

Working time reduction, employment and aggregate demand: a simulation for the French economy

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Abstract

This paper examines the employment and macroeconomic effects of a differentiated reduction and reallocation of working time in France. We consider full-time schedules of 35, 32, 28 and 24 hours, alongside longer hours for workers in very short part-time employment and with public compensation for reduced working time. Building on Cárdenas and Villanueva (2021), we combine an employment simulation with a post-Keynesian macroeconomic model estimated for France over 2001Q1–2023Q4. The analysis accounts for the allocation of released hours between additional employment and productivity adjustment and estimates the macroeconomic relationships through which changes in labour income, distribution and production costs affect aggregate demand. The simulations indicate substantial employment creation across the three scenarios, while the macroeconomic estimates show a strong response of consumption to labour income and a pronounced accelerator effect on investment. The paper also discusses the implications of these mechanisms for the macroeconomic and fiscal assessment of working time reduction.

Key words: working time reduction; work sharing; wage-led demand; Bhaduri–Marglin model; employment; France

JEL classifications: E12; E24; E25; J22; J81

1 Introduction

The long-run decline in working time has been an important dimension of economic development in industrialised economies. Rising productivity expanded the possibilities for increasing material living standards while reducing the amount of time devoted to paid work, although the extent to which these gains translated into shorter working hours varied considerably across countries and historical periods (Huberman and Minns, 2007; Andreescu et al., 2025). In recent decades, this process has slowed markedly. The allocation of productivity gains has shifted away from further reductions in working time, while unemployment and underemployment remain persistent features of many labour markets (Husson, 2015; Behringer et al., 2024).

The issue is therefore not only how many hours constitute a standard working week, but how available working time is distributed across the labour force. Standard full-time employment coexists with constrained short-hours work and unemployment, pointing to a broader imbalance in the allocation of paid work. At the same time, the implications of working time extend beyond employment. Evidence on the health effects of long working hours and on the relationship between working time, consumption patterns and environmental pressures has broadened the range of issues associated with its reduction (Devetter and Rousseau, 2011; Bannai and Tamakoshi, 2014; King and van den Bergh, 2017; Lepinteur, 2019; Voglino et al., 2022). Working time reduction can therefore be considered in relation to both the distribution of available hours across the labour force and its wider social and environmental implications.

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The macroeconomic implications of such a policy are less straightforward. The employment generated by shorter individual schedules depends on firms' productivity and organisational responses, while changes in employment and labour income affect aggregate demand. The resulting distributive changes may have different effects on consumption and investment, and an expansion of domestic demand can generate additional imports and interact with prices and external competitiveness. These relationships are particularly relevant from a post-Keynesian perspective, in which the effects of changes in income distribution depend on the relative responses of the components of aggregate demand (Bhaduri and Marglin, 1990; Naastepad and Storm, 2006; Onaran and Obst, 2016).

This paper examines these relationships through a prospective working time reform for France. The reform combines the existing 35-hour schedule with full-time schedules of 32, 28 and 24 hours, while allowing workers initially employed for fewer than 24 hours to increase their hours towards that threshold. It thus operates in two directions: reducing hours among workers on longer schedules, while increasing them for those with very short schedules and using the remaining released hours to create new employment. The central question is how these changes affect employment and, through their effects on income and distribution, aggregate economic activity.

We address this question by adapting the micro-macro approach developed by Cárdenas and Villanueva (2021) for the Spanish economy. The framework connects the employment effects estimated at the microeconomic level with a post-Keynesian macroeconomic model. Its application to France incorporates differentiated working time schedules and a public compensation mechanism linked to the reduction in working hours, allowing the employment, macroeconomic and fiscal effects of the reform to be assessed jointly.

Section 2 discusses the historical and institutional development of working time and the evidence from previous and recent working time reductions. Section 3 presents the empirical strategy and simulation framework. Section 4 reports the employment and macroeconomic results, and Section 5 concludes.

2 Working time in France: from secular reduction to a new reallocation

2.1 Working time as an institutional and distributive variable

The history of working time provides a direct illustration of its institutional and distributive character. The secular decline in working hours across industrialised economies did not follow mechanically from productivity growth. It resulted from the interaction between rising productive capacity, collective bargaining, labour legislation and changes in the balance of power between labour and capital (Huberman and Minns, 2007; Behringer et al., 2024; Andreescu et al., 2025). Productivity growth expanded the scope for improvements in living standards, but institutions shaped how these gains were distributed between higher wages, profits, greater output and free time. Shorter working time was therefore one historically important form of distributing productivity gains.

France provides a particularly clear illustration. Successive rounds of social legislation progressively transformed the temporal boundaries of employment, from the 12-hour working-day limit introduced in 1848 to the 48-hour week in 1919, the 40-hour week and two weeks of paid leave in 1936, the 39-hour week and fifth week of paid leave in 1982, and the 35-hour statutory week at the turn of the century (Askénazy, 2013, 2021). Other reductions operated through annual working time, particularly the extension of paid leave in 1956 and 1969. As Figure 1 shows, the historical decline therefore involved the regulation of daily, weekly and annual working time rather than a single continuous adjustment in weekly hours.

The economic role assigned to these reforms also evolved. The 1936 reforms combined improvements in working conditions with the distribution of employment during a period of mass unemployment. During the post-war expansion, rising real wages and paid leave absorbed part of the gains associated with rapid productivity growth. From the 1980s, persistent unemployment brought employment redistribution back into the working time debate, first through the 39-hour week and subsequently through the Robien and Aubry reforms (Askénazy, 2013; Gubian et al., 2004). These episodes illustrate how similar changes in working time can form part of different distributive and macroeconomic configurations.

Figure 1. Main stages in the regulation of working time in France.

Year	Reform	Main provisions
1848	First statutory limit	12-hour working day in industry.
1900-06	Daily limits and weekly rest	11-hour daily limit (1900); 8-hour day in mining (1905); compulsory 24-hour weekly rest (1906).
1919	Eight-hour day and 48-hour week	Establishment of general daily and weekly limits on working time.
1936	40-hour week and paid holidays	40-hour week and two weeks of paid leave under the Popular Front reforms.
1956-69	Extension of paid leave	Paid annual leave increases to three weeks in 1956 and four weeks in 1969.
1982	39-hour week and fifth week of paid leave	Statutory week reduced to 39 hours; five weeks of paid leave; tighter regulation of overtime.
1996	Robien law	Working time reductions linked to firm-level agreements, social-contribution exemptions and employment commitments.
1998	Aubry I law	Transition towards the 35-hour statutory week, supported by negotiated reductions and financial incentives.
2000	Aubry II law	35-hour week becomes the statutory reference, combined with social-contribution reductions and negotiated organisation of working time.

Source: authors' own elaboration.

This institutional perspective also requires a distinction between individual and collective working time. Employment rates, part-time work, labour-force participation and the length of working lives determine how paid work is distributed across the population. The expansion of women's employment, longer schooling and changes in retirement have therefore altered collective labour input alongside the decline in individual hours. In France, weekly hours fell from around 66h in the late nineteenth

century to fewer than 40h by the end of the twentieth, while participation and the composition of employment changed substantially (Huberman and Minns, 2007).

Taken from this perspective, the relevant question extends beyond the length of the standard working week to the allocation of working time across the labour force. Changes in working time norms can modify both the intensive margin of employment, through the hours worked by each worker, and its extensive margin, through the number of people employed. The economic effects of working time reduction therefore depend on how these two margins adjust and on the resulting changes in employment, labour income and the functional distribution of income.

2.2 The French 35-hour reform and its macroeconomic lessons

The French transition to the 35-hour week provides the main historical reference for assessing how a large-scale reduction in working time operates in practice. In 1998, Aubry I law established a phased transition, with the new statutory duration applying from January 2000 to firms with more than 20 employees and from January 2002 to smaller firms. Financial incentives were available to firms anticipating the reform through agreements that reduced collective working time by at least 10% and included employment commitments. In 2000, Aubry II law consolidated the 35-hour norm and introduced an annual reference of 1,600 hours for non-managerial employees, alongside greater scope for negotiated flexibility in the organisation of working time (Askénazy, 2013).

The scale of the adjustment can be illustrated by the calculations underlying the reform. Moving from 39 to 35 hours reduced statutory weekly working time by approximately 10%. With monthly earnings maintained, the corresponding increase in hourly compensation would have raised unit labour costs by around 11% under unchanged hourly productivity. The institutional architecture was designed to absorb much of this pressure through several channels. Expected hourly productivity gains were around 3.5%, while reductions in employers' social contributions represented approximately 4.5% of labour costs at the minimum wage. Wage moderation provided an additional adjustment (Askénazy, 2013).

Adjustment occurred within firms through changes in schedules, work organisation and the use of productive capacity. Reorganisation reduced unproductive time and contributed to increases in hourly productivity, allowing output to adjust by less than individual working hours. Employment nevertheless increased substantially during the implementation of the reform. Aggregate evaluations reported in the literature attribute around 350,000 additional jobs between 1998 and 2002 to the period in which the 35-hour week was generalised (Gubian et al., 2004). Husson (2002), using a different macroeconomic approach and period, estimates approximately 500,000 additional jobs between 1997 and 2001.

The adjustment in working time was closely connected to productivity and distribution. Maintaining monthly earnings while reducing hours increased hourly compensation, while productivity gains, social-contribution relief and wage developments shaped the resulting movement in unit labour costs (Gubian et al., 2004). Hourly productivity continued to increase following the introduction of the 35-hour week, while the evolution of the profit share indicates that the reform was compatible with the preservation of

aggregate profitability (Husson, 2015). Employment creation also increased the number of wage earners receiving labour income, introducing a demand-side channel alongside the adjustments taking place within firms (Du et al., 2013).

This French experience provides three main lessons for the analysis developed here. First, the employment effect of shorter working time depends on the extent to which reduced individual hours are absorbed by productivity and organisational adjustments. Second, the cost effect depends on the joint evolution of hourly compensation, productivity and social contributions. Third, employment creation introduces a macroeconomic channel through its effects on labour income and aggregate demand.

2.3 Recent working time experiments in France and abroad

Working time reduction has returned to the policy debate through a new generation of experiments, most prominently around the four-day week. These initiatives differ from the statutory reductions discussed above, since they have generally been introduced at firm or organisational level and combine shorter hours with changes in work organisation. They also encompass distinct arrangements. In France, Grimaud (2024), examining 150 company agreements, shows that many four-day-week arrangements compress existing weekly hours into fewer days rather than reducing total working time.

Experiments elsewhere have more explicitly combined shorter weekly hours with wage maintenance. Large trials in Iceland reduced working time for public-sector employees, generally from 40 to 35 or 36 hours, while maintaining pay and broadly preserving productivity and service provision (Haraldsson and Kellam, 2021). More recent trials in the United Kingdom and Portugal extended similar arrangements to private-sector firms. Their results indicate that firms can accommodate part of the reduction in hours through changes in meetings, scheduling, task allocation and work processes, although the extent of this adjustment varies across organisations and activities (Gomes and Fontinha, 2024). This evidence is consistent with broader comparative research showing that the productivity effects of shorter hours depend strongly on the institutional and organisational form of the reduction (De Spiegelaere and Piasna, 2017; Piasna, Cetrulo and Moro, 2024).

The effects considered in recent research also extend beyond employment and productivity. Long working hours are associated with adverse physical and mental health outcomes, while reductions in working time have been linked to improvements in fatigue, sleep and well-being (Åkerstedt et al., 2001; Bannai and Tamakoshi, 2014; Voglino et al., 2022). Recent multi-country evidence from four-day-week trials similarly reports improvements in burnout, job satisfaction and self-reported health following reductions in working time without wage reductions (Fan et al., 2025).

Environmental effects are more ambiguous and depend on how lower working time changes production, commuting and consumption. Devetter and Rousseau (2011) associate longer hours with more resource-intensive consumption patterns. King and van den Bergh (2017) show that emissions effects vary according to the way additional non-work time is used, while Cieplinski, D'Alessandro and Guarnieri (2021) find that allocating productivity gains to shorter working time can combine higher employment with lower emissions.

These studies show that the effects of working time reduction depend closely on how it is implemented. Changes in productivity, work organisation and the allocation of released hours shape the employment effects, while the consequences for well-being and environmental outcomes depend on how shorter working time alters patterns of work, consumption and everyday life.

3 Methodology and the micro–macro simulation of working time reallocation

3.1 Empirical strategy and simulation framework

The empirical strategy builds on the two-stage framework developed by Cárdenas and Villanueva (2021). In their analysis of Spain, the first stage translates a uniform reduction in working time from 40 to 35 hours into employment creation. The volume of hours released by the reform is adjusted for imperfect substitutability across occupations to estimate the additional labour required. The second stage introduces the resulting changes in employment, labour income and functional income distribution into an extended Bhaduri–Marglin model, allowing the initial working time shock to operate through aggregate demand and external competitiveness.

Our analysis extends this framework to a differentiated reallocation of working time in France. The existing 35-hour schedule coexists with full-time schedules of 32, 28 and 24 hours, so that the volume of released hours depends on the distribution of workers across the alternative schedules. Hours are first reallocated to employees initially working fewer than 24 hours, increasing their working time up to that threshold. The remaining volume is then converted into potential additional employment, taking into account imperfect substitutability between released hours and new jobs. The calculation covers private and public-sector employment and treats wage compensation, employers' labour costs and the associated fiscal effects separately.

The simulation takes the 2023 employment structure as its baseline and introduces the reform in 2024. Employment, working hours and compensation are calculated at the sectoral level to account for differences in the composition of employment and working time patterns across economic activities. The resulting changes in employment and labour income, together with their effects on functional income distribution and unit labour costs, subsequently enter the macroeconomic block, which estimates their transmission through consumption, investment, prices and foreign trade.

3.2 From liberated hours to additional employment

For workers moving from the 35-hour norm to a shorter schedule, the first step is to determine the volume of working time released by the reform. Gross weekly liberated hours in economic activity i are given by

$$LH_i = \sum_j N_{ij} (35 - h_j), \quad h_j \in \{32, 28, 24\}$$

where N_{ij} is the number of workers in activity i moving to schedule j , and h_j is their new weekly working time.

These hours do not translate directly into new employment. Part of them can first be used to increase the working time of employees initially working fewer than 24 hours per week. This introduces underemployment directly into the calculation and allows the

reform to redistribute working time in both directions. Net liberated hours (NLH) are thus

$$NLH_i = LH_i - UH_i$$

where UH_i denotes the additional hours required to bring eligible short part-time workers in activity i towards the 24-hour threshold. This allows firms to increase the hours of incumbent underemployed workers before recruiting additional employees.

A second adjustment concerns the conversion of the remaining hours into new employment. A reduction in individual working time need not generate an equivalent demand for additional hours, since firms can accommodate part of the reduction through productivity gains and changes in work organisation, shifts and the allocation of tasks. This adjustment is captured by a substitution rate s , so that additional employment (ΔN) is given by

$$\Delta N_i = s \times NLH_i / \bar{h}_{i,new}$$

where $\bar{h}_{i,new}$ denotes the average weekly working time of new employees in activity i . The baseline simulation sets s , the substitution rate, at 0.44, corresponding to the average of the occupation-specific substitution rates estimated by Cárdenas and Villanueva (2021) for Spain. The present analysis applies the average rate to each economic activity.

3.3 Productivity, wage compensation and income distribution

The employment adjustment described above also determines the productivity response to shorter working time. The substitution parameter implies that 44% of net liberated hours translate into additional labour demand, with the remaining 56% accommodated through higher hourly productivity and organisational adjustment. Productivity is therefore determined jointly with employment.

For each economic activity, the productivity adjustment is calculated from the reduction in labour input that remains after additional employment has been taken into account. Value added is held constant at this stage in order to identify the increase in hourly productivity required to accommodate the lower volume of labour input. This assumption concerns the microeconomic stage of the simulation. Changes in aggregate output arising from employment, income and aggregate demand are subsequently determined in the macroeconomic block.

The distribution of the income adjustment between employers, workers and the public sector is a central feature of the simulation. We assume that the reduction in working time leaves employers' unit labour costs unchanged. Hourly labour compensation paid by employers consequently increases at the same rate as hourly productivity. Productivity gains can therefore finance part of the increase in hourly compensation associated with shorter schedules without raising the labour cost per unit of output.

The simulation also introduces a public compensation mechanism. For every hour by which an employee's weekly schedule is reduced, the public sector pays a transfer equivalent to 50% of the hourly minimum wage (SMIC). A worker moving from 35 to 32 hours consequently receives compensation corresponding to three hours at half the hourly SMIC, while reductions to 28 and 24 hours generate compensation for seven and eleven hours respectively. The compensation per hour reduced is identical for all

workers, irrespective of their initial wage. This reflects the principle that an additional hour released from paid work is assigned the same monetary value across workers rather than being valued in proportion to individual earnings. The mechanism therefore compensates the reduction in working time through a uniform hourly transfer, while the total amount received varies only with the number of hours released.

The post-reform labour income reflects the combined effects of higher hourly compensation, longer hours among previously underemployed workers and additional employment. The resulting change in labour income determines the post-reform labour share. Public compensation is treated separately as a fiscal transfer associated with the reform.

3.4 Macroeconomic block

The second stage of the analysis traces the macroeconomic effects of working time reallocation through aggregate demand, income distribution, prices, the external sector and public finances. Following the general structure of Cárdenas and Villanueva (2021), the framework extends the Bhaduri–Marglin approach by distinguishing the main components of aggregate demand and the channels through which changes in employment, distribution and production costs affect economic activity.

Household consumption depends on the labour income, profit income and household debt. Private investment is determined by domestic output, the profit share, the long-term interest rate and household debt. Exports depend on foreign demand and the real effective exchange rate, while imports depend on domestic output and relative domestic-to-import prices. Domestic prices are related to unit labour costs and import prices, and export prices to unit labour costs and import prices. These relationships can be written as follows:

$$(1) C = c_0 + c_W W + c_R R + c_{Dh} Dh$$

$$(2) I = i_0 + i_Y Y + i_\pi \pi + i_r r + i_{Dh} Dh$$

$$(3) X = x_0 + x_{Y^*} Y^* + x_{REER} REER$$

$$(4) M = m_0 + m_Y Y + m_{PPM} PPM$$

$$(5) P = p_0 + p_{ULC} ULC + p_{PM} PM$$

$$(6) PX = p_{X_0} + p_{XULC} ULC + p_{XPM} PM$$

Where C denotes household consumption, W the labour income, R profit income, Dh household debt, I private investment, Y domestic output, π the profit share, r the long-term interest rate, X exports, Y^* foreign demand, $REER$ the real effective exchange rate, M imports, PPM relative domestic-to-import prices, P the domestic price level, ULC unit labour costs, PM import prices and PX export prices.

The structure captures the principal channels linking working time reallocation to aggregate demand. Changes in employment and hourly compensation modify the labour income and functional income distribution, which feed into household consumption and

investment. The expansion of domestic demand also affects imports, while changes in unit labour costs and prices interact with external competitiveness.

Public finances (*PF*) are introduced in a subsequent stage of the simulation, once the employment and macroeconomic effects of the reform have been determined. The general government balance is related to two outcomes generated by the preceding stages: the change in real output and the change in unemployment. The theoretical relationship is specified as

$$(7) PF_t = \alpha + \beta \Delta \ln(Y_t) + \gamma \Delta u_t + \varepsilon_t$$

where *PF* denotes the general government balance and *u* the unemployment rate. The change in output is obtained from the macroeconomic block, while the change in unemployment follows from the employment effects calculated in the first stage of the simulation. These two channels capture the indirect fiscal effects of the reform through economic activity and labour-market conditions. The resulting change in the government balance is subsequently considered together with the direct fiscal expenditure generated by the public compensation scheme, providing the basis for assessing the overall budgetary implications of each scenario.

4 Results

4.1 Revised scenarios and employment effects

The three scenarios differ in the extent to which employees initially working full time move from the 35-hour week to shorter schedules. In the Limited scenario, 20% move to a shorter schedule, compared with 35% in the Intermediate scenario and 50% in the Extended scenario. The distribution also varies across the alternative schedules, with larger reductions in working time receiving greater weight in the Intermediate and Extended scenarios.

Table 1. Distribution of full-time employees across weekly working time contracts in the three scenarios

Scenario	35 h	32 h	28 h	24 h
Limited	80%	5%	5%	10%
Intermediate	65%	10%	10%	15%
Extended	50%	20%	15%	15%

Note: Shares refer to employees initially working full time. Authors' assumptions.

Table 2 reports the employment effects of the three scenarios. Net liberated hours range from 1.45 billion annually in the Limited scenario to 2.53 billion in the Intermediate scenario and 3.20 billion in the Extended scenario. After reallocating hours to workers initially below the 24-hour threshold and applying the substitution parameter, the simulations generate 514.832, 882.356 and 1.115.460 additional jobs, respectively. This corresponds to increases in employment of 1.90%, 3.26% and 4.12%.

Accordingly, the employment expansion produces a sizeable reduction in unemployment across the three scenarios. The unemployment rate falls by 1.67 percentage points in the Limited scenario, 2.86 percentage points in the Intermediate

scenario and 3.62 percentage points in the Extended scenario, reaching 5.67%, 4.48% and 3.72%, respectively.

Table 2. Employment effects under the three working time scenarios

Indicator	Limited	Intermediate	Extended
Net liberated hours	1.450,4	2.530,1	3.198,5
Additional employment	513832	882356	1115460
Change in employment (%)	1.90	3.26	4.12
Unemployment rate (%)	5.67	4.48	3.72
Change in unemployment rate (p.p.)	-1.67	-2.86	-3.62

Note: Net liberated hours are expressed in millions of annual hours. Additional employment refers to the number of jobs created. Authors' calculations.

4.2 Estimated macroeconomic relationships

Table 3 reports the final specifications used in the simulations. The consumption equation indicates a strong transmission from labour income to household demand. A 1% increase in the labour income is associated with a 0.84% increase in consumption. Household debt also affects consumption, although its positive contemporaneous coefficient is followed by a negative lagged effect, leaving only a small cumulative response. For the working time simulations, the labour income coefficient provides the main channel through which changes in employment and labour income feed into household expenditure.

Investment responds strongly to economic activity. Its output elasticity of 1.041 points to a pronounced accelerator mechanism, implying that changes in aggregate demand generated elsewhere in the model are reinforced through investment. Profitability provides an additional distributive channel. The contemporaneous and lagged coefficients on the profit share are both positive, with a cumulative coefficient of 0.00573. A redistribution towards wages can therefore reduce investment directly through the profit-share channel while simultaneously stimulating activity through household consumption. The eventual investment response depends on the interaction between these two mechanisms. This differs from the Spanish estimates of Cárdenas and Villanueva (2021), in which profitability plays a more limited role in the preferred investment specification.

The external sector introduces an important constraint on the domestic demand effects of the reform. Exports respond strongly to foreign activity, with positive coefficients on both current and lagged foreign demand, while a real appreciation reduces export volumes. Imports display an income elasticity of 1.38, indicating that increases in domestic activity generate a more than proportional response in import demand. Relative prices also matter, with a higher domestic-to-import price ratio reducing imports with a lag. The external contribution of the reform therefore depends on two distinct mechanisms: the response of competitiveness to changes in domestic costs and prices, and the import leakage generated by the expansion of domestic demand.

The price equations complete this transmission mechanism. For domestic prices, the contemporaneous pass-through from unit labour costs is positive and sizeable, with a coefficient of 0.486, while the lagged coefficient of -0.102 partially offsets the initial effect. Taken together, the two coefficients imply a cumulative response of approximately

0.384. Changes in unit labour costs generated by working time reallocation can therefore affect domestic inflation and, through relative prices, the external sector. Import prices exert a comparatively small cumulative effect on domestic prices, as their contemporaneous and lagged coefficients largely offset one another. Export prices display some persistence and respond strongly to import prices. In the simulations, unit labour costs affect external adjustment primarily through domestic and relative prices.

Table 3. Macroeconomic estimation results

	Consumption	Investment	Exports	Imports	Domestic prices	Export prices
	<i>Equation (1)</i>	<i>Equation (2)</i>	<i>Equation (3)</i>	<i>Equation (4)</i>	<i>Equation (5)</i>	<i>Equation (6)</i>
$\Delta_4 \ln \text{GDP } (Y_t)$		1.041		1.380		
$\Delta_4 \ln \text{Labour income } (W_t)$	0.837					
$\Delta_4 \ln \text{Household debt } (Dh_t)$	0.249					
$\Delta_4 \ln \text{Household debt } (Dh_{t-1})$	-0.295					
Profit share (π_t)		0.00305				
Profit share (π_{t-1})		0.00268				
$\Delta_4 \ln \text{Foreign GDP } (Y^*_t)$			2.3105			
$\Delta_4 \ln \text{Foreign GDP } (Y^*_{t-1})$			0.3044			
$\Delta_4 \ln \text{REER}_t$			-0.4046			
$\Delta_4 \ln \text{REER}_{t-3}$			-0.3187			
$\Delta_4 \ln \text{PPM}_t$						
$\Delta_4 \ln \text{PPM}_{t-1}$				-0.3801		
$\Delta_4 \ln \text{ULC}_t$					0.48580	
$\Delta_4 \ln \text{ULC}_{t-1}$					-0.10221	
$\Delta_4 \ln \text{Import prices } (PM_t)$					-0.06694	
$\Delta_4 \ln \text{Import prices } (PM_{t-1})$					0.08542	
$\Delta \ln \text{Export prices}_{t-1}$						0.2086
$\Delta \ln \text{ULC}_t$						-0.0524
$\Delta \ln \text{Import prices } (PM_t)$						0.5742
D2009		-0.0676				
COVID			-0.0571			
D2009Q1					-0.01741	
D2009Q2					-0.01374	
D2009Q3					-0.01176	
D2023Q2					0.01533	
D2023Q3					0.01875	
D2023Q4					0.02173	
Constant	0.00388	-0.176	-0.0246	0.0105	0.00931	0.00075
Observations	86	88	84	86	86	90
R ²	0.9140	0.8314	0.9192	0.8391	0.6310	0.8858
F-test	290.35	248.34	177.42	105.62	12.83	152.52
Durbin-Watson	2.0904	0.6588348	2.1233	1.919	2.2711	2.342
Estimation method	Cochrane-Orcutt	Newey-West	Cochrane-Orcutt	Cochrane-Orcutt	Cochrane-Orcutt	OLS

Note: The reported coefficients are statistically significant at the 5% level ($p < 0.05$).

4.3 Macroeconomic effects of the revised scenarios

The macroeconomic simulation translates the distributive effects of working time reduction into changes in aggregate demand. Following the approach of Cárdenas and Villanueva (2020), the first stage computes the changes in labour income and the labour share associated with each scenario. These changes are then introduced into the estimated consumption and investment relationships, while the subsequent response of output is obtained from the aggregate-demand multiplier.

Table 4 reports the results. Labour income increases by 0.37% in the Limited scenario, 0.65% in the Intermediate scenario and 0.83% in the Extended scenario. The corresponding increases in the labour share are 0.21, 0.37 and 0.47 percentage points. These distributive effects are considerably smaller than the employment effects reported in Section 4.1. This follows from the wage and productivity assumptions of the simulation: hourly compensation paid by employers increases in line with hourly productivity, thereby preserving unit labour costs.

Table 4. Macroeconomic effects under the three working time scenarios.

Indicator	Limited	Intermediate	Extended
Change in hourly productivity (%)	1.83	3.2	4.14
Public compensation (€ bn)	24.12	30.97	34.97
Public compensation (% of GDP)	0.95%	1.22%	1.38%
Change in labour income (%)	+0.37	+0.65	+0.83
Change in labour share (p.p)	+0.21	+0.37	+0.47
Consumption contribution (p.p.)	+0.17	+0.29	+0.38
Investment contribution (p.p.)	−0.02	−0.04	−0.05
Direct aggregate-demand effect (p.p.)	+0.14	+0.25	+0.32
Multiplier	1.385	1.385	1.385
Total real-GDP effect (%)	+0.20	+0.35	+0.45

The increase in the labour share generates two opposing direct effects on domestic demand. Higher labour income raises household consumption, contributing between 0.17 and 0.38 percentage points to aggregate demand across the three scenarios. At the same time, the corresponding decline in the profit share reduces investment through the estimated profitability channel, with a considerably smaller contribution of between −0.02 and −0.05 percentage points. The direct aggregate-demand effect is consequently positive in all three scenarios, ranging from 0.14 percentage points in the Limited scenario to 0.32 percentage points in the Extended scenario.

The accelerator and import responses are incorporated into the estimated multiplier rather than added separately to the initial demand shock. The multiplier of 1.385 reflects the reinforcement of the initial expansion through investment as output rises, together with the leakage generated by higher import demand. Applying this multiplier yields an increase in real GDP of 0.20% in the Limited scenario, 0.35% in the Intermediate scenario

and 0.45% in the Extended scenario. These figures are deviations from the counterfactual level of real GDP in the absence of the reform, rather than forecasts of annual GDP growth.

The external price channel is neutral under the assumptions adopted here. Hourly compensation paid by employers is assumed to increase at the same rate as hourly productivity, so that working time reduction does not generate an additional increase in unit labour costs. With import prices and foreign demand held constant in the simulation, the estimated price and export-price equations therefore generate no direct price-competitiveness effect attributable to the reform. This result is conditional on the wage-productivity rule imposed in the scenarios. It does not imply that working time reduction is intrinsically inflation-neutral, since other possible channels from employment and aggregate demand to prices are outside the estimated price specification.

Overall, the macroeconomic effect is positive. Across all three scenarios, working time reduction generates substantial employment gains while real GDP also increases. In the Extended scenario, employment rises by 4.12% and real GDP by 0.45%, despite the reduction in working hours and the assumption of unchanged unit labour costs. The results therefore suggest that working time reduction can redistribute employment on a large scale while sustaining a positive aggregate-demand response.

4.4 Public finances

The fiscal implications of working time reduction depend on the direct cost of public compensation and on the budgetary effects generated by changes in output and unemployment. To quantify the latter, we estimate an auxiliary fiscal-balance equation linking the general government balance to real GDP growth and changes in unemployment, while controlling for the persistence of the fiscal balance:

$$FB_t = -0.8245 + 56.8046 \Delta \ln Y_t - 0.5209 \Delta u_{t-1} + 0.6954 FB_{t-1} + 0.1581 FB_{t-2} - 2.0348 COVID_t + \varepsilon_t.$$

The estimated coefficients imply that stronger economic activity improves the fiscal balance, while an increase in unemployment deteriorates it. We use these coefficients to translate the changes in real GDP and unemployment generated by each scenario into fiscal effects. These effects are then compared with the direct cost of public compensation estimated in Section 4.3. The exercise therefore provides a net fiscal effect of the reform, combining its direct budgetary cost with the endogenous response of public finances to the resulting macroeconomic and employment changes.

Table 5. Fiscal effects under the three working time scenarios.

Fiscal indicator (% of GDP)	Low	Intermediate	Extended
GDP-induced balance effect	+0.11	+0.20	+0.25
Unemployment-induced balance effect	+1.10	+1.72	+2.11
Gross macro fiscal feedback	+1.21	+1.92	+2.37
Public compensation	-0.95	-1.22	-1.38
Net fiscal effect	+0.26	+0.70	+0.99

The results indicate that the endogenous fiscal feedback more than offsets the direct cost of public compensation in all three scenarios. The effect is already positive in the Limited scenario, at 0.26% of GDP, and increases to 0.70% in the Intermediate scenario and 0.99% in the Extended scenario. This improvement is driven primarily by the employment channel. In the Extended scenario, for example, the decline in unemployment improves the fiscal balance by 2.11% of GDP, compared with 0.25% through the increase in economic activity.

The fiscal results therefore highlight an important distinction between the gross budgetary cost and the net fiscal effect of the reform. Public compensation represents a sizeable initial expenditure, reaching 1.38% of GDP in the Extended scenario, but evaluating this expenditure in isolation would omit the fiscal consequences of the employment generated by working time reallocation. Under the estimated relationships, these feedback effects are sufficiently large for the reform to improve the overall fiscal balance in each scenario.

5 Conclusion

This paper has examined the employment and macroeconomic implications of a new reduction and reallocation of working time in France. The results show that shorter individual working hours can be combined with substantial employment creation and positive aggregate economic effects. Across the three scenarios, the reform generates between approximately 514,000 and 1.12 million additional jobs, increasing employment by 1.90% to 4.12% and reducing the unemployment rate by 1.67 to 3.62 percentage points. At the same time, real GDP increases in all three scenarios, by between 0.20% and 0.45%.

These results reinforce one of the main lessons of the historical French experience. Reductions in working time need not imply a proportional reduction in output when they are accompanied by employment creation, productivity gains and changes in work organisation. The transition to the 35-hour week already illustrated the importance of these adjustment mechanisms, while more recent experiments in France and elsewhere provide further evidence that well-designed reductions in working time can be accommodated through changes in scheduling, task allocation and work processes.

The reform considered here extends this logic by treating working time reduction as a problem of reallocation rather than simply reduction. Hours released by workers on longer schedules are partly directed towards workers with very short working hours and partly converted into new employment. The policy can therefore address unemployment and underemployment simultaneously, reducing the concentration of paid work among some workers while expanding access to employment and hours among others. Beyond its macroeconomic effects, a more balanced allocation of working time also creates scope for improvements in health and the organisation of everyday life.

Importantly, these gains are obtained without an additional increase in employers' unit labour costs. The financing arrangement proposed allows employment to expand while preserving firms' cost conditions and maintaining a positive aggregate-demand response. It therefore points to a configuration in which the objectives of shorter working time,

employment creation and macroeconomic stability can be reconciled, strengthening the economic and political feasibility of the reform.

The fiscal results further strengthen this conclusion. Although public compensation entails a direct budgetary cost, the expansion of economic activity generates offsetting fiscal effects through lower unemployment and higher output. Under the estimated relationships, these feedbacks more than compensate for the initial expenditure in all three scenarios, producing a positive net effect on the public balance. Working time reduction therefore need not imply a trade-off between social objectives and macroeconomic performance. On the contrary, under the institutional configuration examined here, shorter working time can support employment creation and improved conditions for life, while remaining compatible with economic expansion and stronger public finances.

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