	-0.00179 (0.48)	-0.0339 (4.16) ***	0.000233 (0.06)	-0.0332 (4.15) ***	-0.00267 (0.80)
No degree			-0.029 (5.66) ***	-0.00201 (0.85)	-0.0282 (5.01) ***	-0.00393 (1.57)	-0.0253 (4.42) ***	-0.00651 (2.87) ***
Long-term unemployment			-0.0136 (2.49) **	0.00151 (0.58)	-0.0137 (2.49) **	0.00185 (0.73)	-0.012 (2.2) **	0.00156 (0.70)
EC-trade					-0.062 (0.37)	0.152 (2.04) **	0.0164 (0.10)	0.0913 (1.36)
Liquidities							-0.00222 (2.0) **	0.00238 (5.04) ***
System weighted R ²	0.441		0.547		0.559		0.644	
Number of observations	93		93		93		93	

The figures in parentheses below the estimated coefficients are the t-values. An asterisk means that the variable has a significant influence at the 90% level of confidence (two asterisks: 95%, three asterisks: 99%). R² is the coefficient of determination.

Table 3

Determinants of the approval and abstention rates in the referendum

Weighted SURE estimates

	(5)		(6)		(7)		(8)	
	yes	abstention	yes	abstention	yes	abstention	yes	abstention
Constant	-0.621 (2.00) **	-1.615 (11.62) ***	-0.485 (1.42) ***	-1.472 (10.31) ***	-0.642 (2.22) **	-1.46 (17.46) ***	-0.568 (1.99) **	-0.688 (8.32) ***
Average abstention		0.0466 (10.91) ***		0.0474 (11.49) **		0.0465 (11.73) ***		
Same department	0.0227 (5.40) ***	0.00145 (0.86) ***	0.0208 (4.48) ***	-0.00077 (0.43) ***	0.0231 (5.74) ***		0.0217 (5.48) ***	
Mortgage	0.0192 (4.44) ***	-0.00724 (4.11) ***	0.0192 (4.41) ***	-0.00742 (4.39) ***	0.0191 (4.54) ***	-0.00791 (5.14) ***	0.0191 (4.55) ***	-0.00526 (2.16) ***
Unemployment	-0.027 (3.35) ***	-0.00137 (0.42) ***	-0.0264 (3.28) ***	-0.00091 (0.29) ***	-0.0255 (3.48) ***		-0.0298 (4.13) ***	
No degree	-0.0286 (5.08) ***	-0.00773 (3.40) ***	-0.0287 (5.10) ***	-0.00792 (3.64) ***	-0.0286 (5.37) ***	-0.00719 (3.66) ***	-0.0283 (5.32) ***	-0.00332 (1.07) ***
Long-term unemployment	-0.0146 (2.73) ***	0.00113 (0.52) ***	-0.0133 (2.42) **	0.00266 (1.23) ***	-0.0163 (3.21) ***		-0.0132 (2.65) ***	
EC-trade	-0.0345 (0.21) ***	0.00768 (1.18) ***	-0.079 (0.47) ***	0.0261 (0.40) ***				
Liquidities	-0.00385 (3.17) ***	0.00194 (3.95) ***	-0.00382 (3.15) ***	0.00197 (4.20) ***	-0.00382 (3.21) ***	0.00209 (4.81) ***	-0.00378 (3.19) ***	0.0016 (2.31) **
Agriculture	1.244 (2.80) ***	0.463 (2.19) **	1.41 (2.96) ***	0.671 (3.13) ***	1.26 (2.88) ***	0.675 (3.31) ***	1.169 (2.68) ***	-0.740 (2.81) ***
Border			0.0449 (0.97) ***	0.0513 (2.88) ***		0.0473 (3.25) ***		0.0373 (1.62) ***
System weighted R ²	0.659		0.6748		0.669		0.52	
Number of observations	93		93		93		93	

The figures in parentheses below the estimated coefficients are the t-values. An asterisk means that the variable has a significant influence at the 90% level of confidence (two asterisks: 95%, three asterisks: 99%). R² is the coefficient of determination.

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A first glance at tables (1) to (7) suggests a strong relationship between the economic characteristics of departments and the results of the referendum, both in terms of approval and abstention rate. More precisely a sizeable proportion of the explanatory variables used appear significantly in the regressions, and the system of equations' explained variance reaches more than 66%.

That diagnosis applies chiefly to the relationships devoted to the approval rate. Thus, all the core variables, bar the share of intra-EC trade in total trade, enter regression (6) with a significant coefficient. Moreover, those signs remain consistent across specifications, and are not affected by the inclusion of control variables. Furthermore, their significance also remains unaffected by the inclusion of control variables.

A closer look at tables (1) to (7) allows to comment the estimated impact of each variable in more detail. Accordingly, the rate of unemployment and the variables measuring social mobility, in other words the share of the population with no degree and the rate of long-term unemployed, exhibit the predicted signs.⁴ Namely, the rate of unemployment, the share of the population with no qualification, and the rate of long-term unemployment are all negatively related with the approval rate. Those results are consonant with Jonung's (2004) observation that the probability of voting for EMU in Sweden increased with education and the share of the working age population that were either unemployed, on sick-leave, or on early retirement. The finding that support for monetary integration decreases in departments with a less educated population is also reminiscent of the results of Doyle and Fidrmuc (2006) who observe that EU membership is supported by those with favourable and flexible human capital in new EU member countries.⁵

Surprisingly, the share of intra-EC trade never appears significantly in the relationship. Other definitions of openness to European trade, like the per capita European trade ratio, were also used but none performed better in the regressions. Another surprising result is the sign of the coefficient of per capita liquid savings, which is significantly negative. A possible, though admittedly daring, interpretation of this result is that more risk-averse voters may at the same

⁴ Strikingly, the result on the unemployment rate may seem at odds with the finding of Doyle and Fidrmuc (2004) that higher unemployment was associated with greater approval in referenda on EU accession held in candidate countries. One must recall however that the scope of those referenda was larger than the scope of the Maastricht referendum. In addition, participation in the EU does not imply, at least in the short run, adoption of the euro.

⁵ Another interpretation can be conceived if one assumes that knowledge about the European Union increases with education. The negative correlation between lack of education and the share of yes votes may then be interpreted as a consequence of Hayo's (1999) finding that support for European integration is correlated with EU knowledge.

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3 time hold a larger share of their savings in liquid assets and fear the unknown implications of
4 monetary union.
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7 More interesting are the coefficients of the geographic mobility variables, which are
8 both consistently positive. Those coefficients both suggest that less mobile voters tended to
9 approve the ratification of the Treaty on the European Union. This result points towards the
10 second interpretation of those variables. Namely, instead of being measures of the intrinsic
11 mobility of workers they may be measures of their past exposure to macroeconomic shocks.
12 Workers who have not had to move out may feel less exposed to shocks. Moreover, workers
13 who feel less likely to have to move out because of an adverse shock will be more likely to
14 buy a house and get a mortgage. Therefore, if voters assess the probability of being hit by an
15 adverse shock on the base of their past exposure, it is reasonable to contend that the approval
16 rate will be higher in departments whose inhabitants seem less mobile at first sight. Our
17 empirical results are consistent with this interpretation.
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21 By the same token, the sign of the coefficient affecting the share of gainful employees
22 in the agricultural sector is not as extraordinary as it may first seem, in spite of popular
23 accounts of the results of the referendum. Indeed, the fact that departments where the share of
24 gainful employees in agriculture is larger tended to vote in favour of the ratification is
25 consistent with the presentation of that sector as a producer of tradable goods. According to
26 Frieden (1991) they should therefore support monetary integration, which is consistent with
27 our empirical results.
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31 Finally, the contiguity of the department with another country does not seem to be
32 related to the approval rate. That control variable was therefore ineffective in explaining the
33 approval rate.
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37 As regards the estimation of the relationship of the abstention rate with the
38 characteristics of departments, the results may look more disappointing than for the approval
39 rate. To be precise, fewer explanatory core variables related to monetary integration appear
40 significant. Thus, the share of the population that has been living in the same department for
41 the last ten years, the unemployment rate, and the long-term unemployment rate, which are
42 significant in the approval rate relationships, appear insignificant in the abstention rate
43 relationships. On the other hand contiguity with the border is significantly associated with the
44 rate of abstention, whereas it is insignificant in the other relationship.
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48 However, four variables that appear in the approval rate relationships also appear
49 significantly in the abstention relationships. This is the case of per capita outstanding
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3 mortgage and the share of the population with no degree, which both appear significantly
4 negatively correlated with abstention.⁶ Finally, both liquid savings and the share of
5 employment in the agricultural sector appear with a positive and significant sign in the
6 relationship.
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10 It must be admitted that finding an economic interpretation for those results may turn
11 out knotty. Ad hoc attitudinal explanations would probably sound more convincing. However,
12 doing so would go beyond the scope of this paper, and we prefer to let the reader find
13 interpretations of his/her own. Nevertheless, the disappointing performance of economic
14 variables in explaining the rate of abstention is indeed not unexpected. The fact that
15 participation is a challenge to the rational theory of voting was emphasized in the previous
16 section. Moreover previous studies, such as Weck-Hanneman (1990), have also shown that the
17 power of economic variables to predict abstention is significantly smaller than their capacity
18 to explain votes themselves. Matsusaka and Palda (1999) obtained similar results in
19 explaining turnout decision at the individual level using issue-specific variables. Doyle and
20 Fidrmuc (2006) also remark that different considerations may drive voting behaviour and
21 participation in referenda on EU-integration.
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32 More to the point, our study provides a positive result, which points out to the
33 secondary role of contextual variables in shaping the turnout rate. Thus, it appears that the
34 average rate of abstention, computed over the two closest national elections surrounding the
35 Maastricht referendum, is overwhelmingly significant. Moreover, removing that variable from
36 the set of explanatory variables results in a spectacular drop in the system of equations' share
37 of explained variance, as the comparison of estimations (7) and (8) shows.⁷ This result
38 contrasts with Matsusaka and Palda's (1999) who observed that past abstention rates, though
39 significantly correlated with present turnout had a very limited explanatory power.⁸
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46 A possible implication of this finding is that the factors determining abstention are to a
47 great extent structural and must therefore be found outside the scope of the question at stake
48 in the referendum. One may also remark that this finding is consistent with turnout models
49 that are based on learning. The high explanatory power of average abstention rates would thus
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55 ⁶ Opp (2001) also observed a positive impact of education on participation.

56 ⁷ In addition to being estimated in a SURE model, abstention equations (7) and (8) were estimated on their own.
57 It results that the adjusted R^2 dropped from 66.05% to 11.88% between the two regressions. In other words,
58 dropping average abstention from the set of explanatory variables results in a 54.17 percentage point drop in the
59 explained variance of the abstention rate. Moreover, average abstention explains up to 48% of the variance of
60 abstention observed in the referendum in a simple bivariate regression.

⁸ They however contended that using aggregate abstention figures, as we do here, instead of individual observations may raise the share of variance explained by past abstention.

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3 be the result of some learning process on the part of voters, leading to a strong persistence of
4 abstention.
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7 8 9 *2. Robustness checks*

10 A first concern with our results was that they may be driven by the collinearity of
11 some explanatory variables. It can in particular be argued that the unemployment rate, the
12 long-term unemployment rate, and the share of the population that holds no degree should be
13 correlated. To make sure that this is not the case, we ran each estimation anew while dropping
14 in turn the three variables that can be suspected of being collinear, taking estimation (7) as a
15 benchmark. The results of those estimations are displayed in table 5.
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18 The results of those estimations clearly suggest that multicollinearity is not the driving
19 force of our results. Indeed, all coefficients remain significant, the only exception being the
20 share of gainful employees in agriculture, which only fails to be significant in estimation (10)
21 in the equation that explains the approval rate. Moreover, it appears that the magnitude of
22 those coefficients remains stable across specifications. Multicollinearity therefore does not
23 appear to be an issue in our estimations.⁹
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26 A second concern was the measurement of geographic mobility. As a key result of our
27 estimations is that past immobility is positively associated with the approval rate, this issue
28 required closer scrutiny. We therefore complemented the set of explanatory variables by an
29 alternative measure of mobility, namely the share of French citizens who had been
30 naturalized, as provided by the 1990 census. This variable was first simply added to the set of
31 explanatory variables. We then dropped insignificant variables. The results of that test are
32 displayed in column (12) of table 5. They show that the share of naturalized Frenchmen was
33 not correlated to the share of yes vote. However, it was significantly correlated with the
34 abstention rate. However, the same estimation reveals that adding the share of French
35 nationals that had been naturalized to the set of explanatory variables has little effect on the
36 coefficients of the variables that already appeared significantly in estimation (7). However, in
37 both equations, the share of the population that has been living in the same department for at
38 least ten years becomes insignificant. On the other hand, the unemployment rate and the long-
39 term unemployment rate now turn out significant in the expression of the abstention rate.
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59 ⁹ It should also be noted that the coefficient of correlation between any two of those variables, although always
60 significant, never exceeds 0.45 (0.27 between unemployment and long-term unemployment, 0.21 between
unemployment and the share of population that has no qualification, and 0.44 between long-term unemployment
and the share of the population that has no qualification).

Table 4

Determinants of the approval and abstention rates in the referendum

Weighted SURE estimates

	(9)		(10)		(11)	
	yes	abstention	yes	abstention	yes	abstention
Constant	-0.855 (2.85) ***	-1.476 (17.68) ***	-1.0786 (3.51) ***	-1.602 (20.99) ***	-0.275 (0.99)	-1.458 (17.30) ***
Average abstention		0.0474 (12.00) ***		0.0444 (11.20) ***		0.0463 (11.55) ***
Same department	0.0252 (5.96) ***		0.0209 (4.78) ***		0.0149 (4.59) ***	
Mortgage	0.0207 (4.64) ***	-0.00798 (5.18) ***	0.0247 (5.29) ***	-0.00581 (3.79) ***	0.0206 (4.62) ***	-0.00792 (5.14) ***
Unemployment			0.0314 (4.02) ***		-0.0330 (4.51) ***	
No degree	-0.0324 (5.86) ***	-0.00724 (3.69) ***			-0.0296 (5.34) ***	-0.00715 (3.64) ***
Long-term unemployment	-0.0221 (4.31) ***		-0.0180 (3.26) ***			
Liquidities	-0.00434 (3.47) ***	0.00201 (4.85) ***	-0.00509 (3.82) ***	0.00159 (3.60) ***	-0.00396 (3.21) ***	0.00209 (4.82) ***
Agriculture	1.738 (3.94) ***	0.699 (3.43) ***	0.701 (1.44)	0.475 (2.31) **	1.0364 (2.31) **	0.665 (3.25) ***
Border		0.0459 (3.15) ***		0.0428 2.89 ***		0.0456 3.10 ***
System weighted R ²	0.6487		0.6230		0.6496	
Number of observations	93		93		93	

The figures in parentheses below the estimated coefficients are the t-values. An asterisk means that the variable has a significant influence at the 90% level of confidence (two asterisks: 95%, three asterisks: 99%). R² is the coefficient of determination.

Table 5

Determinants of the approval and abstention rates in the referendum

Weighted SURE estimates

	(12)		(13)		(14)	
	yes	abstention	yes	abstention	yes	abstention
Constant	-0.595 (2.05) **	-1.585 (18.75) ***	0.776 (4.92) ***	-1.584 (18.75) ***	-1.592 (3.80) ***	-1.529 (13.46) ***
Average abstention	0.0220 (5.45) ***	0.0473 (12.71) ***		0.0470 (12.61) ***		0.0458 (8.44) ***
Same department					0.0318 (5.82) ***	
Mortgage	0.0193 (4.57) ***	-0.00755 (5.10) ***	0.0158 (3.51) ***	-0.00758 (5.13) ***	0.0250 (3.80) ***	-0.00772 (3.07) ***
Unemployment	-0.0267 (3.48) ***	-0.00685 (2.23) **	-0.0263 (3.21) ***	-0.00697 (2.28) **	-0.0259 (2.44) **	
No degree	-0.0288 (5.38) ***	-0.00950 (4.87) ***	-0.0268 (4.57) ***	-0.00963 (4.94) ***	-0.0104 (1.51)	-0.00519 (1.78) *
Long-term unemployment	-0.014 (2.67) ***	0.00689 (3.71) ***		0.00696 (3.84) ***	-0.0268 (3.57) ***	
Liquidities	-0.00385 (3.23) ***	0.00201 (4.85) ***	-0.00277 (2.18) **	0.00202 (4.88) ***	-0.00487 (2.18) ***	0.00249 (2.92) ***
Agriculture	1.227 (2.79) ***	0.815 (4.22) ***	1.533 (3.02) ***	0.838 (4.32) ***	1.212 1.63	0.696 (2.09) **
Border		0.0361 (2.61) **	0.126 (2.83) ***	0.0389 (2.72) ***		0.0362 (1.62)
Naturalized Frenchmen		1.68 (4.18) ***		1.819 (4.53) ***		
System weighted R ²	0.7047		0.6779		0.6957	
Number of observations	93		93		47	

The figures in parentheses below the estimated coefficients are the t-values. An asterisk means that the variable has a significant influence at the 90% level of confidence (two asterisks: 95%, three asterisks: 99%). R² is the coefficient of determination.

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The finding that when the share of naturalized nationals is introduced in the set of explanatory variables, the share of the population that has been living in the same department for at least ten years becomes insignificant suggests a strong collinearity between them. We subsequently used the former as a substitute for the latter. The results of that estimation are displayed in estimation (13) of table 5. Here again, it appears that the share of naturalized Frenchmen was not significantly associated to the share of yes votes, but that our main results are little affected. The only striking difference with previous estimations is that the rate of long-term unemployment now fails to be significant, but all the other coefficients remain stable.

Our final robustness check was to make sure that our results were robust to using sub-samples. We therefore ran our estimation on a sample of departments consisting only of those whose number is uneven, which left us with 47 observations.¹⁰ The results of the estimation on that sample is given in estimation (14) of table 5. It can be easily verified that the coefficients estimated on that sample are very close to those obtained with all departments.

VI. CONCLUDING REMARKS

The Maastricht treaty was by all accounts a milestone in the history of European integration. Following the Danish “no” to the treaty, the results of the French referendum were of paramount importance. Indeed, a French disapproval might well have brought the process of European integration to a halt. Such a scenario did not materialize but the results were, somewhat unexpectedly, close.

This paper’s red thread is that the French referendum can be interpreted as a consultation on monetary union, and that our knowledge of the distributive implications of monetary integration can be improved by studying voting behaviour and abstention at the level of departments. We did so by applying a minimum chi-square model to the approval and abstention rates in French mainland departments, thanks to a weighted SURE method. Two chief conclusions emerge from that econometric exercise.

First, it appears that, as expected, the economic characteristics of departments do a good job in predicting voting behaviour. The results are moreover consistent with predictions based on the theory of monetary integration. Thus, it appears that departments where

¹⁰ In France, departments are officially referred to either by their name or by their number, which follows the alphabetical order. Number one is for instance Ain and Yonne is 89. The only exceptions are the metropolitan departments whose numbers range from 90 to 95, which were created after the others, and are mainly located in the Paris area. Focusing on uneven-numbered departments is therefore equivalent to a random draw.

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3 unemployment, long-term unemployment, and the share of the population that does not hold a
4 degree are high tended to oppose ratification.
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7 On the other hand, departments whose residents seem less mobile, and where the share
8 of gainful employees in the agricultural sector was larger, provided more support to the treaty.
9 Those a priori disconcerting results can be easily explained once one recognizes that past
10 mobility may be the result of a low exposure to macroeconomic adverse shocks, and that
11 farmers are indeed producers of tradable goods, thereby benefiting from a reduction in
12 exchange rate risk.
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17 Second, the results for the participation rate seem more disconnected from the
18 question asked in the referendum. In fact the main variable accounting for differences in
19 participation across departments is the average rate of participation. This finding points
20 toward more fundamental determinants of the participation rate, or toward models based on
21 learning. This is in itself an interesting result. However, this finding also warrants further
22 research, because the significance of average abstention in our regressions can be interpreted
23 as a measure of our ignorance about the deep causes of participation.
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