Cliometrica
DOI 10.1007/s11698-013-0102-6

ORIGINAL PAPER

Relative deprivation and labour conflict during Spain's industrialization: the Bilbao estuary, 1914–1936

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Received: 9 October 2012 / Accepted: 18 August 2013

Abstract What drove social conflict in Spain's industrial areas in the period before the Spanish Civil War? This paper is concerned with contrasting the determinants of working-class conflict in northern Spain at the beginning of the twentieth century. Our hypothesis is that the key determinant of conflicts in emerging industrial areas during the interwar period was the struggle to obtain satisfactory family income in a context of combined high price fluctuation, unemployment and economic boom and bust. We suggest two new ways to decipher how economic factors interact with labour conflict. We introduce the family as the relevant income unit when considering wage struggles and relative deprivation. And secondly, we study the reactions to short-term variations of income on families by using monthly rather than quarterly or annual data.

Keywords Strikes · Relative deprivation · Industrialization · Labour relations · Interwar period · Spain

JEL Classification D19 · E31 · J52 · J53 · N34

This article seeks to discern the logic behind the blazes of social disruption in one of Spain's rapidly progressing industrial areas during the interwar period. The succession and the failure of different systems of labour relations in establishing social dialogue and providing institutions to resolve conflicts surely contributed to the increasing social tension before the outbreak of the Spanish Civil War. We propose, however, that a closer understanding of the economic factors involved in these labour conflicts may also enhance our perception of how social conflicts came

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Published online: 14 September 2013

to be. Specifically, this paper reclaims the importance of material economic conditions in determining labour conflict in the period leading up to the Spanish Civil War. Even though resource-accumulation and collective-action theories and political-exchange approaches have attempted to play down, in some cases even to question, the role of economic factors as causes of labour conflictivity (Shorter and Tilly 1974; Snyder 1977; Tilly 1978; Shalev 1980), we consider material well-being too important to relegate as something secondary.

We suggest two new ways to decipher how economic factors interact with labour conflict. We introduce the family as the relevant income unit[1] when considering wage struggles and relative deprivation.[2] And secondly, we study the reactions to short-term variations of income on families by using monthly rather than quarterly or annual data. We hereby contend that families were on tight budgets and that price and income variations put important strain on their nutrition, health and well-being and thereby led to a higher propensity to labour unrest.

Our analysis will concentrate on strikes, one of the key manifestations of labour conflict, and the Bilbao estuary will constitute our geographical field of research. To paraphrase Cohn (1993: 8), we concentrate on a closed industrial area with comparable workers with comparable classifications and a comparable institutional framework, using data with consistent and well-understood recording conventions. Furthermore, the economic dynamics of a single industrial space are far easier to grasp intellectually than are the parallel dynamics for a large and diverse economy. As an emerging economic area since the 1870s, Bilbao developed a highly concentrated industrial centre, becoming the most important heavy industry district in Spain. This scenario constitutes an integrated and relatively isolated industrial setting which, together with the use of monthly rather than annual data, reveals different patterns of economic and social relations than those obtained with aggregated national data.[3]

Many scholars of the early twentieth century will share Dick Greary's perception of the First World War as *the* watershed, a traumatic break with the politics of the

[1] Kuznets (1976: 1) already insisted on using families as basic units of income measurement when addressing distribution. More recently, the standard of living debate has focussed on family income Humphries (1977), Horrell and Humphries (1992), Allen (2001, 2009, 2013), Humphries (2010). Rothbart (1989) insists that 'the wage struggle (…) cannot be understood simply as a struggle over the level of pay for the performance of work, since a major justification for higher wages has been the argument that the wage of adult males should be determined by the subsistence needs of a family'.

[2] We define relative deprivation as the judgment that one is worse off compared to other groups and/or compared to the past. This judgment may lead to frustration and collective action. Townsend (1974: 15) argued that 'individuals, families and groups in the population can be said to be in poverty when they lack the resources to obtain the types of diets, participate in the activities and have the living conditions and amenities which are customary, or are at least widely encouraged or approved, in the societies to which they belong'. Therefore, poverty is the guiding concept, and we would define 'relative deprivation' as the perception of poverty. At the same time, collective action and/or social conflict would be a reaction to relative deprivation. For the recent evolution of deprivation research, see Gordon (2006).

[3] Ritschl et al. (2008). As Morys and Ivanov (2011: 6) have summarized, historical National Accounts are normally constructed with an eye for the level rather than the volatility; this (understandable) preference determines interpolation techniques which can lead to serious differences in volatility between the reconstruction and the true unknown series. Fortunately the disaggregate series which maintain the original volatility are often abundant for historical periods.

pre-war *ancien régime*. For most of Europe, the war brought hardship to the working class by way of food shortages, inflation and the massive influx of new labour into the industrial sectors.[4] The post-war period was one of price fluctuations, strong economic cycles and unemployment. This changing economic environment produced recurrent income shocks which deprived living conditions, making workers more prone to unrest, a situation very similar to that Sharp and Weisdorf (2012) have found for France's workers prior to the French Revolution.

Although the analysis is limited to only one of the major industrial centres in Spain at the time, at the very least, it opens the question whether similar dynamics existed in other urban industrial areas at the time, i.e., if there was a generalized urban industrial deprivation process that may be considered one of the causes of the Spanish Civil War. At the same time, using monthly disaggregate series to study the impact of the interwar economic fluctuations is an innovative approach. Oscillations and variations have not been smoothed out, higher data frequency allows for sub-period analyses, and short-term dynamics otherwise hidden can be revealed. This may be an approach to consider in other countries with strong social conflicts in this period.

The rest of the paper is structured as follows. The next section of the paper introduces a general background on strikes and the following an overview of strikes in Bilbao, Biscay (the greater area surrounding) and Spain. Section 3 presents the data series we have collected on strikes and economic factors. This is followed by a detailed and concise summary of labour relations over the period we are examining. Understanding the changing labour-relation regimes is essential for inferring the results from the empirical contrasts. Sections 5 and 6 present the strike model, the statistical exercises for the impact of economic factors on strike frequency, and discuss the results. The exercises consider business profits, real family incomes and unemployment. In order to check the robustness of our findings, property crime and political violence are added to test whether these alternative expressions of social disruption are also correlated with variations in material living conditions. We close with a presentation of our conclusions.

1 Strikes and the determinants of strikes

An economic strike is a suspension of production while workers and employers argue about how to divide the surplus from their relationship (Kennan 2008: 1). Strikes are costly disputes. In a two-agent model of negotiation in which each party was rational and well-informed, each would know the other party's concession curve and could agree on distribution of surplus without the waste implied by an output loss through stoppage. But despite the possibility of avoiding this waste, strikes have been commonplace in industrialized countries for the last 150 years.

Hicks (1932) was one of the first authors to articulate a theory about why strikes occur, concluding that most of them result from faulty negotiation between workers

[4] For a summary of European labour relations during the First World War and the 1920s, see Greary (1981: 134–143).

and employer. At a later point, Ross (1954) introduced a political and institutional approach, emphasizing the role played by other agents like firm managers and unions. He stressed the divergent interests existing between trade union leaders—interested in the survival and growth of the organization—and rank-and-file union members. Ross also analyzed the relationship between strikes and unions, pointing out that strikes are only a temporary withholding of labour, whereas a union is a permanent association of workers (Kaufman 1982: 477). Over the course of time, strikes as 'weapons of labour' would have fallen into the hands and control of business unionism. Ashenfelter and Johnson (1969) formalized Ross's institutional wage bargaining model, addressing that strikes are more likely the result of agency problems and the logic of collective action.[5]

Economists have sought regularities between the economic cycle and the frequency, duration and depth of strikes. For the late nineteenth and early twentieth century, studies have shown that strikes are more frequent when general economic conditions have been good. Strike incidence has been found to be pro-cyclical and strike duration countercyclical to the business phase (Card 1990; Crampton and Tracy 2003; Kennan 2008).[6] Besides their economic nature, strikes may also be called for political reasons. Theories of strikes based on economic factors tend to have lesser explanatory power in those settings where strikes are politically motivated (Cohn and Eaton 1989). In the late nineteenth and early twentieth century, especially after 1917, strikes have often been considered a measure of the threat of revolution. Among various forms of social unrest, such as riots, demonstrations and social disorder, strikes are a potent menace to a regime because they interfere with the functioning of the capitalist economic system on which the regime is based (Kim 2007). They are also a powerful mechanism of social mobilization.

In any case, labour conflict and strikes in particular are complex multi-causal phenomena. Industrial workers are not a homogeneous class but a diverse group under constant recomposition, as Vigna (2012) has pointed out recently for France. Workers and employers develop complex and diachronic sequences of interaction. The different approaches taken by economists, sociologists and political scientists are an evidence of its multi-factorial and intricate nature. This diversity was succinctly summarized by Franzosi (1995: 7–11), who identified at least seven different theoretical approaches: business-cycle theories, which concentrate on the relationship between business cycles, the bargaining position of labour and strikes; relative-deprivation approaches, which sustain that deterioration of economic living conditions and increasing social injustice are at the heart of conflict; resource-accumulation and collective-action theories, which suggest that collective action depends on a group's capacity to mobilize resources and organize; institutional theories, which propound that strike intensity is determined by the calendar of collective contracts, especially in the case of industry-wide or nationwide

[5] For a summary of strike theories, see Friedman (2009).

[6] However, there are studies which contradict a pro-cyclical pattern of strike incidence. For example, Ingram et al. (1993) for the British manufacturing sector in the 1980s; or more recently Devereux and Hart (2011) for the British engineering sector between 1920 and 1970.

bargaining; political-exchange approaches, which concentrate on the mechanisms used by labour-oriented social-democratic parties in order to achieve a more favourable distribution of resources; theoretical frameworks related to class conflict, which view long-term immiseration as the main determinant of rising labour conflictivity; and theories of modernization, which concentrate on the breakdowns of social groups produced by rapid industrialization and urbanization.[7] Among these theoretical approaches, we consider that changes in workers' economic conditions and wage bargaining were the main motivations of labour conflictivity during the interwar period, as we explore in the next section.

2 Labour conflict determined by economic factors? Our hypothesis and the setting for contrast

The interwar period in Europe was an age of political and social turmoil. Most of the countries experienced unrest and tensions during those years, Spain being among the more unstable. Although Spanish economy benefited from neutrality during the First World War, the wartime expansion produced imbalances and rapid economic changes with exacerbating social tensions. These tensions, kindled by the success of the Russian Revolution, produced revolutionary outbursts between 1917 and 1919. Growing working-class unrest and the post-war economic crisis of 1921 accelerated the decay of the liberal political regime (1876–1923), which collapsed giving way to military rule from 1923 to 1929. The dictatorship of General Primo de Rivera was able to produce noteworthy economic growth. Applying a mixed policy of repressing (anarchist trade unions) and coopting (socialist trade unions), and introducing a corporatist framework of labour relations similar to that of Mussolini's regime in Italy, the dictatorship managed to keep the working-class movement under control. However, social conflict surged again after the coming of a democratic Second Republic (1931–1936) which freed the forces that had been repressed during dictatorship and now resurged in the context of the world economic depression. The interwar period in Spain ended with a gruelling civil war between 1936 and 1939.

Our hypothesis is that the key determinant of conflicts in emerging industrial areas during the interwar period was the struggle to obtain satisfactory family income in a context of combined high price fluctuation, unemployment and economic boom and bust. Following Rothbart (1989) on 'homes are what any strike is about' and Humphries (1977) on the fragility of working-class families during industrialization, we seek to contrast whether labour conflict in a time of important economic fluctuations was determined by the subsistence needs of families. So, well aware of shortcomings, our analysis will concentrate on wage bargaining, relative deprivation in families, profits and unemployment as the valid elements to explain labour conflictivity during the interwar period. We seek to find labour conflicts driven by economic factors.

[7] Apart from Franzosi, for an additional summary of strike theories see Friedman (2009).

In light of the weak evidence for the relevance of economic variables in explaining strike frequency found by Silvestre Rodríguez (2003) using aggregate data for all of Spain, we would like to contrast the importance of economic change and material necessity in a more closely defined geographical and temporal setting. Such findings could indicate that a regional approach concentrated on the large industrial nuclei of Barcelona, Madrid, Valencia and Bilbao may reveal very different patterns from those obtained with aggregate macroeconomic data and that much of the cause–effect mechanism may have been smoothed out by aggregation and low-frequency data.

What makes the Bilbao estuary a particularly interesting case is its speed and scale of structural change. Together with Catalonia, Biscay (the administrative region in which Bilbao is situated) was an industrial forerunner and would be the only other province on the Iberian Peninsula to reduce the percentage of labour employed in agriculture to less than 50 % before the end of the nineteenth century (Soto Carmona 1989). Biscay had gained higher access to Spanish markets in 1829 when its customs were shifted from its regional borders with the rest of Spain to its own coast, i.e. it became part of the Spanish common market. The 1869 liberalization of mining and commerce opened its vast iron ore resources to international markets and foreign investors, such as Great Britain, Belgium, France and Germany. Ore trade with European iron and steel centres established the bridges for the transfer of technical equipment and skills, and these ties provided the markets competition and the high-quality coal needed to transform Bilbao into the iron and steel centre of Spain. Between 1876 and 1936 the Bilbao region developed from an iron ore mining district into the most important concentration of heavy industry in Spain.[8]

Bilbao was a small geographic area in which a fairly rapid process of industrialization took place in an isolated form. The physical constraint of social conflicts to a local level was predominant in the political arena of the time (Fusi 1975). Regions and industrial areas in Spain tended to have specific characteristics regarding trade unions, employers' strategies and conflict intensity. The different patterns of economic development and the mountainous condition of the Iberian Peninsula explain this lack of integration. In the case of Bilbao, there were no competing industrial *loci* within a reasonable distance. The closest industrial centre was in Barcelona, some 600 km away. As one of Spain's major ports, it had well-integrated commodity markets and, as a consequence of the late nineteenth-century iron-ore-mining boom, it had well-functioning labour markets. In short, the Bilbao estuary constituted a quite isolated setting in which contagion was not a common source of unrest.

Industrialization and structural change accelerated during the first third of the twentieth century. In the province of Biscay, the working population employed in industrial activity grew from 32.6 % in 1900 to 43.1 in 1920 and 47.0 in 1930; the service sector grew from 25.7 to 33.3 and 31.5 % (Olábarri 1978: 447). As part of

[8] For the history of Basque industrialization, see Harrison (1983), Escudero (1998) and González Portilla (2001). For a general account on Spanish industrialization during the interwar period, see Houpt and Rojo Cagigal (2013).

the process of industrialization, there were also important demographic changes in the area being examined. According to population censuses, the population of the Bilbao estuary grew from 192,747 in 1910 to 242,641 in 1920 and on to 304,364 in 1930, implying annual population growth rates of around 2.3 %. Over the first third of the century, Bilbao was the fastest growing urban agglomeration in Spain (Reher 1994). The major immigration wave had already occurred over the last three decades of the nineteenth century, and net migration to the estuary during the first third of the century slowed down considerably. Between 1920 and 1935, over 85 % of the population growth was generated by natural growth. Over that same period, 93.7 % of the population lived in family households. Over the early twentieth century, families were evolving from extensive to nuclear families and at the same time to predominantly male-breadwinner families with an increasing number of children. And at the same time, over 70 % of the active population remained unskilled day workers.[9] Therefore, throughout the period of analysis, the majority of working-class families lived in a nuclear male-breadwinner setting with an increasing number of children. For the predominantly unskilled-labour households, this implied a high vulnerability to changes in real income. The lack of extensive family safety nets, heavily disputed alternative incomes in times of crises and no foraging to fall back on are some reasons for this.

3 Data series on strikes and economic factors

In order to examine labour unrest and its determinants in detail, we have been able to construct a very detailed monthly database for the Bilbao estuary over this period. One of the series we use is a recently calculated cost-of-living series for a breadwinner family in Bilbao's iron and steel industry.[10] This series has been constructed with monthly price data from the municipal statistical bulletin. The basket is designed to provide the energy requirements of a representative five-member family taking into account diet habits and diet transformations. The monthly series of real incomes is calculated from average money incomes for workers of the Baracaldo factory of Altos Hornos de Vizcaya [AHV].[11] We have

[9] Population in the Bilbao estuary has been thoroughly examined by a group of demographers lead by González Portilla (2001): 117, 130, 278–9, 396 and 403. Based on municipal statistics, only 9.4 % of married women worked in 1900 and by 1935 this had decreased to 3.7 % (García Abad and Ruzafa Ortega 2009: 304). For a summary on how the male breadwinner nuclear family evolved see Rojo Cagigal and Houpt (2011: 11).

[10] The index is based on seventeen basic consumption goods' price series and calculates a gradually changing consumption basket reflecting variations in consumption patterns during the 1914–1936 period with a gradual diet shift in food groups towards fresher products. A typical working-class family of five members constitutes the consumption and production unit of analysis. For a detailed description of the index calculation see Rojo Cagigal and Houpt (2011). For living standards in Biscay, see Pérez Castroviejo (1992); an up-to-date account of the debate about the evolution of living standards in Spain and France can be found in Chastagnaret et al. (2010).

[11] Monthly data was extracted from Altos Hornos de Vizcaya (1914–1923). Annual averages have been taken from González Portilla (1984): 74 and 85). This company was created by merger of two of the leading iron and steel company with a smaller tinplate factory in 1901. They employed 5,905 workers in 1916 and 8,300 in 1930, approximately one third of the workers employed in the iron and steel industry.

contrasted these incomes with the maximum and minimum money wages registered by the municipal statistics. The monthly money incomes at AHV are within or above these bands over the complete period analysed. If any, this introduces upward income bias, as AHV workers were considered highly paid workers at the time.

Unemployment rates were not registered for this period. We have proxied them with inverse nuptiality rates. The choice of this proxy is motivated by the close correlation found by Southall and Gilbert (1996) for England and Wales, and Kirk (1960) for the interwar period in the United States.[12] Wales, England and the United States were industrial forerunners and geographical areas which showed strong negative correlation between nuptiality rates and unemployment during industrialization; their studies include regions concentrating heavy industry. Bilbao, Wales, England and USA also share a common demographic pattern: the nuclear male-breadwinner family. This further sustains similar nuptiality behaviour in response to income variations. In Wales, GB and USA there are empirical data series for testing the correlation between both variables. In the case of Spain, we lack unemployment data. But outdoor poor relief, for which we have data and which should be highly correlated with unemployment, moves in unison with nuptiality rates. This strengthens our conviction that nuptiality rates proxy unemployment well. Nuptiality rates not only reflect the marriage postponement due to unemployment but also due to growing underemployment and to any other reduction in earnings and income. Therefore, we use the inverse marriage rate as a proxy for unemployment and underemployment over this period.[13]

Business profits and an index of business perspectives have been used to measure the variation of economic surplus over time. Monthly business profits can be approximated for Altos Hornos de Vizcaya between 1914 and 1921 by calculating markups for each product produced and multiplying those by the amount of each product sold. We have also used the monthly stock-market index for Bilbao which is an expression of the present and future firm-value based on information on its present profitability. Monthly strike frequency has been collected from works of Lazcano (1950) and Sanfeliciano López (1990). Both series are based on exhaustive scrutiny of local newspapers. As Lazcano's series becomes less reliable towards the end of the period, Sanfeliciano's series which registers only the strikes in the 1930s will be used for the latter part.

As a first approximation to the relationship between variations in workers' family incomes and labour conflict, we can use the annual data on strikes provided by Olábarri (1978: 498) to contrast the coincidence between the number of strikes and tensions on family budgets. Figure 1 shows the twelve-month moving average of

[12] 'If marriage and trade-union unemployment corresponded closely in timing and, in some senses, in amplitude of variation, it is tempting to treat both as proxies for the unemployment,' Southall and Gilbert (1996: 55).

[13] Friedlander found that from 1855 to 1901 unemployment and marriage rates were negatively correlated in England and Wales. During the entire period, for each unemployment peak in a given year there was a trough in the marriage rate and vice versa. His regression analysis confirmed that the change in unemployment levels explained nearly 50 % of the variance in marriage rates (Friedlander 1992: 32–33). Kirk also found an inverse correlation between unemployment and nuptiality for the United States, stronger during the interwar period that after the Second World War (Kirk 1960).

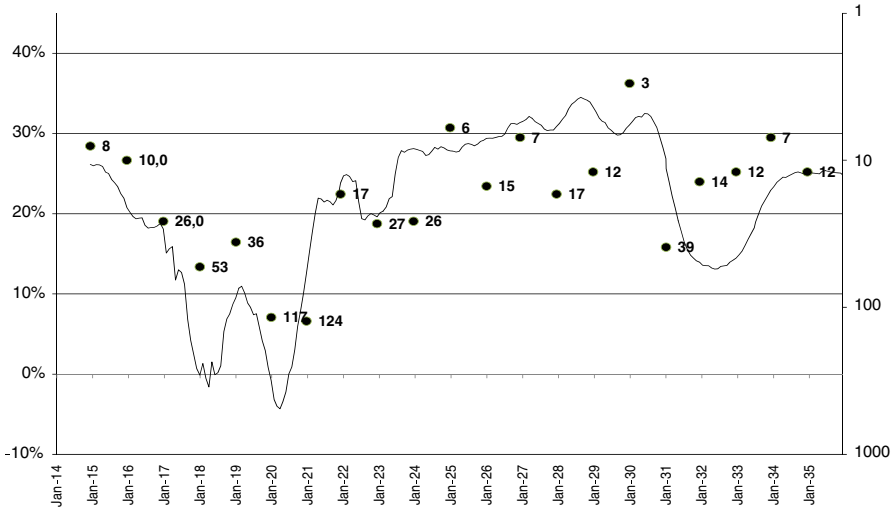

Fig. 1 Annual number of strikes (rhs log scale) and 12 month moving average of difference between real worker income and minimum price of family food basket (lhs in percentages). *Source* Strikes: Olábarri (1978: 498); prices for CPI: Boletín Municipal de Estadística—Bilbao; real worker's incomes: Altos Hornos de Vizcaya (1914–1923) and González Portilla (1984: 75 and 85)

dearth or abundance in family budgets, i.e. the percentage difference between real workers' income and the lower bound cost of living. Minus 20 % indicates that the wage is unable to buy 20 % of the family food basket and positive 10 % indicates that 10 % of the workers' income is still available after buying the family food basket. Families' ability to make ends meet follows a sharp and constant worsening throughout the First World War and the immediate post-war years up to 1920; a steady and rapid recovery between 1921 and 1923 is followed by gradual improvement up to 1930. A second sharp decline is observed between 1930 and 1931, followed by stability and a slow recovery between 1932 and 1934, and further stability in 1935.[14] When confronted with data on labour conflicts, measured here in the number of annual strikes, we find a close correlation. Strikes increase vehemently when average nominal family incomes worsen to minimum sustainability, i.e. they are not able to acquire the amount of calories required for work energy and basic vital needs.[15] This is the case in 1917, when the situation escalated into a revolutionary general strike, but also in 1919–20, when nominal earnings came close to this lower bound anew, and briefly in 1922, when employers were trying to force money wages back down to pre-war levels. The decrease in total earnings between 1929 and 1931 again seems correlated with increasing conflict. Over this period, breadwinner families had numerous occasions on which their families were deprived and these coincide with moments of anger as expressed by

[14] The renewed worsening in 1936 is not shown on the graph.

[15] Dasgupta and Ray (1987), and Ray (1998), especially chapter 8 on poverty and nutrition and Sect. 13.4 on poverty, nutrition and labour markets. On energy requirements and work energy, see also Consolazio et al. (1961), FAO (2001), Harris (2004), and Floud et al. (2011).

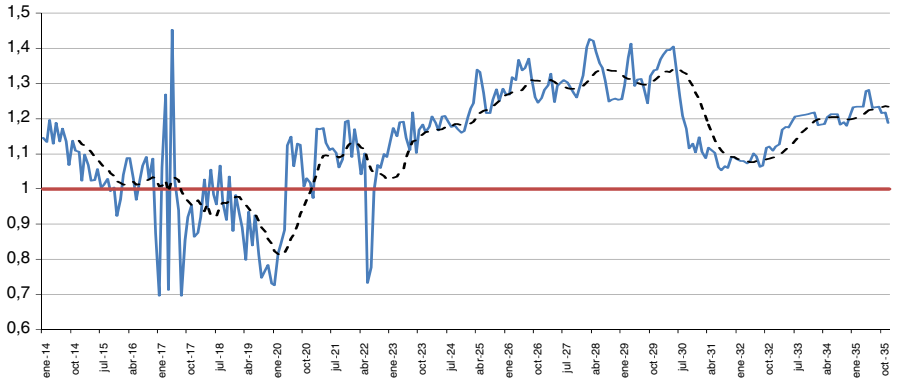

Fig. 2 Welfare ratios for *Altos Hornos de Vizcaya* steel worker's families, 1914–1936. *Source* Rojo Cagigal and Houpt (2011)

labour conflicts. At the same time, conflict decreased as earnings situated above costs of living over most of the 1920s until 1930.[16]

The figure we present here is no more than a rough approximation. But the series for real earnings and cost of living for an average family are based on very detailed data proceeding from single reliable sources. The monthly data introduce seasonality. This adds an important aspect to the issue of nutrition. Studies on energy requirements in present-day agricultural environments in East Asia have shown that during high-workload seasons land workers consistently consume more energy than they take in. This is sustainable during short intervals of high workloads, but energy reserves must be built up and recovered during idler seasons of the year.[17] Quite differently, factory work does not allow for inter-annual energy-reserve compensation. Energy requirements are constant year-round and workers will be sensitive over very short periods to sudden falls in real income. Families can compensate for this to some point, by having the remaining members of the family consume less.[18] But in the mid-term, this would have negative effects on their health and family well-being.[19]

According to our previous analysis on living conditions, real family incomes worsened between January 1914 and December 1919. They improved from January 1920 to April 1930, and from then on worsened until August 1932. They recovered to the levels attained in the mid-twenties by May 1935 but started a downward hike from then on. This is visualized in Fig. 2 with welfare ratios, i.e. the number of times a family can buy its basic consumption bundle which provides the necessary

[16] Short waves of strikes are possibly related to small downward adjustments in 'real family incomes' during the late 1930s.

[17] Consolazio (1966), Schofield (1974), Guzman et al. (1984), and Payne and Lipton (1994).

[18] Guaranteeing the share of male breadwinners may have been a rational response, enabling the husband and father to remain in work and thus contribute to the well-being of the family as a whole. However, this meant that any shortfall would be imposed exclusively on the share of women and children. Humphries (2013).

[19] See Rojo Cagigal and Houpt (2011) for mortality, pawning and child-abandoning response to real income variations in the Bilbao estuary over this period.

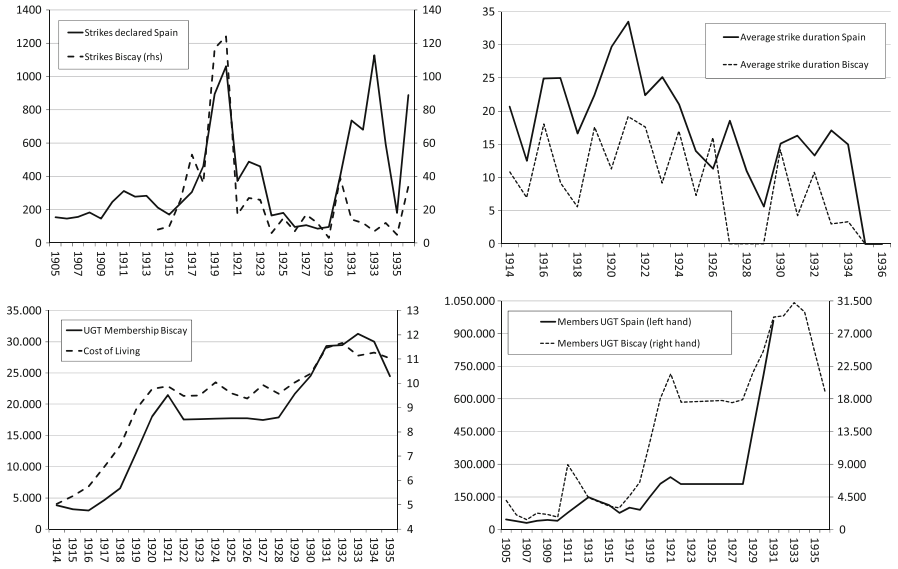

Fig. 3 Spanish and Biscayan strikes, 1905–1936—a first look at similarities. *Sources*: Silvestre Rodríguez (2003: 75), Sanfeliciano López (1990), de Larrañaga (1977) and Olábarri (1978: 446 and 498)

nutrition for basic body functions, maintenance and work. Some of these results are surprising, others expected. War and post-war economy deteriorated workers' living conditions, dictatorship and right-wing democracy improved them, and left-wing democracy maintained or worsened standards of living for these workers.

Figure 3 summarizes some characteristics of organized labour and strikes in Biscay (Bilbao and the administrative territory surrounding it) for the period we examine. The evolution of strikes declared in Biscay is very similar to that for Spain as a whole up to 1930. It shows a break in this year and initiates an inverse trend until 1935, which will be explained in the discussion of results. As Friedman (2007: 28) has pointed out, strike activity is episodic, characterized by long periods of dormancy punctuated by sudden spurts of action, or strike waves. We can observe in this case the existence of two strike waves, the first one from 1918 to 1921 and the second one from 1931 to 1933. Average strike duration in Biscay remained below that of Spain throughout the period studied with the exception of 1 year.

The Unión General de Trabajadores (UGT), a socialist trade union founded in 1888, became the most important working-class organization in Biscay. A Catholic and Basque-nationalist trade union, Solidaridad de Obreros Vascos (SOV), founded in 1911, competed with UGT, although the socialists remained the leading organization of Biscayan working class through all the period.[20] In Fig. 3, we can see that Biscay union membership in socialist UGT increased in levels during the First World War. But the important increase in UGT membership in all of Spain did

[20] The Confederación Nacional del Trabajo (CNT), an anarchist and radical union founded in 1910, did not achieve a relevant position in Biscay, despite its dominance in other industrial regions such as Barcelona.

Table 1 Causes of strikes in Biscay

	Registered strikes	Percentage indicating causes (%)	Of those indicating causes	
			Primary cause wage increase (%)	Primary cause others (%)
1914–1916	44	55	88	13
1917–1919	206	33	75	25
1920–1922	168	18	70	30
1923–1925	47	40	37	63
1926–1928	36	6	0	100
1929–1931	56	48	33	67
1932–1934	31	55	18	82
Total	588	32	60	40

Others include 24 % for readmission of workers or improving working conditions and 16 % in support of other strikes or political motivations

Sources Lazcano (1950) and Sanfeliciano López (1990)

not happen until the late twenties. UGT membership in Biscay continued growing over the 1920s and overall we find a close association between inflation and trade union membership.[21]

Table 1 shows what we can discern about the causes of strikes. Only 32 % of the strikes registered through local press indicated their motivation. Of these, 60 % name wage increases as the principal cause of the conflict. This is the predominant strike cause up to 1922 and resurfaces somewhat between 1929 and 1931. Among the other reasons reported by newspapers, readmission of workers and improving working conditions add up to 24 % and support for other strikes or political motivations the remaining 16 %. Still there is a clear dividing line in 1922, in terms of wage issues being the main reason for calling strikes.

Another interesting aspect of strikes is their seasonality. Griffin found that the seasonal movement of strikes is 'in general determined by two elements, first the already-existing pattern of business, and second the greater capacity for resistance on the part of employees in the early summer and later summer as opposed to spring and winter. Here, as elsewhere, the weather shapes the affairs of men' (Kennan 1987: 1130). Perrot (1974: 111–12) expanded on Griffin's idea: 'the difficulties of daily life, for a working class barely living at a subsistence level, were greater during the winter—the greater necessities for such items as clothing, heating and better nutrition, the greater likelihood of illness'. Severe economic hardship, which the winter time typically brought to a much larger segment of the working-class population, reduced the collective resources at the disposal of workers and therefore their capacities to carry on strikes. We also find strong traces of summer seasonality in strike frequency in the data for Bilbao.

[21] Ashenfelter and Pencavel (1969) find a strong causal relation between growing trade union membership and changes in price levels as a measure of changes in real workers' income. More recently Geraghty and Wiseman (2011) have found a high correlation between both union density and inflation rates with compromise outcomes.

Silvestre Rodríguez (2003) has examined annual strike data for the whole of Spain over the first third of the century. He finds that the characteristics of strikes disaggregated into its three components—frequency, magnitude and duration—are comparable or slightly higher than those reported by Shorter and Tilly (1974) for France, the US and other European countries. The pattern of Spanish strikes seems most similar to those observed in France, Germany, Belgium and Italy. Strikes motivated by wage increase demands were around 35 % of all strikes, according to information collected by the Instituto de Reformas Sociales. Sector breakdown shows construction, mining, metal working and textile as those with a highest labour conflictivity. Strikes were also closely correlated with geographical population and worker density. Bilbao was one of the main industrial nodes in Spain, which explains that around 10 % of the strikes registered in Spain were called in Biscay which concentrated approximately 2 % of total population.

The lower average strike duration in Biscay over the whole of the interwar period, observed in Fig. 3, could be indicative of a lesser degree of information asymmetry, better negotiation or lesser means of resistance on behalf of the workers.[22] As we have pointed out, strikes in Bilbao show summer seasonality, with a highest incidence in July and August. No such pattern can be found in the cost of living, unemployment, profit cycle or money wages. These seasonal patterns changed in the late 1920s and early 1930s, they evened out and shifted more to the month of May. No substantial explanation has been found for the high incidence of strikes in the months between April and August, but they are a reality also in our data.[23]

4 The narrative of interwar labour relations in Bilbao

Compared to other Western European countries, labour relations studies got off to a late start in Spain. Elsewhere labour academics had made important efforts to contrast theories about the determinants of labour conflict by collecting time series on strikes and related variables, especially following the high incidence of work conflict in the late 1960s and 1970s.[24] Although the decline in labour union power in the 1980s removed labour unrest from the mainstream economics research agenda, the topic has resurfaced time and again—with important shifts (Franzosi 1989: 358–360).[25] The organizational-political models proposed by Tilly (1978) and other

[22] Card and Olson (1995) find higher bargaining power for workers when organized by unions.

[23] For a review on the seasonality of strikes Kennan (1987: 1130); Griffin (1939: 51–54) focuses more on the US and Knowles (1952: 157–160) on Great Britain. Knowles finds the same May seasonality for the United States and Great Britain for the 1919–1939 period, specifically in the metal, engineering, shipbuilding sector but also in transport and construction. The May shift may very well be related to the First of May celebrations increasing conflictivity.

[24] For a summary of countries which had collected strike data by the 1980s, see Paldam and Pedersen (1984).

[25] More recently Huberman and Young (2002), Geraghty and Wiseman (2008, 2011) have examined war of attrition and strike outcomes in Canada in the interwar period, war of attrition with asymmetric information in the 1880s US and the determinants of strike compromises in the US up to 1945 respectively.

authors added an interest in long-term cycles, and there was a surge in the application of the newer developments in micro-economics—game theory, collective action and new institutional economics.[26] Over long periods, the study of labour relations in Spain remained dissociated from many of these efforts and trends.

But with the return to democracy, notable progress in collecting data and approximating the issue of Spanish labour relations has been made. Labour history in Spain received an important boost from the extensive empirical research of Tuñón de Lara (1972) and Soto Carmona (1989). The emerging industrial region of Biscay was among the first to be examined with a less ideological, more academic approach. Two monographs are considered path-breaking. Fusi (1975) provided a thorough traditional British labour history approximation in 1975, whereas Olábarri (1978) connected to the structured theoretical approach marked by Walter (1970) or Clegg (1976) only a few years afterwards. Their work laid the foundations in defining methodology, historical sources and the academic study of labour relations in Biscay. Later contributions have concentrated in more detail on different periods and have extended the analysis to other regions.[27]

In the pages to follow, we will recount the existing narrative of what we know about labour conflicts in the region our analysis will be concentrating on. In the first third of the twentieth century, labour relations in Biscay can be divided into four distinct phases which coincide with the periods of strike frequency we have shown before: a phase of labour-relations formation and 'all-out war' before 1912; a second phase of conflictive bargaining between 1912 and 1923; a phase of growing corporatization and low conflict during Primo de Rivera's dictatorship (1923–29); and a period of trade union resurgence and growing conflict from 1930 onward.

The first phase of labour relations was characterized by the war of attrition between unions and employers. It showed short waves of social agitation, disappearance and reappearance of conflictivity, and the dominance of socialist trade unions. On one hand, the 'all-out war' nature of the early industrial conflicts can be explained by the degree to which their protesters were exploited and the ease with which they were replaced by scabs. Union activism concentrated on miners and dock workers, both with low skill qualification, reliant on and prone to physical force and easily replaced with the constant stream of immigrant labour. On the other hand, workers' resistance societies were weak, and employer associations, aware of their leverage, were unwilling to negotiate and keen on hungering out dissent. They used scabs and provoked outbursts of violence to force interventions by the armed forces and civil authorities, presuming that intervention would be in their favour.[28]

[26] See Kaufman (1982) for an exposition on the debate over economic versus organizational-political models. For an institutional approach to the theory of trade unions, see Kaufman (2010).

[27] Rivera (1985) analyzed the labour movement in the city of Vitoria, Luengo (1990) in Guipúzcoa; and Castells (1993) put together a synthesis for all of the Basque regions of Spain. Sanfeliciano López (1990) studied the socialist trade union Unión General de Trabajadores (UGT) in Biscay during the Second Republic; and Mees (1992) analysed the Basque-nationalist labour movement. Other important works include Cabrera and Rey's (2002) survey on employer's associations. Miralles Palencia (1992) provides a solid review of most of this literature.

[28] A closer description of the three intense waves of strikes in 1890–1892, 1899–1903 and 1910–1911, with the general disorganization and passivity in between and which precede the period we examine, can be found in Olábarri (1978: 396–404) and Fusi (1975: 81–104, 118–52, 203–21, 230–42 and 318–31).

The period between 1911 and 1923 was a phase of conflictive bargaining, which had its foundation in the steady rise of the socialist trade union UGT, combined with employer's associations' indulgent resistance during the economic boom, and the gradual weakening of UGT power after 1920, when internal excisions and economic slowdown allowed for a crackdown on unions.

As a result of Spain's neutrality during World War I, Biscay's industry had the opportunity to reap important wartime profits. But at the same time, speculation, hoarding, shortages and economic mismanagement doubled the prices of basic needs.[29] This led to money wages lagging behind the cost of living over most of the war. The expansive economic conjuncture thus enclosed an explosive mix for strikes: a working class grieved by rising costs of living and a thriving war economy providing industrialists with extraordinary profits and therefore determined to avoid stoppages and make concessions. These circumstances combined to creating a period of conflictive negotiation between employers and unions. Strikes spread both in scale and scope, but they were preceded, accompanied and followed up by negotiations. Strikes were used as a signalling device in a ritual to extract information on whether employers were willing and able to concede a larger share of surplus. The climax in this phase of conflictive labour relations was attained between 1918 and 1920 at the height of strike frequency and was followed by a slow decline in the search for negotiation, bargaining and agreements. During this phase of rise and decline, the large metal-working companies and the socialist unions dominated labour relations in Biscay (Olábarri 1978: 406–408).

Several factors contributed to the deterioration of labour relations in 1920: the end of the war, socio-political revolutions in post-war Europe, the consolidation of the Russian Revolution, and continuously rising prices of basic needs. Previous employer concessions had also been strained beyond the means of small- and medium-sized enterprises. Whereas the larger firms had excellent business perspectives as long as their production processes did not come to a halt and were more concerned with avoiding hold-up than with wage concessions, small firms had less economies of scale and scope and did not profit to the same extent from wage concessions. By July 1920, there were major divisions between the groups of large businesses and small- and medium-size enterprises. Labour relations within the large corporate were different, and Olábarri sustains that only the pact between UGT and large metal-working firms had prevented labour conflict from escalating to levels like in Barcelona and Madrid. Due to the impact of the industrial crisis of 1921, wage concessions by big employers finally came to an abrupt halt. In 1922, following a long series of strikes and lock-outs, trade unions were defeated and obliged to accept substantial wage cuts.

The third phase, between 1923 and 1929, was of state-corporatist dominated labour relations. The escalation of political and social violence in Barcelona and Madrid, especially the growing threat of anarchist power in Catalonia, and the lack of direction and authority on behalf of the existing Restoration political factions led to a military coup d'état. General Miguel Primo de Rivera had staged what was

[29] The cost of a basic food basket which included heating and lodging for working-class families in Bilbao grew from 100 in September 1914 (beginning of WWI) to 168 in November 1918 (end of WWI), and to 224 in December 1920 (price peak during the war and postwar period). See Rojo Cagigal and Houpt (2011).

intended to be a short transitional military take-over, but later clung to power in an attempt to create a moderate corporatist state aimed at overcoming social unrest and the tensions and antagonisms between the old and new forces of power and wealth. This involved the repression of the more radical trade unions and seeking the collaboration of the more moderate socialist union within the dictatorship's corporatist labour-relations management.

Primo de Rivera gradually introduced corporatist institutions to articulate bargaining. Some time before, at the beginning of the twenties, the last liberal governments had organized *comités paritarios* as tools of intermediation and resolution of disputes between unions and employers in some industrial sectors. However, the use of these corporatist arbitration boards had been sporadic. One of the main reasons was that, like their Italian counterparts, Spanish industrialists were sceptical about the binding effectiveness of negotiating in such bodies as long as trade union membership remained non-compulsory.[30] A broader corporatist system of labour relations was enacted in 1926, when Minister Eduardo Aunós published a decree creating the National Corporatist Organization. The decree extended the use of *comités paritarios* to all industrial sectors and organized them into local representative bodies, industry-based tribunals and corporations. The corporations integrated all the *comités paritarios* of a branch or industry and organized them hierarchically placing the Ministry of Labour at the peak of the organizational pyramid (Perfecto García 1977). Aunós' corporatist architecture retained the more liberal dispositions but restructured it and increased the degree of government intervention. Although Primo de Rivera had created a single official political party, he made no attempt at verticalizing unions. In contrast to other corporatist experiences of the time, Aunós' model allowed for pluralism both for unions and employer associations. The repression of the more radical unions and the hierarchical corporatist structure imposed by the dictatorship gave the existing moderate unions the opportunity to consolidate workers' representation on arbitration boards. The socialist union UGT, which was the dominant trade union in Biscay at the time, collaborated decidedly in this scheme.[31] Economic growth and higher wages during the 1920s made the collaboration of UGT and the growing corporatization of labour relations easier to defend towards its ranks and files.[32]

The improvement of industry-workers' living conditions, the unions' defeat in 1922 and early repression on behalf of the dictatorship had undermined union power in Biscay over the first half of the decade (Castells 1993: 161–162). This steady decline in membership and UGT's pragmatic stance had pushed the organization to

[30] The liberal political elites rejected compulsory trade unionization because it clashed with basic liberal principles like the freedom of association (Rey Reguillo 1992). See also Adler (2002).

[31] Weak government intervention combined with trade-union pluralism induces Linz (1981: 382) to define this model as a 'social corporatism with pluralist features'.

[32] Over the 1920s, up to 1929 industrial production increases by little over 60 %, i.e. an annual average growth rate of almost 5%, from 1929 to 1935 it fell by approximately 1.5 % per year (Prados de la Escosura 2003, Tables A.5.7.& A.5.8).

actively participate in Aunós' corporatist system. From 1927 to 1930, the socialist union put into practice an intensive campaign to position themselves in the *comités paritarios* contending with the yellow Catholic and Basque-nationalist unions.[33] The system by which delegates were elected was ruled by a proportional-majority system, creating a bias towards the dominant position of UGT in the dictatorship's arbitration boards, especially in the metal sector (Ibáñez and Pérez 2012: 122). This in turn fed back into higher levels of affiliation. UGT had increased its ranks and files from just 4,000 members in 1924 to almost 18,000 in 1928 (Olábarri 1978; Otaegui 1986; Castells 1993; Ibáñez and Pérez 2012).

The fourth phase of labour relations, from 1930 to the outbreak of the Spanish Civil War in 1936, was a period of higher conflictivity. The social peace was disrupted in the year 1930 by the final decay of the Primo dictatorship. This was the year of greatest labour conflict in Biscay in the period between 1926 and 1936, coming close to the highest levels attained after the war. The literature stresses two factors that explain this resurgence. Firstly, the dominance and overrepresentation of UGT in the corporatist bodies kindled rivalry and hatred in the ranks of the contending unions, especially in the communist unions. Secondly, the fall of Primo de Rivera opened a period of uncertainty in which arbitration seemed doomed to disappear. In preparation for a new institutional setting, a programmatic stance rendered better future returns. In this situation, unions—including UGT—increasingly called strikes with a political or revolutionary motivation (Olábarri 1978: 427–428). Strikes seeking the re-admittance of workers also propagated, especially in the metal sector, a sign of growing defiance and attrition. Unemployment did not affect labour relations in 1930, given that it did not appear until the end of the year. The number of employees in the larger iron-and-steel concerns actually increased slightly between December 1929 and December 1930 (Miralles Palencia 1988: 117). Economic contraction and consequent unemployment made its appearance in 1931.

The proclamation of the Second Republic in April of 1931 modified the labour relation's institutional framework anew. The leftist-republican governments developed a social-reform agenda aimed at improving the standards of living of the working class. The strategy designed by the socialist Labour Minister, Francisco Largo Caballero, was to maintain the corporatist structure of collective bargaining created during the preceding dictatorship, but imposing a stronger bureaucratic control by the Labour Ministry through the local and provincial delegations. Two laws in November 1931 enacted the new legal framework for collective bargaining. It endorsed the creation of arbitration boards—renamed *jurados mixtos*—in all sectors of the economy and encouraged detailed and lasting collective bargaining agreements, termed *bases de trabajo* (Soto Carmona 1989). The new legislation and the Ministry's firm leading hand developed a dense network of collective bargaining in Spain, which showed some degree of similarity to the institutional setting which

[33] Catholic trade unions (*Sindicatos Católicos and Sindicatos Libres*) and Basque-nationalist unions such as SOV, also with a strong Catholic background, defended religious and family values, respect for private property, and rejected strike action. These unions strongly favoured negotiations and agreements with employers. SOV was financed by one of the most important entrepreneurs of the time, Ramón de la Sota. See Mees (1992).

existed during the latter half of Primo de Rivera's dictatorship.[34] Biscay made good use of the *jurados mixtos*, producing a long record of balanced settlements, much more than other regions of Spain (Sanfeliciano López 1990: 337).

5 What the short-term analysis of data reveals during conflictive bargaining, 1914–1923

With these different labour relation regimes in mind, our endeavour will be twofold: to reveal what is hidden in the monthly data by concentrating on the short-term factors generating labour conflict, and to combine this with our primary interest to discern the economic factors contributing. Here we are especially interested in the variation of income via prices or money wages, which would provoke situations of relative deprivation. We approximate the impact of economic factors on labour conflictivity in a simple wage bargaining model initially proposed by Ashenfelter and Johnson in 1969 and more recently discussed by Kennan in 1987, Franzosi in 1995, and Farber in 2001.[35] This approach has shown to be more successful with quarterly data than with annual frequency.[36] Seasonal dummy variables are included to capture regularities in specific moments of the year. It also includes a variable which reflects the cumulative effect of real earnings variation in the recent past, the level of unemployment and a measure of perceived business profits. The Ashenfelter-Johnson model is a non-equilibrium model of strike activity which tries to detect the play of forces between what workers need to ask for and whether they are in a position to ask for it, and what employers are able to concede and whether they are willing to concede it.

$$S'_t = \beta_1 D_{1t} + \beta_2 D_{2t} + \cdots + \beta_{11} D_{11t} + \beta_{12} \frac{\sum_{i=0}^{n} \Delta R_{t-i}}{n+1} + \beta_{13} \mathrm{UN}_t + \beta_{14} \pi_{t-6} + \beta_{15} T + \epsilon_t \tag{1}$$

In our model, S'_t is the number of strikes registered.[37] D_{jt} are the monthly seasonality dummies from January to November.[38] R_t is the real representative working-family's earning. The variation of their real income (ΔR_t) has been

[34] For the institutional continuity of the collective-bargaining system in Spain during the 1920s and 1930s see Rojo Cagigal (2009: 97–8).

[35] For discussion and comparisons of the model see Mumford (1993) and Goerke and Madsen (2004).

[36] Quarterly data for United States in Aschenfelter and Johnson (1969), for Great Britain in Pencavel (1970), and for Canada in Abbot (1984). (Kennan 1987: 1122).

[37] In the original model S'_t is the probability of a strike, which should be approximated by S_t/N, the number of observed strikes over the number of contracts that are renegotiated. The probability must be proxied by the total number of strikes registered, which is consistent with assuming contracts being renegotiated evenly throughout the period.

[38] In the original model these seasonal dummies were included to capture the termination of contracts, in our case we include them to capture omitted seasonal variation in general. December shows the lowest strike frequency worldwide and also in Bilbao in this period.

included as a two-period moving average. The lag structure is based on our previous work on family income, pawning, child abandoning and mortality. Two months is the statistically significant lag length with which these families react to deprivation in the form of increased pawning, which we assume to be indicative of the time with which economic strife seriously affects working-class families (Rojo Cagigal and Houpt 2011).

Although we were more interested in seeing how short-term hardship affected strike frequency, we have also followed the bargaining-model modification proposed by Stern by using both income levels and changes in order to capture the effect of prosperity and relative deprivation, respectively (Stern 1978). UN_t is the current level of unemployment proxied by the inverse of nuptiality. As we have commented before, nuptiality rates not only reflect the postponement of marriage due to unemployment, but also growing underemployment and any other form of reduction in earnings and income. π_{t-6} is the six-period lagged Bilbao stock exchange index.[39] Business perspectives, real income and unemployment rates will interact to signal the give-and-take dynamics between employers and workers, and their willingness to grant concessions and support collective action, respectively (Franzosi 1995: 32–33). T is a time-trend variable introduced to approximate structural changes in the bargaining model, and ε_t is an error term.

In the original model, the expected signs for the coefficients of real income and unemployment are negative. The previous level of profits has an undetermined sign. This is because an upturn of profits increases the probability of management to give into wage demands but also tends to increase wage demands made by workers—perhaps more than what management would be willing to concede. The combination of the wage demands and the concession curve of employers in each particular case will determine whether unions lead workers to strike and thereby the expected sign of changing profits remains undetermined. A positive sign would indicate the unions demand more than what profits are signalling employers to be willing to concede.

The table below shows the results of the OLS estimation in regression (1). In the majority of the cases, every one of the coefficients is in the expected direction (lagged earnings variation—negative; lagged profits—positive and unemployment—negative) and is statistically significant. The results provide strong support for the material-needs explanations for strikes.[40] The serial correlation in the first regression is indicative of omitted variables and, together with the analysis of the residuals, recommends a GLS estimation—presented in specification (2). This second estimation pushes unemployment out of the foreground, but earnings variations and profits remain significant variables.[41] Both specifications reflect the peak seasonality of strikes in summer months, very similar to what the original

[39] We have applied a 6 month lag to the Bilbao Stock Exchange index based on Moore who calculated an average six month lead for troughs and a 5 month lead for peaks between the United States Common Stock Price index and business cycle in the United States between 1873 and 1945. (Moore 1983: 148).

[40] This is similar to what Skeels (1982) found for the first half of the twentieth century in the US with the exception of the 1920s. See also Kaufman (1982: 484–89).

[41] If the differences in the coefficients estimated by OLS and GLS can give us any hint on the variables omitted from the model, these would be such that they lower the effect of changes in real income and that of unemployment. Higher job security and better working conditions are possible candidates.

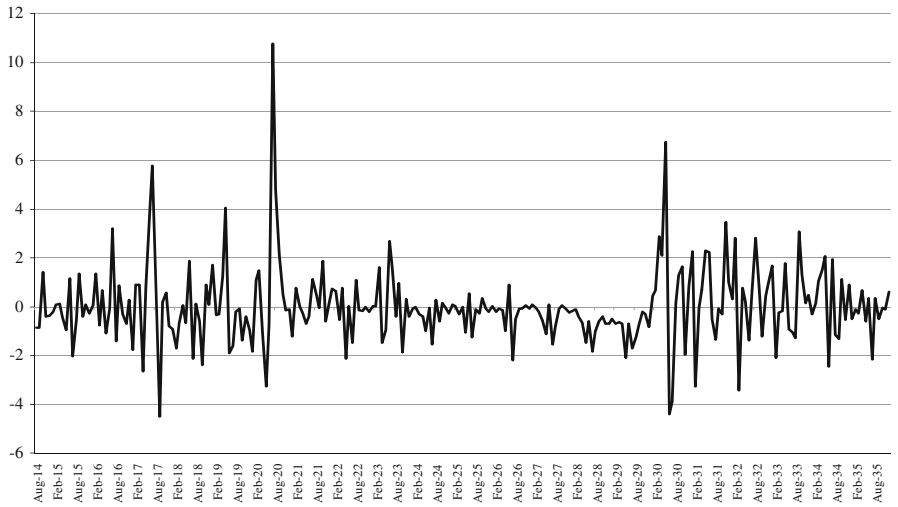

Fig. 4 Plot of residuals. GLS estimation, Table 2, specification (2)

Table 2 Test of wage bargaining model for Biscay

Dep. var.: nr. strikes	(1) OLS Full sample	(2) GLS Full sample	(3) Phase 1 Jan 14–Aug 23	(4) Phase 2 Nov 23–Dec 35	(5) OLS Full sample	(6) OLS Full sample
Constant	1.473	0.268	−2.726	−0.407	**8.127*** **	4.711
	(0.947)	(1.694)	(4.449)	(0.932)	(1.562)	(2.935)
DJan	−0.157	−0.125	−0.445	0.066	−0.151	−0.175
	(0.541)	(0.329)	(0.695)	(0.240)	(0.517)	(0.523)
DFeb	0.196	0.149	0.065	0.168	0.252	0.237
	(0.545)	(0.422)	(0.891)	(0.288)	(0.521)	(0.527)
DMar	0.231	0.164	0.419	−0.074	0.294	0.290
	(0.549)	(0.472)	(0.996)	(0.307)	(0.525)	(0.530)
DApr	0.082	0.091	0.031	0.079	0.089	0.089
	(0.541)	(0.493)	(1.029)	(0.314)	(0.517)	(0.522)
DMay	0.255	0.227	0.472	−0.034	0.272	0.276
	(0.542)	(0.507)	(1.058)	(0.316)	(0.518)	(0.524)
DJun	0.616	0.607	0.988	0.263	0.617	0.619
	(0.541)	(0.510)	(1.063)	(0.317)	(0.516)	(0.523)
DJul	**1.574*** **	**1.644*** **	**3.578*** **	0.118	**1.540*** **	**1.528*** **
	(0.534)	(0.508)	(1.066)	(0.371)	(0.521)	(0.527)
DAug	**1.513*** **	**1.525*** **	**3.137*** **	0.270	**1.549*** **	**1.561*** **
	(0.543)	(0.488)	(1.014)	(0.317)	(0.517)	(0.522)
DSep	0.733	0.742	1.597	0.151	0.804	0.809
	(0.543)	(0.461)	(0.967)	(0.303)	(0.517)	(0.522)
DOct	0.172	0.178	0.629	−0.087	0.149	0.147
	(0.543)	(0.413)	(0.873)	(0.281)	(0.517)	(0.522)

Table 2 continued

Dep. var.: nr. strikes	(1) OLSFull sample	(2) GLSFull sample	(3) Phase 1Jan 14–Aug 23	(4) Phase 2Nov 23–Dec 35	(5) OLSFull sample	(6) OLSFull sample
DNov	0.065	0.042	0.175	−0.009	0.096	0.092
	(0.535)	(0.323)	(0.691)	(0.232)	(0.517)	(0.523)
MA-12 long-term inc.var.					**−1.138*****	**−0.995*****
					(0.219)	(0.282)
MA-2 income variation	**−1.565*****	**−1.200*****	**−1.260****	−0.956[@]	**−1.768*****	**−1.829*****
	(0.475)	(0.335)	(0.535)	(0.609)	(0.457)	(0.462)
Unemployment	**−0.096****	−0.025	0.048	−0.004	**−0.121*****	
	(0.041)	(0.078)	(0.179)	(0.054)	(0.040)	
Peak						**−0.072***
						(0.042)
Trough						0.061
						(0.062)
Business profits(-6)	**0.0107*****	**0.011*****	**0.015****	0.002	**0.007*****	**0.009*****
	(0.002)	(0.004)	(0.006)	(0.002)	0.001	(0.002)
Time trend	**−0.008*****	**−0.008****	0.008	0.001	−0.002	0.002
	(0.001)	(0.003)	(0.021)	(0.002)	0.002	(0.001)
AR(1)		**0.643*****	**0.626*****	**0.453*****		
		(0.050)	(0.083)	(0.074)		
R-squared	0.351	0.613	0.644	0.296	0.421	0.410

Bold coefficient values are significant

[@] Significance at 11 %, * at 10 %, ** at 5 % and *** at 1 %

model found for the United States and other industrial countries. Both estimations show that economic factors are capable of explaining an important part of the variability of strike frequency over the period.

The residuals for the GLS regression (2) shown below reflect the three periods of labour-relations regimes in Biscay during the period we examine. The first period of conflictive bargaining stretches from 1914 to 1923. A closer look at Fig. 4 reveals important surges in strike activity—July 1917, May 1919 and August 1920—which are not explained by the movements of the explanatory variables included in the regressions. All the observed strike peaks are replicated in the estimated values but they are underestimated. Economic variables alone cannot explain the explosive nature of conflict in this stage, although it does very well in explaining when strike waves do occur within that particular economic bargaining framework (Table 2).

During the Primo de Rivera dictatorship (1923–1929), the fitted observations continue to pick up strike occurrence until 1926, when the arbitration boards enter the scene. Thereafter, until the end of the dictatorship, strikes practically disappear. In the last phase of labour relations, the wage bargaining model fits the observed data well during the first 2 years (1930–1931), but is completely inadequate when corporatist bargaining institutions are reintroduced.

For the socialist union UGT, strikes stopped being a signalling device after 1926. They were no longer part of a procedure for obtaining 'rite'-full redistribution as it had been in the previous period. Before 1923, asymmetric information and redistribution may have been at the base of strikes. Private information about the demand and profitability of its products was withheld by the firm. Strikes became a device to make firms signal whether they had good enough business perspectives to therefore grant higher wages immediately or whether they had poor perspectives and resisted the strike to force lower wages demands. *Ex post* the private information on demand would become available to labour by way of the audited accounts in the shareholder reports, dividend announcements and the *climate of prosperity* workers breathed in their shops. The production foregone by strikes may be considered the cost of extracting such private information at each moment of time.

In any case, it is worth noting that if anything remained in place during the following phases of corporatist labour relations, it is the high sensitivity of strikes to decreases in real earnings—see both regression (4) and Table 3. As we can observe in specifications (5) and (6), this income-variation sensitivity remains significant even when we add long-term variations in incomes or the differentiated effect of unemployment—trough and peak variables of unemployment which emphasize the opposing impact that unemployment may have on strike frequency. As expected, unemployment plays a significant role when emphasizing low unemployment phases—peaks. Tightening labour markets encourage workers to strike in the early thirties. But the increasing threat of job loss and rising unemployment and underemployment discourage them from stoppages as the decade preceded. At the same time, neither long-term variations nor short-term variations in income can be discarded as determinants of higher strike propensity.

It might be interesting to insist on the similarity to other studies for this period. Knowles (1952: 314) found that strikes in post WWI Britain were mainly aimed at avoiding decreases in wages. Both Knowles for Great Britain and Griffin (1939: 68) for interwar America place particular importance on 1920–1921, a period in which wholesale prices fell by more than a third in both the United States and Britain. In that same period, strikes fell by 30 % in 1921 and 67 % in 1922 in the United States, and by 50 % in Great Britain in 1921 (Kennan 1987: 1116). Strikes acquire a completely different meaning in a context of growing recession. They will no longer be used as a tool for extracting information on business perspective. Rather than this, they will be employed as a defensive mean in order to curb placing the weight of economic adjustment on workers.[42]

Some very convincing evidence on pro-cyclical fluctuations of strike activity for the interwar period was provided by Jurkat and Jurkat (1949) for the United States between 1915 and 1938.[43] The NBER business cycles were divided into nine phases: phases one, five and nine being trough, peak and trough, respectively. The total number of months between trough and peak—or peak and trough—were

[42] For a summary of this sort of 'defensive strikes', see Naples (1987).

[43] This has also been pointed out by Rees (1954) and Weintraub (1966); although questioned by Scully (1971), who found differences in the frequencies of both cycles using spectral analysis. Nevertheless it adds the interesting aspect of how inflation and strikes relate to each other.

Table 3 Procyclicity of strikes to cost of living index cycles

	Trough Phase 1	– Phase 2	Expansion Phase 3	– Phase 4	Peak Phase 5	– Phase 6	Contraction Phase 7	– Phase 8	Trough Phase 9
1st cycle	01–03/1914	04/14–05/16	06/16–07/18	08/18–09/20	10–12/1920	01/21–04/23	05/23–08/25	09/25–01/28	02–04/1928
	73	31	146	269	73	130	47	3	0
2nd cycle	02–04/1928	05/28–08/29	09/29–01/31	02/31–06/32	07–09/1932	10/32–07/33	08/33–05/34	06/34–03/35	04–06/1935
	0	0	115	330	244	73	73	24	0

Percentage of average strike number over the cycle

divided into three phases of equal length, expansion phases two, three and four and contraction phases six, seven and eight, respectively. We apply this same methodology to the cost-of-living index we have for Biscay, and for each phase, we count the amount of strikes in that phase expressed as a per cent of the average number of monthly strikes over the whole cycle. Therefore, 73 % in the first cycle during phase one means that the number of strikes observed in these 3 months is 73 % of the average monthly number of strikes over the whole cycle. Again Table 3 shows there is a high level of coincidence between these price-real income cycles and the relative frequency of strike waves. Strikes occur over average in the expansion and peak phases of inflation.

Knowles (1952: 147) stressed the cost of living as a non-direct indicator of economic pressure on the worker's life, in so far as worker's families live on narrow margins they might be expected to resist rises in the cost of living by striking. Applying this older methodology to measure economic pressure on worker's life, we find that the cyclic movement in the cost of living is very closely tied to the strike cycle. Strikes have a high incidence at the peaks of basic-needs price increases and linger on after.[44] Relative deprivation of families cannot be discarded as ultimate source of labour conflict during neither of the two cycles. As to why strike frequency does not remit until some time after prices stop increasing, perhaps Hoffer (1951: 27–28) has best expressed the dormant nature and lagged timing of addressing grievance: 'Discontent is likely to be highest when misery is bearable; when conditions have so improved that an ideal state seems almost within reach. A grievance is most poignant when almost redressed (…) it is not actual suffering but the better taste of things which excites people to revolt'. With this in mind, we can return to the change in the bargaining scenario initiated by the dictatorship in November of 1926.

6 What the short-term analysis reveals during corporatist bargaining, 1926–1936

As we have seen before, the corporatist arbitration boards introduced in 1926 by Labour Minister Eduardo Aunós opened the door for the socialist trade union UGT to institutionalize bargaining and outrival contenders.[45] The new regime followed a two-tiered strategy of repressing radical left-wing unions—anarchists and communists—and at the same time offering power and overrepresentation to the socialists and, at a lesser extent, to the yellow unions—Catholic and Basque nationalist. UGT merely followed a pragmatic strategy of gathering power, consolidating its organizational prowess and converting itself nationwide into the hegemonic trade union it had been in Biscay.

[44] Goerke and Madsen (2004: 395) summarize the literature which insists on inflation fostering strikes if workers have not been compensated for the resulting loss of purchasing power.

[45] For the corporatization of interest intermediation, see the seminal work of Schmitter (1974). For an analysis of the process of corporatization in authoritarian regimes in interwar Europe, see Pinto (2012).

Therefore, the socialist trade union pounced on the opportunity to consolidate their power from within the state during Primo dictatorship and then promoted the system on as a solid vehicle to continue accumulating power during the first years of the Republic.[46] The scenario of labour relations we can describe for 1931 is that of a region which is increasing its organized collective bargaining, which has growing union membership, mainly socialist and Basque nationalist, and which is facing a severe situation of unemployment—much higher than any other part of Spain. The important political involvement with which the masses reacted to the new pluralist regime, the high expectations for improvement harboured in the new government due to its socialist participation, the mounting strength of unions and the growing unemployment combined to a highly explosive *mélange*. But quite contrary to what might be expected, in Bilbao it generated one of the lowest strike frequencies in Spain.

A possible explanation for the low labour conflictivity was the strategy of moderation employed by the two most important unions. In the beginning, in 1931, workers blamed employers for lay-offs and production cut-downs. They accused them of sabotaging the consolidation of the new political regime.[47] As a reaction, socialist union leaders conducted an important campaign of contention, convincing workers that the cause of unemployment was exogenous and that the measures taken by employers were justified by the severity of demand contraction. The operation included visits by government officials, newspaper campaigns and wide-scale factory briefings (Castells 1993: 167–168). The Basque-nationalist union SOV developed a similar policy of finding a non-conflictive way out of recession. Both trade unions promoted alleviation of the crisis through the *jurados mixtos*; the creation of a short-term unemployment insurance; organizing fundraising to pay for unemployment benefits; increasing the capacity of soup kitchens; or lobbying the government, especially socialist Public Works Minister Indalecio Prieto, for public works stimulus packages as a means of reactivating the construction and iron and steel industries (Olábarri 1978: 428–429).[48] As a result of their combined efforts, strike activity was more restrained between 1931 and 1933, to the contrary of what happened in other regions of Spain.

Once socialist unions lost their grip on the captured state after the political right won the elections in November of 1933, they turned their organization and discourse to revolution. How had the ranks and files been accommodated so easily over the two previous years of the Republic? Between its sixteenth congress in 1928 and its seventeenth congress in October of 1932, UGT carried out a strong centralizing reform within the trade union. This included the creation of 37

[46] The coming of the Second Republic also increased union membership in Biscay. Socialist UGT affiliates grew from 18,000 members in 1928 to more than 31,000 in 1934. The second most important union, the Basque-nationalist Solidaridad de Obreros Vascos, increased its membership from 6,200 in 1929 to 18,000 in 1935. Union pluralism re-legalized anarchist and communist unions, prohibited during the dictatorship, although their activity remained limited to very occasional conflicts.

[47] The most important strike motives during 1931 were the re-admittance of laid-off workers and the reduction of the working day.

[48] According to Sanfeliciano López (1990): 301), the underemployment or the unemployment itself was the main obstacle to sustain the workers' demands via strikes.

Table 4 Wage bargaining model with rivals

Dep. var.: nr. strikes	(1) Nov 26–Dec 29 Jun 31–Dec 35	(2) Jun 31–Dec 35 II Republic
Constant	−1.4743	8.629
	(1.618)	(8.202)
DJan	0.072	−0.222
	(0.715)	(0.912)
DFeb	−0.074	−0.415
	(0.716)	(0.906)
DMar	−0.456	−1.062
	(0.727)	(0.911)
DApr	0.036	0.294
	(0.741)	(0.979)
DMay	1.199	**1.869***
	(0.746)	(0.984)
DJun	0.668	0.082
	(0.713)	(0.949)
DJul	0.676	0.071
	(0.693)	(0.877)
DAug	0.301	−0.322
	(0.697)	(0.876)
DSep	0.018	−0.553
	(0.701)	(0.857)
DOct	−0.362	−0.961
	(0.689)	(0.851)
DNov	−0.006	−0.319
	(0.671)	(0.857)
MA(2) income variation	−0.312	**−5.324***
	(1.544)	(3.168)
Unemployment	**−0.138***	
	(0.084)	
Business profits(-6)	0.005	**0.023***
	(0.004)	(0.013)
Rivals	**1.481*****	**0.922***
	(0.428)	(0.514)
Peak		**−0.686***
		(0.368)
Trough		−0.006
		(0.097)
Time trend	**0.016*****	
	(0.005)	
R-squared	0.294	0.415

Bold coefficient values are significant

* Significance at 10 %, ** at 5 % and *** at 1 %

'National Industrial Branches' which came under the full control of the national trade union hierarchy. Strikes and relations to employers were relegated to the centralized bodies of the union (Ibáñez and Pérez 2012: 145).[49] For Tilly (1989: 444), 'to the extent to which crucial decisions visibly take place at a national scale (…) and the power position of labour is uncertain, we can expect political strikes to become prominent'. In such a scenario, the temporal patterns of strikes should change accordingly, in order to accommodate from the local productive fluctuations to changes in policy, regimes and power on a national level.

UGT's strategy of consolidating more organizational power within the corporatist-state framework could have produced a strategic response by other unions which could have influenced the strike cycle. In order to test this, we have modified the original model to include a dummy variable we have named 'rivals'. This dummy variable will be zero over almost all of the period and take value one for the months surrounding the publication of agreements struck by the arbitration boards (*comités paritarios* until the Republic and *jurados mixtos* afterwards) in the metal sector of Biscay —the highest institutionalized sector in industry.[50] The hypothesis being tested here is that rival unions would intensify strike activity whenever UGT-dominated arbitration boards obtained agreements on holidays, minimum wages, overtime compensation or wages adjustments. Two motivations are behind this type of sabotage. On one hand, it sends a strong signal to employers that UGT does not represent all workers and that other unions should have a higher presence in the arbitration boards. It also undermines the authority of UGT as a negotiating party. On the other hand, the publication of such agreements can be used to convince workers that they have been sold out by UGT and rally anger for protest. As we can see in Table 4, the 'rival' variable is significant and positive for both of the models we specify. The political struggle we observe here is therefore not one tied to national politics but rather driven by the rivalry of competing unions at moments when arbitration boards publish the agreements they have negotiated in Bilbao.

Two other interesting results are, on one hand, the change in the seasonality of strikes, especially the high incidence of strikes in the month of May—a common pattern in Great Britain and United States—and the other result worth noting is that the economic variables remain relevant in this new regime of labour relations. Grievances have retained their spontaneous impact on strike frequency and firm profits and unemployment continue to show the correct coefficients and are significant [Table 4, (2)].

The impact of unemployment should be significant especially in the 1930s, when the effect of the economic depression on industrial employment in Biscay was particularly harsh. The iron and steel industry and metal-working industries were especially hard hit, followed by mining and construction. The three sectors added up 90 % of unemployment in Biscay (Rivera 2002: 128). The increase in unemployment reached its heights between 1931 and 1932 and failed to drop substantially in

[49] Nevertheless as Cruikshank and Kealey (1987) insist wages figure prominently both in times of union strength and weakness.

[50] Publication dates are taken from Prat and Molina (2011: 14). Dummy variable takes value one for the month before publication, the month of publication and the two months following publication.

Table 5 Crime and dispair

Dep. var.:	(1) Strikes Jan 30–Dec 35	(2) Strikes Jan 30–Dec 35	(3) Property crime Jan 30–Dec 35
Constant	11.820	**25.601*** **	**115.877*** **
	(7.982)	(8.523)	(19.493)
DJan	−0.585	−0.438	−6.551
	(1.036)	(1.017)	(5.164)
DFeb	−1.055	−1.185	**−9.240***
	(1.029)	(1.007)	(5.170)
DMar	−0.889	−1.087	−6.461
	(1.034)	(1.005)	(5.167)
DApr	0.511	0.054	−6.906
	(1.125)	(1.016)	(5.164)
DMay	**3.068*** **	**2.570****	1.946
	(1.132)	(1.018)	(5.163)
DJun	0.602	0.169	−5.559
	(1.114)	(1.011)	(5.166)
DJul	0.284	0.492	**−13.458****
	(1.060)	(1.049)	(5.163)
DAug	0.138	0.407	**−10.075***
	(1.060)	(1.051)	(5.165)
DSep	0.026	0.146	−5.923
	(1.033)	(1.016)	(5.168)
DOct	−0.423	−0.082	**−20.595*** **
	(1.023)	(1.012)	(5.177)
DNov	−0.522	−0.710	−9.707*
	(1.025)	(0.999)	(5.175)
MA(2) income variation	−0.318	0.833	
	(2.750)	(2.652)	
Income(-5)			**−11.220*** **
			(2.459)
Unemployment	−0.144	−0.121	−0.465
	(0.121)	(0.116)	(0.466)
Business profits(-6)	0.002	0.012	
	(0.011)	(−1.222)	
Rivals	**1.007**[@]		
	(0.607)		
Political violence		**−0.115****	
		(0.051)	
Time trend	−0.036	**−0.079*** **	
	(0.022)	(0.024)	
R-squared	0.439	0.461	0.481

Bold coefficient values are significant

[@] Significance at 11 %, * at 10 %, ** at 5 % and *** at 1 %

the following years. In January of 1936, approximately 25 % of the payroll was laid off, another 25 % was working reduced shifts. Close to 50 % of the metal-industry workers were suffering unemployment or underemployment. Biscay had the highest unemployment rate in Spain, around 20 %.[51] The unemployed metal-workers in Biscay were 38 % of all unemployed metal-workers in Spain. Unemployment numbers did not vary substantially in the Biscayan metal sector over the period, whereas they began improving by 1934 in other regions of Spain (Miralles Palencia 1988: 117).[52]

Edwards (1978) has suggested that the relation between unemployment and proneness to strike can be either inverse—due to the tightness of labour markets during low unemployment—or direct—due to discontent during moments of high unemployment. This is why we had included trough and peak variables of unemployment in the specifications in Tables 2 and 4.[53] We saw that unemployment played a significant role when emphasizing low unemployment phases—peaks. Tightening labour markets encouraged workers to strike in the early thirties. The threat of job loss and rising unemployment and underemployment throughout the thirties discouraged them from stoppages.

Some additional insight might also be gained from criminal statistics. If relative deprivation is a driving force for labour conflicts, it should also be systematically related to political violence and property crime.[54] In the regressions in Table 5, we see that property crime shows both seasonality and a high negative relation to lagged earnings and unemployment. We had found that a decrease in workers' income is followed by a proportional increase in mortality with a lag of 5 months. We therefore calibrate the moment of a maximum impact on families to be 5 months after a decrease in real income. At this point of time, desperate situations would lead to desperate solutions. The hypothesis that social disruption in the form of property crime may be driven by short-term variation in earnings as a consequence of price increases cannot be rejected with these results. Both seasonality and the significant inverse relation to income level should incline us to think that property crime may be driven by short-term economic hardship. On the other hand, political violence has an inverse relation to strike frequency—political violence is high when strikes are

[51] There are no reliable statistics, and given the difficulty of estimating the impact of reduced hours, this is the magnitude usually assumed by the literature.

[52] Biscay accounted for 2.06 % of the Spanish population and 4.2 % of the unemployment. (Rivera 2002: 128).

[53] For the calculation method of troughs and peaks, see Edwards (1978: 376).

[54] Literature has usually established a direct correlation between poverty and theft. According to the theoretical work developed by Becker (1968), people resort to crime only if the costs of committing the crime are lower than the benefits gained. Therefore, those living in poverty have a much greater chance of committing theft. For the link between economic conditions and crime, see the summary of Johnson (1995: 137–141) for pre-1914 Germany; or the work of Mehlum et al. (2006) for nineteenth century Baviera; and Traxler and Burhop (2010) for Prussia, which show a strong correlation between real wages and crime rates; and Bignon et al. (2011) for nineteenth century France. Bignon et al. (2011) also include references to contemporary studies.

low.[55] This offers less support to our hypothesis unless the repression of strikes on behalf of accommodating unions is creating frustration over passivity.

7 Conclusions

Quite contrary to previous literature, we find solid evidence for the economic forces being systematically related to labour conflict in the interwar period. This may be due to using disaggregated series and higher data frequency. Monthly data, real worker's earning instead of GDP per head, family unit measurement of impact of price fluctuations, a regional perspective for analysing what at that time was a strongly segmented economy, are but a few of the elements that may have contributed to finding different results.

Labour and social conflict in Bilbao, considered the highest wage earning industrial area in Spain, was driven by short-term variations in workers' family real incomes, profit cycles and unemployment. When we use the cyclic movement in the cost of living to measure economic pressure on worker's life, we find that this is also very closely tied to the strike cycle. Strikes have a high incidence at the peaks of basic-needs price increases and linger on after. Both results are indicative of a re-distributional conflict. Even when workers' claims for higher real incomes are repressed by authoritarian rule or refrained by moderate pragmatic union policy, they remained latent and resurged. Only on occasions of moderation did political motives move more to the foreground. But even during the Second Republic (1931–1936), in a period of high political mobilization, strikes still reacted to economic factors' variations.

During the Republic, when the socialist trade union UGT had its ranks and files under tight control and was negotiating collective agreements, we have been able to trace back some of the political character of strikes to the inter-union struggle for worker representation. The receptiveness of workers to more radical agitators is a sign of discontent and can be interpreted as a reaction to expected economic improvement which has not been forthcoming. The moderation of strike activity in the 1920s, when living conditions were steadily improving, gives further support to economic factors determining labour conflictivity. The short-term reaction of strikes and property crime to changing economic conditions gives more sustenance to the hypothesis of precarious family incomes and sensitivity to relative deprivation. Both phenomena are coherent with theories on the coming of civil conflict in Spain: 'Revolution growth is the product not of extreme oppression but of relatively rapid improvement in conditions (Spain during the 1920s) in countries where notable internal problems are followed by a downturn or significant new frustrations' Payne (2009: 4).

The paper provides important evidence on the correlation between variations in material well-being and labour unrest in the prelude to the Spanish Civil War, which in itself was a prelude to the Second World War—both major turning points in the

[55] 'Political violence' combines series of 'terrorist attacks' and 'subversive actions', compiled by the local police.

social distribution of income. From a theoretical point of view, the analysis reopens the debate on the importance of economic factors as determinants of labour conflictivity and, ultimately, social unrest. Economic factors have been largely displaced by the organizational and political explanations for the labour unrest in this period. Our results suggest that this may be due to the use of aggregate and yearly data. The use of monthly data and disaggregate series give strong support to the prevalence of economic factors determining conflictivity. It challenges the present state of the question on the Spanish interwar period which affirms that economic factors had little or nothing to do with labour unrest and thereby reopens an important debate within the context of the period leading up to the Spanish Civil War: were there economic causes to the conflagration? As a minimum it demands further work on the major industrial centres in Spain. It also gives reason to believe that monthly rather than yearly data could give far greater insights on the impact of interwar price fluctuations and production crisis on labour unrest in other European industrial areas.

Acknowledgments We thank Pamela Radcliff, Christopher Clague and Peter Howlett for help, observations, stimulus and suggestions. Useful comments have been received at presentations held at the WEAI Meeting 2011, San Diego and the Economic History Society Conference 2012, Oxford. Portions of the research were supported by Spanish Ministerio de Educación y Ciencia, projects ECO2009-13331-C01-01, and PR2010-0104. The usual disclaimer applies to the errors that may remain.

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