

What Is Natural About Unemployment? Policy Sources and Implications of Labor Market Rigidities

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I. Introduction

Accumulation of financial balances that with hindsight appear excessive preceded the Great Recession and the euro crisis, and motivates efforts toward macroprudential regulation of financial markets. Regulation in labor markets is more pervasive than in financial markets (and at least as controversial), and the crises and booms that trigger sudden asset price swings generate slower but longer waves in the labor market: employment rose before and collapsed after the crises, and persistently high unemployment still exacts high human costs in their aftermath.

Labor market inertia is as crucial as sticky prices in determining macroeconomic shock transmission and adjustment mechanisms. Because wages and employment adjust slowly, when central banks are constrained by a zero lower bound on short-term rates and would like to lower the longer-term rates relevant for investment decisions, then they may consider committing not to raise rates until unemployment falls to a prespecified level. Such commitments are not theoretically as well founded as other forms of forward guidance might be (Campbell, Evans, Fisher and Justiniano 2012; Calomiris 2012; Woodford 2012a, 2012b). But they are simpler and harder to

manipulate, and were actually formulated by the Federal Reserve in December 2012 and by the Bank of England in August 2013. Unemployment subsequently fell toward the critical levels much sooner than expected, and for reasons that are unclearly related to the aggregate demand gaps targeted by monetary policy.

This experience and a vast and influential stream of literature suggest that macroeconomic policy would benefit from a better understanding of labor markets. Unemployment is a difficult macroeconomic policy target because aggregate demand and nominal rigidities are not the only determinants of labor market dynamics. Structural factors and labor policies also matter, in ways that vary over time as well as across countries, and explain why labor markets react sluggishly to macroeconomic and microeconomic shocks. Wage-setting rigidities and informational imperfections underlie the different dynamic behavior of asset and labor markets (Stiglitz 1999). The latter is special because jobs and wages as a crucial determinant of status: sellers of standardized commodities may not be offended by low prices, but a worker's incentive to provide effort depends on the perceived dignity of working conditions and fairness of wages, which tend to be bargained at the personal level rather than in the anonymous markets that determine commodity prices in perfect competition (Solow 1990).

It is tempting to model labor market dynamics as temporary macroeconomic fluctuations around a longer-run "natural" microeconomic steady state. But it is clearly more appropriate to treat them as an integral element of an imperfect economy's dynamic equilibrium. From that standpoint, labor market rigidities are unavoidable and not necessarily bad, and financial and monetary policies are intimately related to labor market outcomes and policies. Because the lifetime income of the vast majority of individuals is almost completely earned by working, and is only very partially transferred over time and across people in credit and insurance markets, the labor market where intertemporal wage and employment commitments are made may well be the most important financial market. Expectations and credibility are as crucial to labor markets as to debt markets, and the same informational problems that make financial markets imperfect and wages

rigid also motivate policies and institutions that, aiming to control the distribution and volatility of labor incomes, influence the cross-sectional shape and aggregate dynamics of wages and employment.

This paper builds a set of insights, empirical observations, and policy implications on these general observations. It first reviews the distributional and risk-control reasons why policy constrains labor market dynamics, and discusses how such rigidities interact with macroeconomic shocks and policies. Labor market flexibility is not a free lunch. It can but need not be beneficial, depending on circumstances, because rigidities smooth individual consumption when financial market is imperfectly accessible to worker-consumers hit by cross-sectional structural shocks, and stabilize the portion of aggregate demand that comes from liquidity constrained households when the economy are hit by cyclical shocks. Next, the paper displays simple long-run evidence from advanced countries and from Europe's economic and monetary union, and interprets it in terms of different costs and benefits of labor market rigidity across countries, and between the pre-crisis period of internationalization, financial development, and macroeconomic stability, and the recent crises. Finally, the paper discusses the policy implications of variable advantages and disadvantages of labor market regulation, which depend on changing structural circumstances as well as on cyclical conditions. Not only macro policy but also labor market reforms face time-consistency problems, and opportunistic or dogmatic approaches to difficult issues can easily worsen rather than resolve crises.

II. Not-So-Natural Unemployment

Like roads and banks, unemployment is always and everywhere man-made and shaped by human interactions and collective policies. It is part of mechanisms aimed at matching jobs and workers, or at risk control and redistribution, and its variation is explained by labor policies and reforms as well as by macro shocks and macro-policy reactions.

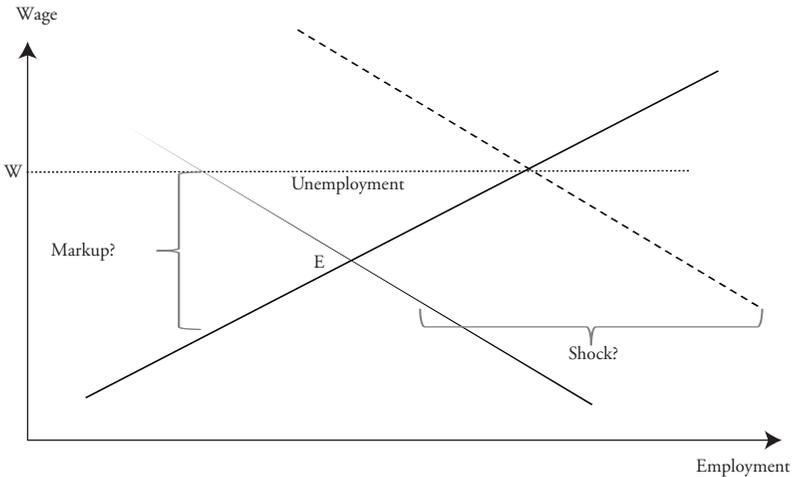
Perfect competitive labor and product markets clear at the crossing point of demand and supply schedules that correspond to labor's marginal contribution to production, and the opportunity cost of employment. Textbook treatments of general equilibrium insert such markets

between the worker-consumer and employer-capitalist personalities of a single individual, Robinson Crusoe. In Figure 1, demand and supply relationships plotted by solid lines cross at point E, which in the desert island parable maximizes the total value of Robinson's output and leisure. On Robinson's island only nature threatens an autarkic individual's welfare, and there are no markets, no coordination failures or confidence crises, and little or no unemployment.

In reality, the unemployed are individuals who would like to work and take some action toward finding a job that suits their wage and working-conditions aspirations. Like coconut trees on remote parts of Robinson's island, such jobs may actually exist, and finding them takes time and search effort. In a civilized economy, specialized labor is not exchanged on a centralized spot market. Information is noisier than on a desert island, hence job search needs to rely on predictable wage distributions. And information is asymmetric, hence high and rigid efficiency wages serve the purpose of motivating workers to provide only occasionally observable effort (Campbell and Kamlani 1997; Bewley 1999).

However, it may be that the unemployed aspire to jobs that are not meant to be available to them. In Figure 1, when the wage is at W , there is unemployment because the workers who are willing to work are more numerous than those that employers find profitable to hire at that wage. The figure illustrates two basic reasons why this may be the case. It may be that a negative shock (indicated by the horizontal bracket) has decreased labor demand after W was set at a level that was consistent with full employment had labor demand remained in the position drawn by a dashed line: if W cannot be changed in the face of a negative shock, there is unemployment rather than full employment of a smaller labor force. It is, however, also possible that W was intentionally set so high as to imply that some willing-to-work individuals fail to obtain employment. On a desert island, flexibility is valuable, and there is no reason for Robinson to force upon himself either ex-ante or ex-post deviations from efficient employment. To the extent that higher wages more than compensate lower employment, however, labor income is higher when legal or contractual minimum wages prevent the unemployed from bidding for work,

Figure 1
Unemployment and Wage Rigidity: Negative Shock, Wage Lower Bound



and keep labor's marginal product higher (as indicated by the vertical bracket) than the opportunity cost along the labor supply curve of the marginal unit of labor. Such not-so-natural deviations from perfect competition are beneficial from the point of view of workers who, unlike Robinson, disregard nonlabor income—as they should if they have no wealth and, like the consumers of many macroeconomic models, are liquidity constrained.

This simple perspective on labor market disequilibrium illustrates more general insights. The figure asks whether a markup wedge or a shock causes unemployment, and the answer is that both are needed for employment to fluctuate at preset wages. In perfect competition, quantities cannot change at given prices and wages without violating maximization conditions. Output and employment can instead vary at fixed prices or wages when imperfect competition inserts markups between prices and marginal costs, and between wages and the opportunity cost of work. In the labor market, the wage that is set *ex ante* is not the one that would be chosen in the aftermath of shocks; but when it implies individually involuntary underemployment, then shocks can trigger individually optimal employment fluctuations.

Reality differs from the desert island's perfectly competitive ideal in other ways. Because wages and employment are not determined

in a centralized market for specialized workers and jobs, labor does not need to be organized to have bargaining power. In models where wages are determined by decentralized match-level bargains, the labor market's reactions to aggregate shocks are not the well-coordinated ones of a representative agent. The behavior not only of expenditure but also of wages and employment depends on intertemporal decisions made on the basis of expectations and of real interest rates (Hall 2013). Many such models let labor have constant productivity and constant opportunity cost, to imply that in perfect competition demand and supply schedules of individual firms and workers are flat up to full employment: but full employment is unreachable when jobs are subject to shocks, matching them to unemployed workers requires costly vacancy-posting and search activities, and wages and employment are determined by job creation and wage determination schedules that, like those of Figure 1, cross at a point where unemployment is positive (Mortensen and Pissarides 1994). That imperfect dynamic equilibrium is in key respects similar to that illustrated in Figure 1. Wages that are bargained within a range of values that makes continued employment privately preferable to costly separation and search may remain constant when shocks vary the boundaries of that range (Hall 2005). In a recession, such inertia implies that wages need not decline along with labor demand and, if labor demand is downward sloping as in Figure 1, can remain higher than would be justified by search and matching (Michaillat 2012). In that situation, the unemployed are rationed out of jobs not by legal or contractual constraints but by their inability, in a decentralized bargaining framework, to bid down the wage of employed workers.

III. Macro Policy and Labor Market Rigidity

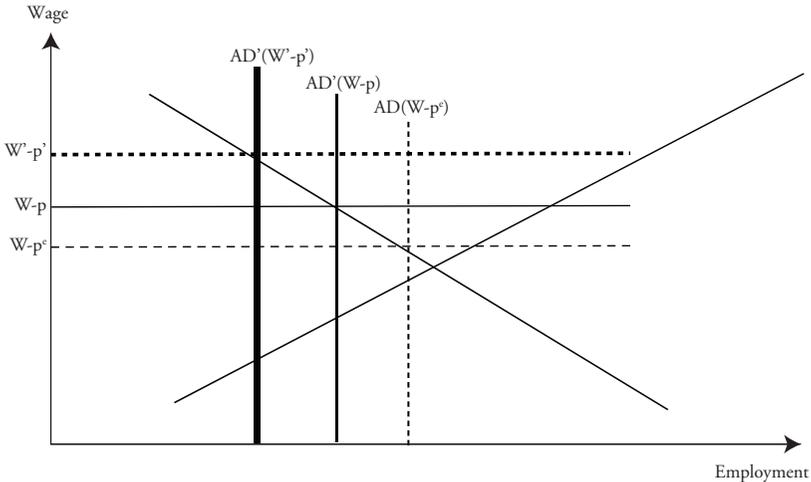
People are more productive when they specialize and trade in goods and financial markets, so life in a modern economy is arguably better than Paleolithic hunting and gathering. But a sophisticated economy is fragile, because markets cannot perfectly coordinate human activities. Earthquakes would be scary but inconsequential if everybody lived in tents, and trade could not be disrupted by confidence crises if individuals lived in autarky. Of course, buildings should be designed to be reasonably earthquake-resistant, and markets suitably regulated

and well informed. Yet absolute safety is beyond reach, so sophisticated systems require equally sophisticated emergency measures.

It is straightforward to see that fluctuations around the unemployment rate that would be realized in the absence of nominal rigidities, shocks and coordination failures require macroeconomic policy responses. When employers set prices, employment is related to wages by marginal cost markup pricing rather than by competitive profit maximization, and would respond strongly to product demand shocks if it were easier to vary employment rather than output prices (Bils, Klenow and Malin 2014). Macroeconomic policy can reabsorb the unemployment resulting from negative shocks by boosting aggregate demand, and smoothing the fluctuations of realized inflation and unemployment along a negatively sloped Phillips curve. In dynamic search-and-matching labor market models, inflation targeting is similarly effective because wages that are bargained, rather than formed in centralized competitive markets, can be preset in nominal terms (Thomas 2008). Labor market features that induce a stable proportionality of wages and productivity are irrelevant for counter-cyclical macro policy, and may be targeted by other policies. Instead, dynamic market rigidities let both current and future expected conditions influence employment and wages, and the optimal stance of monetary policy should be more accommodative when labor market dynamics imply more persistent unemployment (Blanchard and Galí 2007, 2010).

Because aggregate demand determines production and employment when output is below potential, wage flexibility may destabilize aggregate fluctuations (Galí 2013). Figure 2 offers a highly stylized illustration of this Keynesian insight, supposing that wages were set at a level that implies some intentional unemployment (in the situation indicated by dashed lines) before a negative aggregate demand shock (indicated by thin solid lines). The issue of whether in models with nominal rigidities real wages covary positively or negatively with aggregate demand and employment is vexed (Romer 2012, Chapter 6) but distinct from that of whether wages and employment, along with other current and expected discounted income flows, are a significant determinant of aggregate demand. In the chart, as in the original

Figure 2
Aggregate Demand Effect of Wage Flexibility



Keynes, real wages turn out to be excessively high when aggregate demand falls and inflation is unexpectedly low.

If wages are flexible enough to decline in response to unintentionally high unemployment, that decline may, as in the figure, reduce aggregate demand further (to the thick solid line), increase unemployment and make it all the more necessary to rely on suitably timed countercyclical macroeconomic policy. This can happen when the employees' current labor income is a significant determinant of employers' output demand. A destabilizing macroeconomic effect of wage flexibility is more plausible when workers are liquidity constrained, less plausible when output is demanded by investors or foreigners rather than by the economy's employees.

IV. Policy Sources of Labor Market Rigidity

Any adjustment cost or financial friction would complicate monetary policy's stabilization role when sticky prices let demand shock economic activity. The dynamics of labor markets however are even more interesting than those of inventories or investment, because policy contributes significantly to their variation across countries and over time.

Countercyclical policy of course should only react to surprises, and credibly commit not to try and eliminate structural inefficiencies of the economy's equilibrium. Expectations of systematic monetary or fiscal policy efforts to decrease unemployment and increase output would only influence the inflation and labor demand expectations incorporated in preset contractual wage, shifts the Phillips curve vertically, and leaves unchanged expected unemployment and real wages. When characterizing optimal macroeconomic policy, it is customary to suppose that suitable subsidies ensure that monopolistic producers do not restrain output inefficiently. From the point of view of a hypothetical social planner, the aggregate implications of union monopoly power should similarly be eliminated.

In reality, however, not only the aggregate amount but also the distribution of income matters—and U.S. antitrust legislation exempts union activities, since the “labor of a human being is not a commodity or article of commerce” (Section 6 Clayton Act, 15 U.S.C. § 17). The markets where labor is traded deviate from the perfect competition paradigm, aiming to make life better for individuals who are not in a position to compete successfully, on the basis of solidarity criteria that are similar to those that prevail within families (Agell 1999). Sociopolitical factors in fact explain many features of real-life social policy systems. Labor regulations and employment-based contributory schemes, such as those introduced in Bismarck's 19th-century Germany and still prevalent in continental European countries, were meant to control not only labor market but also revolutionary risks.

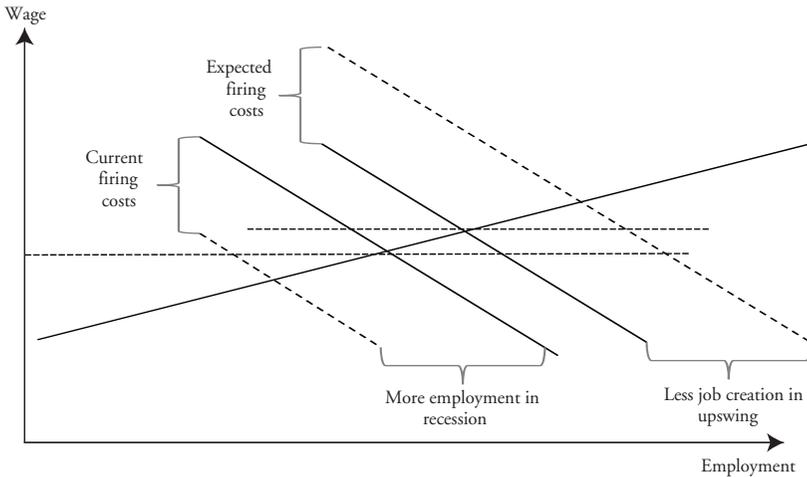
From a more narrowly economic point of view, labor market rigidities that would be incomprehensibly bad if everything else were perfect can be beneficial in ways that depend on structural as well as on cyclical imperfections of the economy. Specialized employment relationships entail forward-looking investment decisions, and expectations influence employment and wage dynamics even more strongly than those of industrial production and retail prices. Uncertainty around those expectations cannot be completely smoothed by financial instruments even when it is idiosyncratic: contracts that protect workers from labor income fluctuations cannot be written

and enforced in court when job losses and wage cuts might reflect lack of effort rather than bad luck.

Hence, society not only tolerates labor unions but also finds other ways to protect workers from low income and unfair job loss. These policies and institutions take many different forms and interfere with both the wage and employment dimensions of *laissez faire* labor markets (Blau and Kahn 1999; Bertola 1999). Rigid wages would, in fact, do little to stabilize labor incomes if, as in Figure 1, they imply larger job losses in the aftermath of negative labor demand shocks. Unemployment benefits can dampen the disposable income implications of job loss and, decreasing the search effort and increasing the reservation wages of the unemployed, prevent wages from falling in response to negative shocks. A similar role can be played by job security provisions stipulating that individual dismissals should be motivated and collective ones negotiated with workers' representatives and with the government. Obviously this reduces job destruction at given wages, because the annuity value of firing costs has to be subtracted from wages when evaluating the cost savings afforded by downsizing. It also reduces hiring during cyclical upswings, because additional employees increase not only the current payroll, but also the firing costs to be expected in future downturns. As shown in Figure 3, if the marginal cost schedule that determines employment and pricing decisions includes the annuity value of current and expected turnover costs, job security provisions reduce employment's reactions to shocks (with ambiguous effects on average employment) at any given level and responsiveness of wages. The income smoothing benefits of job security provisions would of course be lost if completely flexible wages could fall so far as to make continued employment acceptable for employers. But wage and employment rigidities together move the labor market away from an ideal competitive equilibrium in such a way as to stabilize labor income, while making nonlabor income flows lower on average as well as more volatile.

The effects of labor policies are more complicated than those of the rigid marked-up union wage of Figure 1, but they similarly trade the welfare of workers off lower production. Labor income stability is beneficial for households when underdeveloped financial markets

Figure 3
Stabilizing Effects of Job Security Provisions and Firing Costs



make it difficult for their consumption to be smoother than labor income. If financial markets and taxation systems pooled all nonlabor income, then it would not matter whether workers' welfare reduces profits and increases their volatility (as is the case when profits when wages are compressed and dismissals are regulated) or implies higher and more volatile public expenditures (as is the case if labor incomes are stabilized by subsidizing unemployment, temporary layoffs, or work-time reductions). In practice, tradition and administrative capacity determine whether labor market rigidities are introduced by constraining private employment contracts, or by administering taxes, contributions and subsidies.

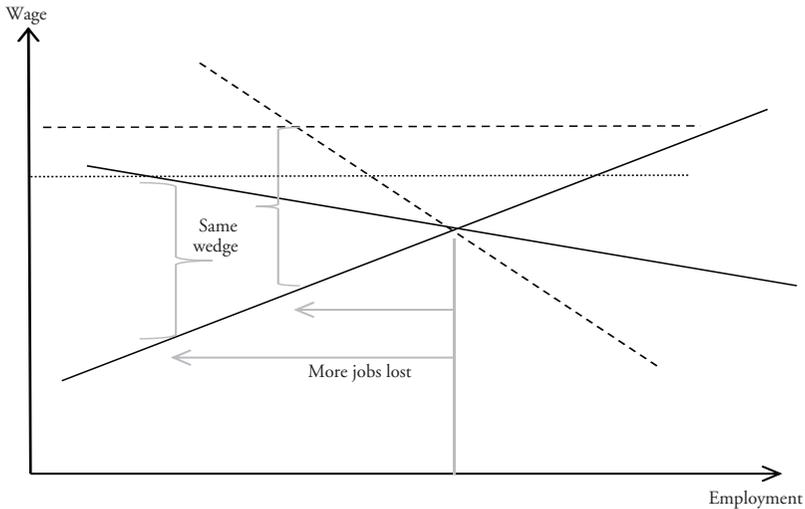
As in Figure 2, labor market rigidities can stabilize aggregate demand, and their policy determinants may also vary cyclically. Unemployment benefits should be more generous in recessions if that is when aggregate demand constrains production and job creation, and the search efforts of cash-constrained workers deserve more support. The role of cyclical labor policies in dynamic matching models is not clear cut, as unemployment benefits influence labor market tightness as well as wages and search behavior (Landais, Michailat and Saez 2013), and cyclical variation of unemployment benefits can be unnecessary if other policy instruments are available (Jung and

Kuester 2014). When unemployment insurance is designed to provide the best combination of individual search incentives and consumption smoothing under asymmetric information constraints, then firing taxes and hiring subsidies can vary to address cyclical issues. As always, appropriate labor policies depend crucially on financial imperfections: in a recession, measures that reduce job losses also reduce the welfare and budget costs of longer unemployment spells, and can prevent separations that are privately efficient but, due to employers' financing constraints, socially inefficient.

The shifting labor demand in Figure 3 can represent aggregate cycles, to which employment responds along a supply schedule representing more or less distorted intertemporal financial opportunities. But Figure 3 can also illustrate rigid responses to demand shifts across different sectors or regions at a point in time. While wages would not respond to cross-section labor demand shocks if labor mobility were perfectly elastic across firms, sectors, or regions, job mobility that is costly for workers needs to be supported by cross-sectional wage flexibility, and instability of labor demand implies labor income volatility. The rigidities implied by labor policies hamper reallocation along a wage schedule that represents the responsiveness to wage differentials of workers' labor reallocation choices. In rigid labor markets, job security provisions reduce job destruction by declining firms and sectors and job creation by expanding ones; collective wage-setting between broad unions and employer confederations, rather than at the firm and individual levels reduce the extent to which wages may fluctuate in response to local shocks; and unemployment and nonemployment subsidies also tend to reduce workers' incentives to exit depressed segments of the labor market. To the extent that these policies prevent replacement of low-productivity jobs with high-productivity jobs, they reduce productivity. But their distributional implications, which are similar to those of a tax on production factors other than labor, may well be appealing for uninsured workers who put less weight on aggregate efficiency than on their own stressful reallocation.

Labor market rigidities are more beneficial if it is more difficult for workers to smooth and insure labor income shocks in financial markets, and labor market shocks are larger and more persistent. The

Figure 4
Demand Elasticity and Labor Market Rigidity



coordination afforded by centralized bargaining in the face of macro shocks is more beneficial when such shocks are larger and more likely; collectively financed unemployment benefits can better align individual and social job-search criteria when underdeveloped financial market make it likely that job search and acceptance behavior is distorted by their consumption's high marginal utility (Shimer and Werning 2008); and if financial markets are easier to access for employers than for workers, then job security provisions can similarly foster labor reallocation (Bertola 2004).

Other structural characteristics of the economy also influence the costs and benefits of rigidity. As Figure 4 shows, a more elastic labor demand relationship implies greater employment losses for any given wedge inserted between labor demand and supply, such as those implied by legal or contractual constraints that prevent the unemployed from underbidding employed workers, or by the payroll taxes and nonemployment subsidies that make underbidding unnecessary. Lower employment, up to a point, still increases aggregate labor income, to be distributed across workers in the form of transfers within families and over their lifetime as well as of formal unemployment

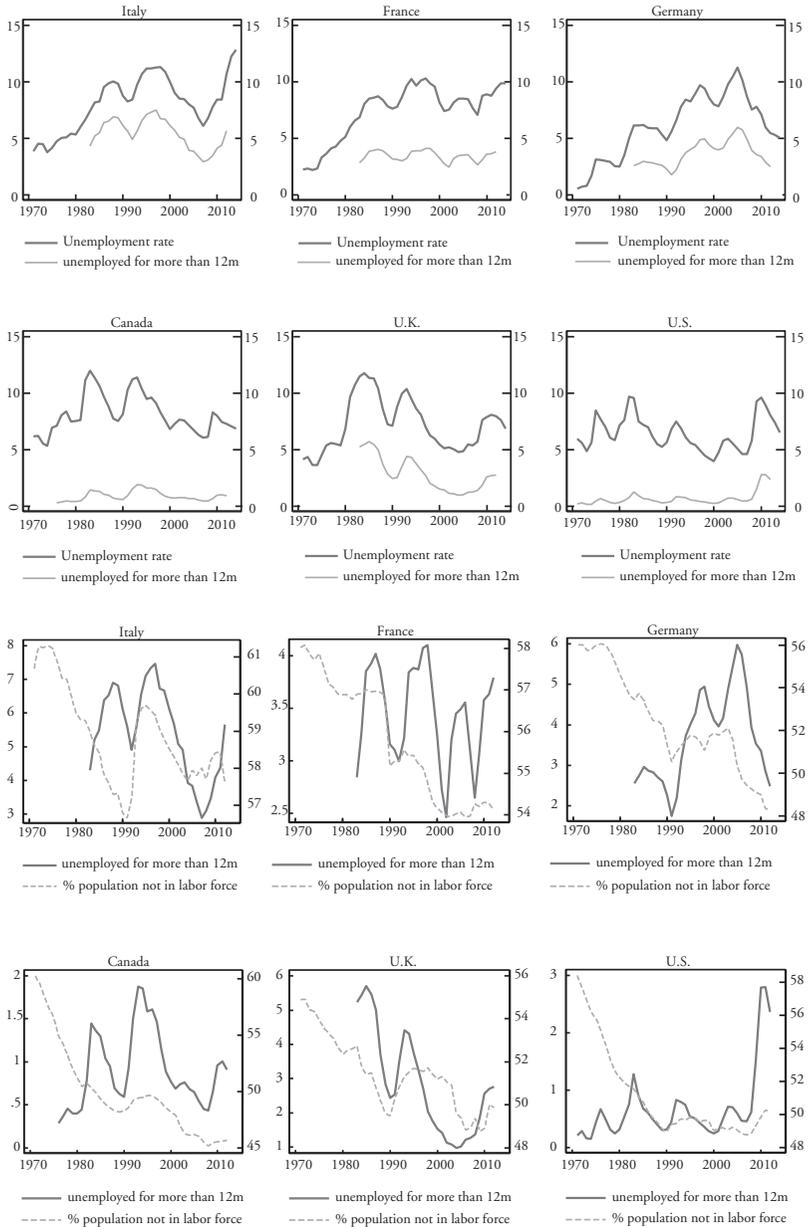
or pension benefits. But the smaller wage gains implied by flatter labor demand reduce the positive (for workers) effects of labor market policies, and the productivity effects of labor market rigidities are more damaging when employers react more strongly to shocks.

V. Countries, Cycles, Trends

Different aspects of labor market rigidity can be measured by indicators of job security provision, of wage-setting centralization and coordination, of unemployment insurance generosity, as well as of active labor market policies that, at substantial fiscal cost, try and reconcile employment flexibility and labor income stability (Bassanini and Duval 2006; Bertola 1999, 2009). Here it may suffice to note that continental European labor markets are more rigid than those of the U.S. and other English-speaking countries, and compare simple statistical evidence across members of the G-7. Chart 1 displays four decades of unemployment and labor force participation data for Italy, France, Germany, Canada, the U.K. and the U.S. (Japan is omitted to save space, because it would deserve and require a long discussion. It may be worth mentioning how absurd it would be to forward-guide monetary policy on the 6-7 percent unemployment targets of the U.S. and U.K. monetary policies in a country where, at 3.7 percent, unemployment is high, and falling.)

In the relatively rigid labor markets of the top row of countries, unemployment and employment patterns are largely an intentional byproduct of policies rather than of organizational and technological features. Long-term unemployment is much higher on average than in the bottom row of countries, and its cyclical movements often but not always coincide with movements of the out-of-labor force population share. Such dynamics depend on macro shocks and policies as well as on details of its labor market's institutional and organizational structure, in ways that are poorly captured by the "natural" unemployment rate series that approximate the expected inflation embodied in preset nominal wage contracts with past realized inflation and supply-side variables. In practice, these series are very close to a moving average of observed unemployment rates and during cyclical swings diverge from the predicted values of unemployment regressions on time-varying indicators of labor market rigidity

Chart 1
Unemployment, Long-Term Unemployment, and Labor Force Participation in Selected Countries



Source: OECD.

(Bassanini and Duval 2006; Orlandi 2012). From the perspective of this paper, the cyclical dynamics of unemployment may be better characterized by the simple indicators displayed in Chart 2.

Unemployment was lower in Europe than in the U.S. during 1960s, and did not rise as fast in rigid Europe as in the flexible U.S. when oil shocks hit in the 1970s. But while European unemployment rates increased more slowly, they also increased more permanently, and grew further after reaching U.S. levels in the early 1980s. This experience was the focus 20 years ago of the 1994 Jackson Hole symposium—“Reducing Unemployment: Current Issues and Policy Options”—when many of the prominent contributors blamed labor market rigidities as the source of persistent unemployment (yet Takatoshi Ito praised a labor market with tight job attachments, along with commitment to low inflation, for the Japanese economy’s then outstanding performance).

One reason why European unemployment remained high in the 1980s and early 1990s is that labor market policies of earlier times were unable to cope with new competitive pressures. When the paths of European and American unemployment rates crossed in the early 1980s, international competition also began to magnify the costs of labor market rigidities, as illustrated in Figure 4. When trade and factor mobility increase the elasticity of employers’ reactions to labor costs, international shocks require more frequent and intense labor reallocation, and lower profits imply capital outflows, then labor income stability is more expensive in terms of unemployment and production.

Empirically, this experience is well represented and can be sensibly interpreted in terms of interactions between shocks and persistent country-specific labor market characteristics. At higher levels of labor market rigidity, the macroeconomic shocks and trends of the 1970s and 1980s were associated with more strongly increasing unemployment and lower employment of youth and elderly workers, as well as with relatively slow total factor productivity growth (Blanchard and Wolfers 2000; Bertola, Blau and Kahn 2002). As the socially optimal or politically determined degree of rigidity responded to changing circumstances, and dismal experiences and macroeconomic moderation convinced rigid labor markets to become more flexible,

Chart 2
Changes of Unemployment and GDP Growth in Selected Countries and Periods

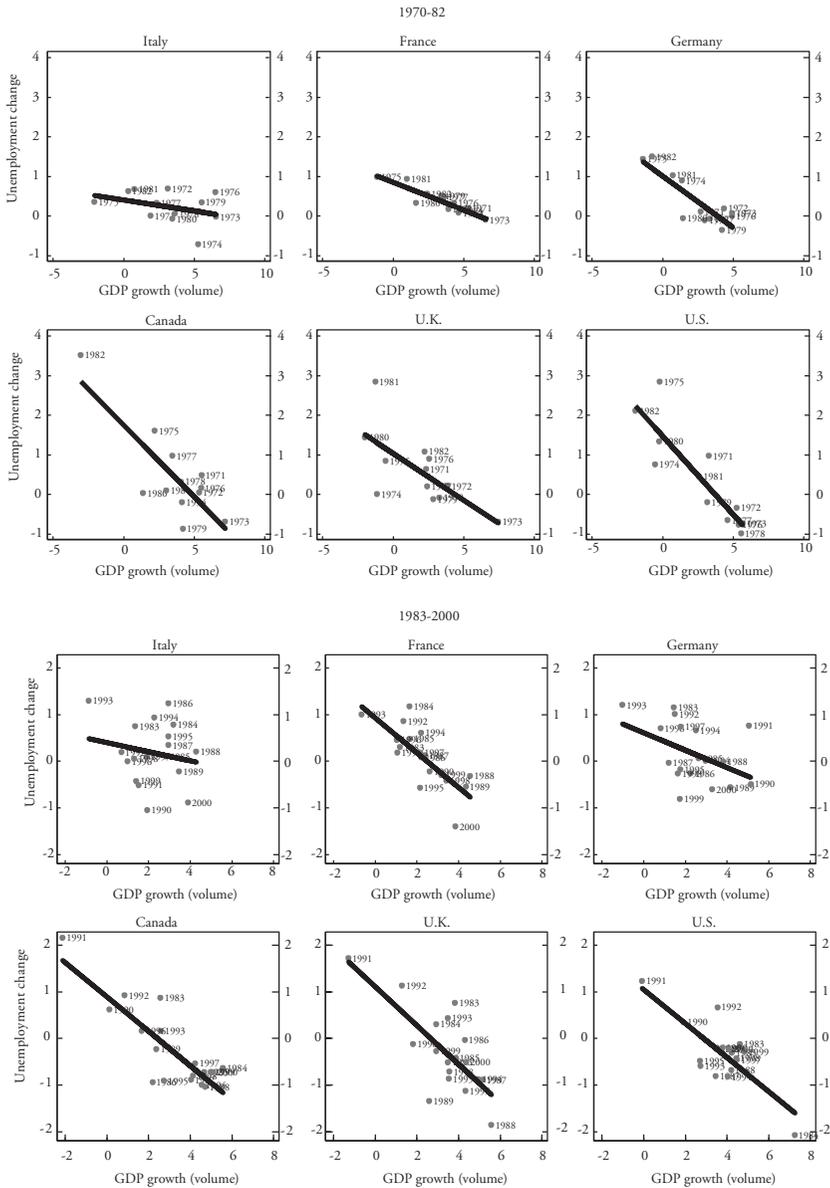
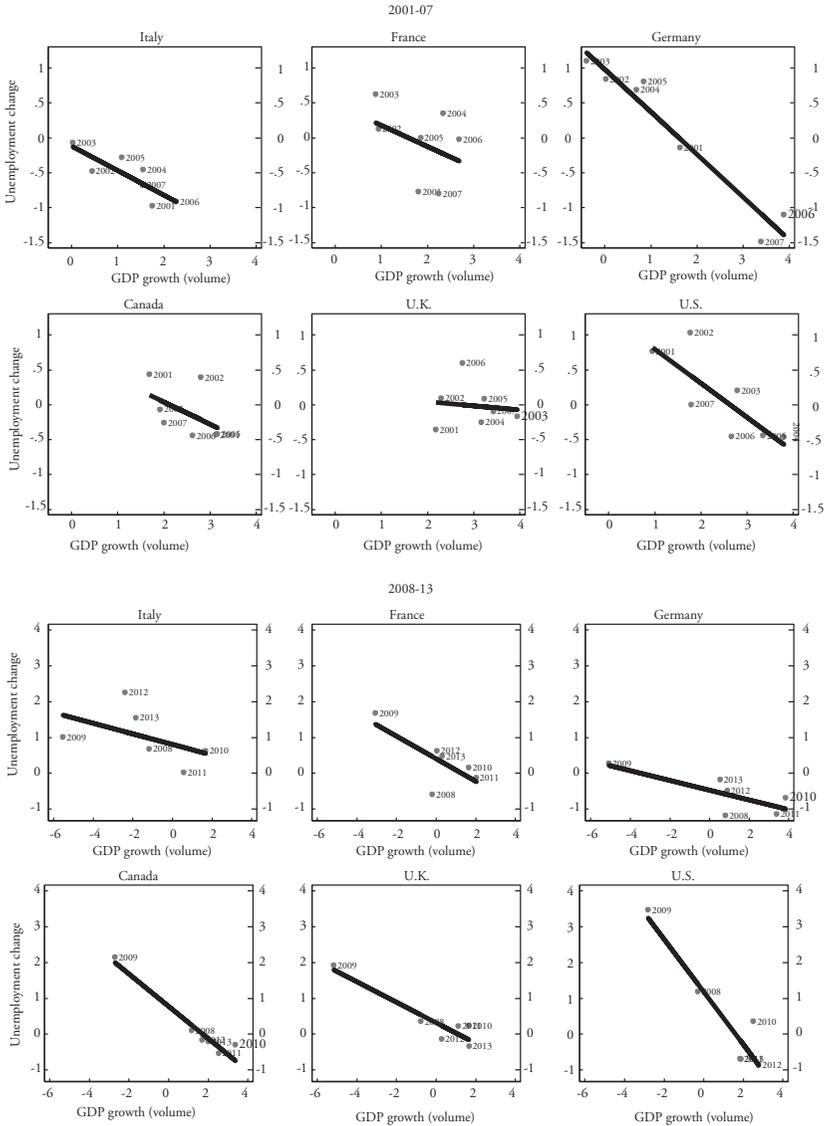


Chart 2 Continued



Source: OECD.

European unemployment finally began to fall, starting at different times in different countries.

The higher price elasticity caused by international openness implied not only faster adjustment to shocks but also less nominal rigidity in output markets, because less pronounced “real” rigidity makes it easier for wage and cost shocks to overcome the cost of price changes (Barro 1972; Ball and Romer 1990). Macroeconomic moderation, globalization and increasing labor market flexibility jointly explain why by 2007 unemployment had been trending down in Europe for some 10 years toward its level 25 years before, and the U.S. level. Then, the crisis came. Unemployment rates converged upward then diverged, remaining high in Italy and France, and declining elsewhere.

Having witnessed the crisis, and before discussing it below, it is interesting to inspect additional simple indicators of labor market rigidity’s variable implications, meant to illustrate rather than prove plausible reasons why its motivation and consequences vary across countries and over time.

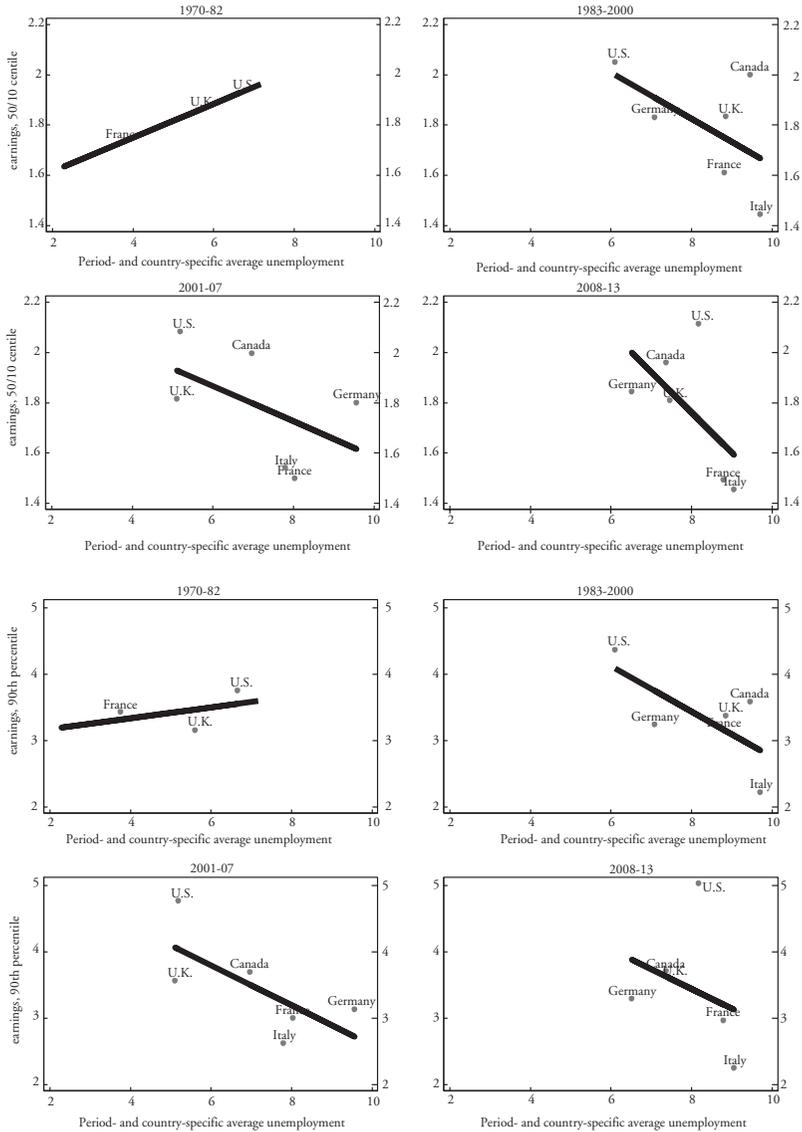
To see that rigidities may not only increase unemployment but also stabilize macroeconomic cycles, Chart 2 displays Okun’s law relationships between growth and unemployment for four subperiods and the same six countries as in Chart 1. The responsiveness of unemployment to output may reflect labor hoarding as in Figure 3’s demand-determined employment fluctuations, or job creation and destruction in search-and-matching models, or variable work effort in efficiency wage models. And these depend in turn on labor market structure as well as on the intensity of demand shocks, the extent of nominal rigidities, and expectations of growth and interest rates. In the 1970-82 period, the slope of the relationship between unemployment and output changes is noticeably flatter in the three continental European countries than in the comparatively more flexible Anglo-Saxon countries in the bottom row. In the former, GDP growth is somewhat slower on average and significantly more stable than in the latter, and unemployment fluctuates very little around a trend of positive changes. The range of unemployment fluctuations remains somewhat smaller in Europe during the 1983-2000 period, when the

volatilities and correlation of output and unemployment changes are no longer very different in the top and bottom rows of the charts.

In 2001-07, both the level and the cyclical of unemployment is different from what it used to be in Europe, and similar across the Atlantic: stability prevails everywhere except in Germany. The average unemployment price of cyclical slowdowns used to be relatively low in 1970s Europe but is just about the same everywhere over the Great Moderation period when other countries become similar to the U.S. There are indications that the U.S. labor market was itself becoming more flexible as job losses in recession tended to become more pronounced over time, possibly because of the deunionization and fewer temporary layoffs associated with manufacturing sector shrinkage (Rudebusch and Williams 2014).

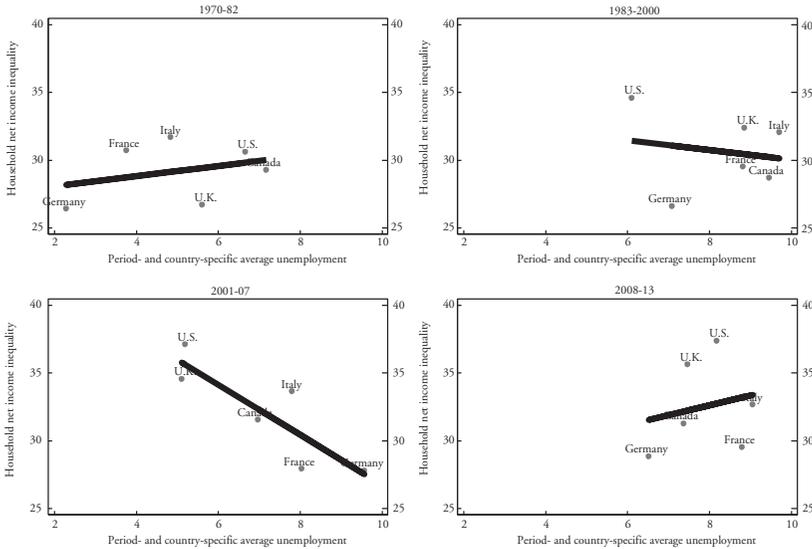
The higher unemployment and lower output implied by labor market rigidity need not be bad if they are associated with lower inequality and more stable labor incomes. As discussed above, that trade-off may be more or less attractive from different points of view and in differently imperfect financial markets, and depends on such structural factors as the intensity of shocks and the elasticity of labor market responses. To assess informally the practical relevance of this perspective, it is useful to inspect the relationship across the same countries and periods between time-averaged unemployment and income inequality indicators. Chart 3 shows that in 1970-82 the U.S. had not only higher unemployment but also higher wage inequality, as well as higher overall income inequality (Chart 4). A trade-off between the two indicators emerges in 1983-2000 when, as suggested by Paul Krugman at the 1994 Jackson Hole symposium, the same forces may have caused rising unemployment in Europe and rising inequality in the U.S. Technological progress and international integration of financial, goods, services and labor markets plausibly increased the dispersion and reduced the mean of labor productivities in all advanced countries. In rigid labor markets, low-wage employment was prevented by minimum wages and collective contracts, by availability of unemployment or early retirement benefits and by employment taxes that, unless linked to individual future benefits, reduce net take-home pay below the reservation wages at

Chart 3
Wage Inequality and Unemployment



Notes: Ratios of the 50th to the 10th and of the 90th to the 50th percentile of the earnings distribution, and unemployment rate, averaged for countries and periods shown.
Source: OECD.

Chart 4
Household Income Inequality and Unemployment



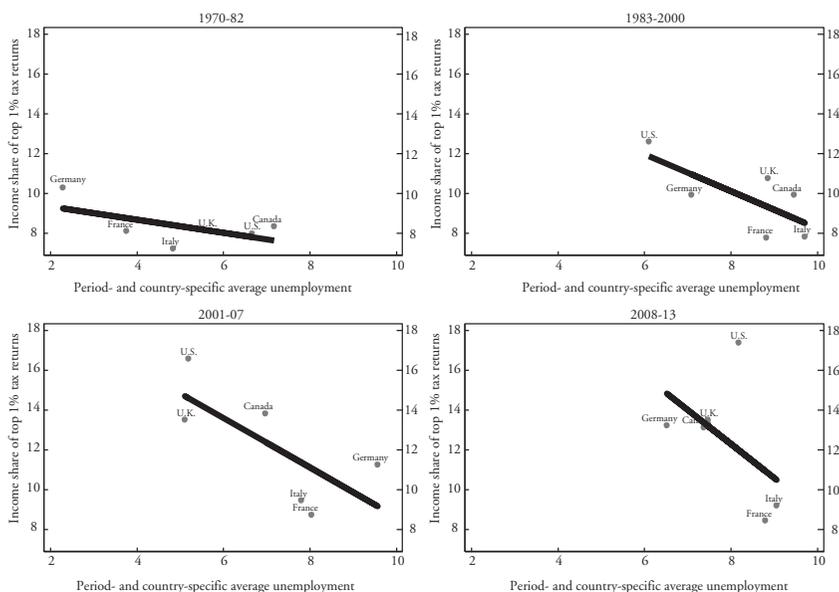
Notes: Gini coefficient of equivalized disposable household income unemployment rate, averaged for countries and periods shown.

Sources: Summary inequality point estimates from the Solt (2009) SWIID database, Version 4.0, September 2013; OECD.

the bottom of pretax wage distribution. Higher wage inequality and lower employment could both be avoided, albeit at the cost of higher public expenditures, only by active labor market policies. In Chart 3, unemployment increases everywhere except in the U.S., where wage inequality shoots up along with overall income inequality in Chart 4. In Chart 5, the top 1 percent income share is always negatively related to unemployment across countries, and its striking growth over time is much less pronounced in countries where unemployment increases. In 2001-07, increasing labor market flexibility everywhere tends to reduce average unemployment, while leaving it relatively high in countries where inequality is relatively low.

While simple evidence can only be suggestive, Charts 6-8 do suggest that unemployment broadly tended to decline and become more cyclically volatile, and wage and income inequality to increase more strongly where labor markets remained relatively rigid, in the pre-crisis period of macroeconomic moderation, economic integration, increasing labor market flexibility and financial imbalances that in retrospect proved excessive.

Chart 5
Income Share of Top 1 Percent Tax Returns and Unemployment



Note: Averaged for countries and periods shown.

Sources: Solt (2009) SWIID database, summary point estimates from Version 4.0, September 2013; OECD.

Then, the crisis came, and flexibility had some other effects. On the scale of previous periods in Chart 2, the Great Recession of 2008-13 everywhere displays extreme output volatility as well as steep unemployment changes (especially in the U.S., but not in Germany). In Chart 3, it pushes both unemployment and inequality up, and in Chart 4 intriguingly restores the upward slope last observed in the 1970s to the relationship between unemployment and the overall income inequality measure.

VI. Europe's EMU

Europe's Economic and Monetary Union (EMU) experience was unprecedented as the Great Moderation and the Great Recession, and provides a useful laboratory for observation and analysis of interactions between macroeconomic, international and labor market phenomena (Bertola and Boeri 2002; Bertola 2010).

As discussed in Section III, structural and policy characteristics of labor markets matter for the conduct of monetary policy. Hence, one

may doubt the wisdom of using the same currency in countries where labor market and welfare policies were shaped by different national histories, and remain determined at the country level. A single monetary policy cannot easily stabilize economic activity when heterogeneous labor markets dynamics imply that similar shocks have different implications (Abbritti and Mueller 2013). Of course, labor markets are also different across U.S. states, and across the rural and urban portion of any region: but denominating preset and sticky prices in a common currency makes relative prices more predictable; this has benefits that are difficult to model and easy to disregard, but were certainly relevant across the boundaries of villages and cities ever since money was introduced, and can be substantial in a modern economy.

Just like other Great Moderation experiences, in fact, EMU initially featured strong macroeconomic performance at the eurozone level, aided by more intense and wide-ranging product market competition within and across countries' borders, and accompanied by financial imbalances that could be viewed as an entirely benign consequence of investment return and productivity convergence (Bertola 2013). It also featured labor market deregulation, motivated by competitiveness concerns, and characterized by a shift from the coordination that had helped ensure wage moderation in the run-up to EMU toward the flexibility that can more appropriately address the labor market implications of shocks occurring at the level not of countries, but of regions or industries. Relative to other advanced countries, EMU members display a reduction of standard policy indicators of labor market rigidity, increasing employment and declining unemployment. Confirming that market rigidities also stabilize and equalize labor incomes, labor market deregulation and lower social policy expenditure account for all the observed growth of disposable income inequality associated with EMU relative to other countries (Bertola 2010).

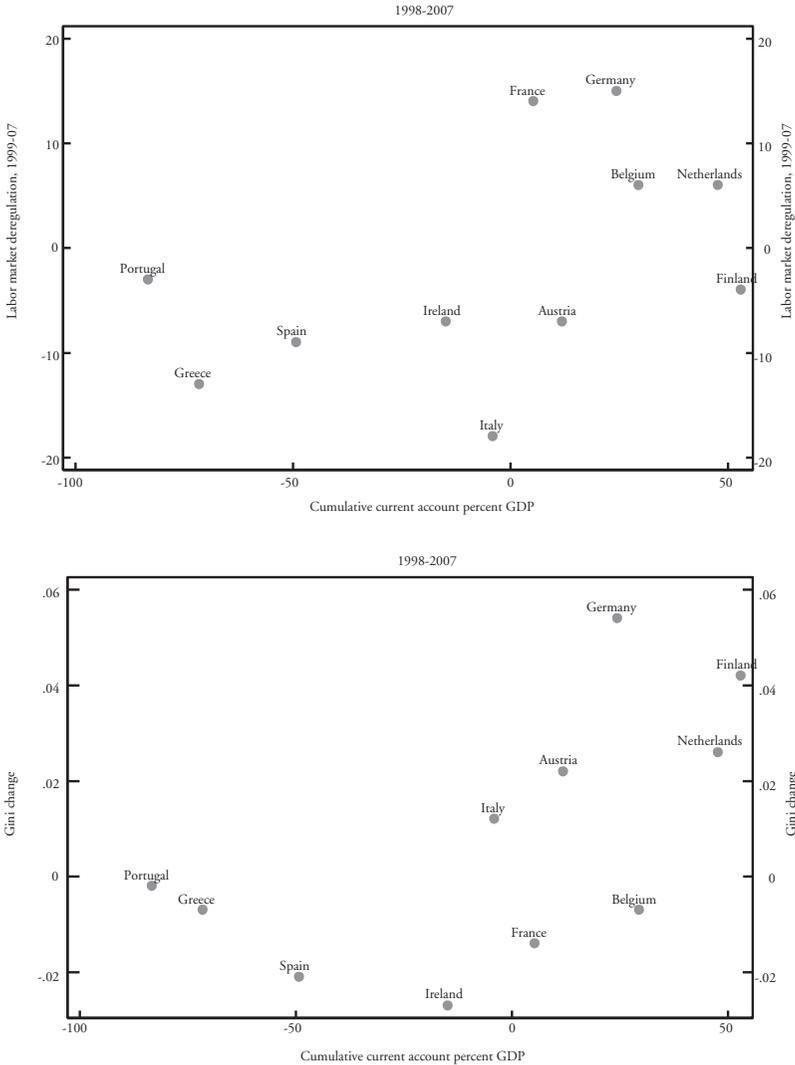
Deregulation and inequality could of course be welcome if labor market rigidity had been made obsolete by technological progress, trade integration and financial market development. In fact, patterns of increasing inequality were associated within EMU with faster total factor productivity growth (Bertola 2014a). Labor market flexibility can also be helpful when, as just before the crisis, the unproven

credibility of the new European Central Bank and strong cyclical conditions could have generated inflationary pressure: wage demands could be restrained by a more elastic labor demand, which implies stronger wage and employment responses to cost shocks. It was then comforting to see that not only in theory, but also in the Eurosystem's Wage Dynamics Network survey, deregulation, deunionization and international and product market competition helped increase employment flexibility and keep wage reactions in check, and product market competition and decentralized wage setting made price increases a less likely consequence of cost shocks (Bertola et al. 2012).

The EMU experience illustrates not only the implications, but also the sources of variation of labor market rigidity. The most interesting feature of the EMU's changing labor market policy landscape is that deregulation patterns were uneven across member countries, and related to internal and external macroeconomic developments. Chart 6 summarizes pre-crisis labor market reforms in terms of a cumulative count of measures deemed to be increasing flexibility, net of those deemed to decrease it, in the European Commission Directorate General for Economic and Financial Affairs and Economic Policy Committee LABREF database (Turrini et al. 2014). Between 1999 and 2007, this rough indicator of cumulative deregulation is positively related to cumulated current account/GDP ratios.

Two narratives are consistent with this evidence. One draws a causal relationship running from reforms to competitiveness and trade balances, and tells a story of countries gaining or losing competitiveness by increasing or reducing labor market flexibility. Another reading of the evidence, however, explains the pattern of labor reforms on the basis of the reasoning outlined above, whereby labor market rigidity benefits individuals who draw most of their income from labor. When, as in EMU, capital becomes mobile across the boundaries of countries with independent labor policies, the reforms triggered by incipient capital mobility are related to the countries' different capital intensities, and to capital flows. If the politically decisive individual in (say) Germany is capital-poor relative to the German average, but less capital-poor relative to the newly integrated financial market, the politico-economic

Chart 6
Labor Market Deregulation, Current Accounts and
Inequality Before the Crisis in EMU



Notes: Labor market reforms, change of the Gini coefficient of equivalized household disposable income, and cumulated current account shares of GDP.

Sources: DG Ecfm LABREF database, elaborated as in Turrini et al. 2014; Eurostat.

equilibrium in Germany should swing toward deregulation more strongly than in (say) Spain, where the politically decisive individual becomes even more capital-poor and the labor market reform implications of economic integration are smaller and ambiguous in sign (Bertola 2014b). As a result of these reforms, and of wage and capital returns convergence when wealth is more unequally distributed than labor income, inequality should (and did as shown in Chart 6) increase in countries that experience capital outflows, and decrease in countries that accumulate negative international imbalances.

VII. Labor Markets After Crises

In the 1990s and early 2000s, a long phase of increasing labor market flexibility saw Europe become more American also in terms of heavier reliance on financial instruments rather than on government policies, plausibly and perhaps visibly because of easier trade and tighter economic integration (Bertola and Lo Prete 2013). Such an international and long-run perspective also offers relevant insights to a discussion of crisis experiences. A comparison of the crisis and earlier recessions in fact highlights differences that are somewhat similar to those arising in cross-country comparisons. In Chart 1, long-term unemployment shoots upward in the U.S. crisis, where for the first time more than one-third of the unemployment spells are longer than one year: this is unprecedented in the U.S., but far from unusual in France, where at least one-third of total unemployment is always longer than one year. And in the aftermath of crises, the Emergency Unemployment Compensation program brought American labor market policy toward European levels of generosity and rigidity (without nearly approaching them) while flexibility-oriented reforms tried to make the most rigid European labor markets somewhat more American.

Just like the French plateau, the U.S. long-term unemployment spike and labor force participation decline are partly natural and partly artificial. The extremely sharp increase in the duration of unemployment in part reflects the large proportion of permanently separated workers, who typically have lower job-finding rates and a higher propensity to exit the labor force, which can explain some of the decline in participation (Hall 2013). But it also reflects the

effects of an unprecedented and unexpected situation on dynamic and essentially financial labor market mechanisms. At the micro level, higher dispersion of realized and expected productivities implies wider mismatch and higher unemployment. At the macro level, when demand falls, firms are reluctant to cut wages and workers are slow to adjust their wage expectations: the prospect of wage cuts, or of lower wages for new hires, are a source of labor income instability that workers may resent even though it makes job finding easier and job loss less likely. These effects can only be stronger when an unprecedented crisis increases uncertainty, confuses reservation wages, induces caution in hiring and firing and adds large and variable risk or default premia to the discount rates applied to future productivity by employers (Hall 2013) and to future wages by workers. If only these and other “natural” developments were responsible for more pronounced and persistent unemployment, one might want to leave the economy alone. Flexibility is good when only nature is a threat, and nature may hopefully be more forgiving in the near future.

To the extent that wage and price stickiness require macroeconomic policy responses, of course, monetary policy should be more persistently expansionary when labor markets react sluggishly to shocks (Blanchard and Galí 2010; Thomas 2008). If wage and employment dynamics are mostly influenced by short-term unemployment (Krueger, Cramer and Cho 2014), then longer unemployment duration calls for larger and more persistent deviations of inflation above target (Rudebusch and Williams 2014). But in a crisis, as always, the size and structure of unemployment is not just a natural phenomenon. Increasing long-term unemployment, and the declining labor force participation that accounts for most of the U.S. unemployment decline, can be an artificial and intentional byproduct of policy rigidities.

The wage and employment effects of labor policies are theoretically clear in partial equilibrium and in limit cases: if minimum wages or unemployment benefits were a \$1 million a month, nobody would work. In available data, variation of labor policies is hardly exogenous at the aggregate level and fairly small across state borders in the U.S., and competent empirical economists can more or less convincingly

estimate unemployment and wage effects to be nearly zero, or very large (Card and Krueger 1995; Karahan, Hagedorn, Manovskii and Mitman 2013). The U.S. extension of unemployment benefits plausibly did decrease job creation and search effort, but may have benefitted the imperfect economy as a whole rather than recipients only. On the supply side, encouraging uninsured workers to search longer can efficiently improve the quality of job-worker matches and improve productivity. On the demand side, more generous income support increases wages and consumption, which along with expectations determine aggregate demand and employment in a demand-driven recession, when wage flexibility might exacerbate rather than reduce unemployment (Galí 2013).

One would not very much worry about the high unemployment implied by generous unemployment benefits if it were just a side effect of policies that improve worker welfare and keep social peace in continental European countries or that, in a Great Recession where elastic market responses proved unable to stabilize financial shocks, prevented advanced economies from sliding back to a primitive situation of no unemployment, subsistence standards of living and intense conflict. The strength of various possible effects depends on the specific situation, and econometric procedures are unavoidably controversial when their results speak to the effects of policies that determine not only aggregate outcomes, but also the distribution of income and consumption across individuals. It is not a coincidence that political decisions regarding extensions of unemployment insurance benefits are tied to those that would prevent expiration of high-income tax cuts in the U.S., and that advocates of further extensions not only downplay econometric evidence of their negative effects, but also stress that their “recipients are a diverse group: roughly half have completed at least some college, including 4.8 million with bachelor’s degrees or higher” (Council of Economic Advisers and the Department of Labor 2013).

There are situations where higher and longer-lasting unemployment is a lesser evil than increasing inequality and collapsing aggregate demand, but flexibility is useful in other situations. When an integrated economy is hit by a negative aggregate shock, labor

market rigidities can support aggregate demand along with coordinated expansionary fiscal and monetary policies. Within that economy, however, countries or regions may need to adjust to a structurally new situation. When growth expectations falsified by the crisis shock have resulted in negative financial positions that other countries or regions are no longer willing to finance, and exports and imports do not respond elastically to prices, a sudden stop of capital inflows forces a quick decline of imports through a recession that collapses labor income (through job losses when wages are rigid and employment is unsecured), domestic demand, and nontradable output. In the longer run, rebalancing international positions through better competitiveness requires a decline of consumption and wages relative to other regions of countries, and of relative nominal wages when the exchange rate cannot be devalued (as in a currency union, or regions within a country). Because lower wages do not have the negative aggregate demand effect shown in Figure 2 when they boost exports and reduce imports, labor market flexibility is beneficial, also in allowing speedy reallocation of labor toward tradable sectors of the economy (Bertola et al. 2014).

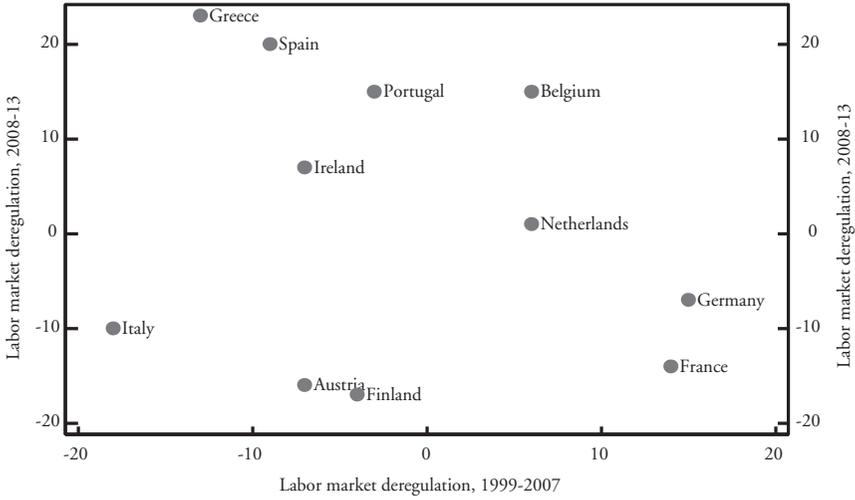
These considerations justify different mixes of “micro” and “macro” labor market flexibility in different circumstances (Blanchard, Jaumotte and Loungani 2014). The case for micro flexibility needs to be based on the structural and permanent rather than demand-driven and temporary character of the shocks that trigger recessions; macroeconomic flexibility plays a crucial role in coordinating country-specific reform and wage adjustment trajectories. The distinction between the micro and macro dimensions is useful, but nuanced in a world of increasing international integration. Within Europe’s economic and monetary union, countries’ lack of macroeconomic policy tool makes them similar to regions within traditional nations, or federal states. This makes micro aspects of labor policy particularly important, but the member countries’ political and policy competence on most tax, social and labor market aspects still assigns an important role to macro policy aspects in these fields. While adjustment may call for changes of international wage differentials within an integrated economic area, in the absence of an areawide policy framework the resulting labor mobility can be destabilizing. Clearly,

national pension systems would collapse in countries experiencing mass out-migration of active workers on the scale observed in some U.S. states, or indeed in East Germany after unification, where federal pension and social policies could buffer the impact on those who remain behind of labor mobility's contribution to the decline of local tax and contribution bases.

The pattern of labor market reforms that in Chart 6 was associated with capital flows in EMU left indebted countries in a position of relative labor market rigidity at the time of the crisis. Chart 7 shows that subsequent reforms tend to reverse that pattern in the crisis. But Chart 8 indicates that, while income inequality unsurprisingly again increases in countries where labor markets become more flexible, current accounts fail to reverse their previous pattern. Despite reform efforts, EMU crisis countries have for a time been stuck in a situation of limited current account adjustment through internal demand compression.

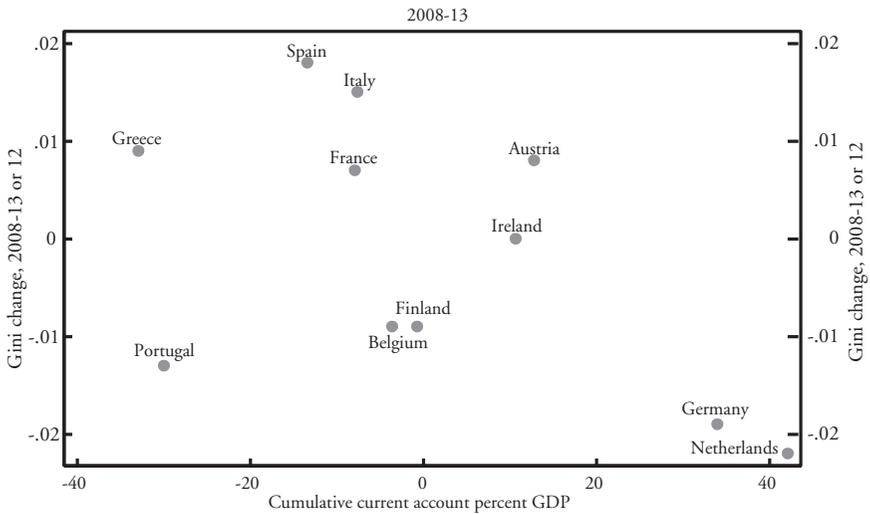
Flexibility is not enough, because structural adjustment requires not only that wage and employment react promptly to market forces, but also that those forces do push labor markets in appropriate directions. Labor market flexibility improves productivity, at a cost in terms of risk and inequality, but better productivity does not reduce (and indeed worsens) aggregate demand shortfalls. A flexible labor market helps economies adjust to structural shocks, but employer's hiring and firing decisions, workers' reallocation choices, and wages all depend on future as well as on current labor market conditions and policies: labor market investments may be influenced by financial constraints, and are certainly influenced by macroeconomic expectations. If it remains possible for crisis countries to slide back from integration to more primitive conditions, it can be individually rational for workers to resist wage cuts (and indeed demand nominal wage increases in the expectation of nominal devaluation, as in the exchange rate mechanism that preceded the euro), and for employers to refrain from creating jobs in the tradable sector. Macroeconomic policy should of course shape expectations so as to induce appropriate labor market adjustment. But labor policy, as discussed in the

Chart 7
Labor Market Deregulation Before and After the Crisis in EMU



Source: DG Ecfm LABREF database, elaborated as in Turrini et al. 2014.

Chart 8
Income Inequality Changes and Cumulated Current Accounts After the Crisis in EMU



Note: Inequality is measured as the Gini coefficient of equivalized household disposable income.
Source: Eurostat.

next section, also needs to steer suitable expectations on the part of employers, workers, consumers and investors.

VIII. Macro and Labor Policies in a Dynamic World

Most things (and all that economists find interesting) are both bad and good in different respects or from different perspectives. If prices were not sticky, shocks would not trigger complicated recessions, and central banking would not be a useful occupation. If labor market and other rigidities did not propagate shocks, recessions would be shorter, and the job of central banks easier. But prices are sticky and labor markets rigid for some good reasons. Just like customers are annoyed by uncertainty about their usual restaurant's menu prices, so workers are bothered by the possibility of wage cuts or job loss. While sticky prices generate fluctuations of economic activity and rigid labor markets reduce production and employment, predictability and flexibility are good things that need to be traded off when information and contracts are imperfect and incomplete.

Labor market flexibility would be unambiguously good if the only threats to human welfare came from nature. But rigidities can be beneficial in imperfect economies, where the flexibility that employers like is the other face of the precariousness workers fear. The balance of labor market regulation's pros and cons depends on financial market imperfections and macroeconomic fluctuations, and their appeal varies over time as well as across countries. Before the crisis, passive unemployment subsidies, employment protection and short-time or temporary layoff provisions appeared to be relics of an industrial revolution past when essentially closed economies could try and stabilize the labor income of specialized workers attached to cyclical industries, and unable to smooth in financial markets the consumption impact of income fluctuations. As labor markets rigidities were partly, gradually and unevenly swept away by international market integration in the 1990s and early 2000s, income instability could to some extent be reduced by clever macroeconomic policies, or dissipated in better financial markets. Yet, labor market rigidity can look better after a crisis that casts doubt on the efficacy of financial markets and shows that monetary and other macro policies cannot always prevent deep recessions. In Germany, a country with interestingly peculiar shocks and

evolving labor market institutions, the implications of an old-fashioned crisis triggered by a sharp but quickly reversed fall of manufacturing exports were successfully buffered by similarly old-fashioned and unreformed short-time work subsidies and coordinated industrial relations (Rinne and Zimmermann 2012). Like manufacturing, labor market rigidities may yet become fashionable in the aftermath of a crisis where they were useful, and in a world that across advanced countries resembles the 1970s in some of the respects illustrated by the charts above, if not in terms of inflation rates.

In a changing world, there is no all-weather optimal set of policies and it is pointless to fight previous wars, praising policy frameworks that performed well in specific previous instances, such as flexicurity in times of growth and structural transformation or German vocational education in the current crisis. Like in financial markets, so in labor markets past performance is no guarantee of future returns, and policy discussions should be based on clear discussion of advantages and disadvantages rather than on simplistic or dogmatic views. When circumstances change, labor policies should change to suit specific situations: in the labor market, rigidity can soften and smooth aggregate shocks, flexibility is useful when sector reallocation is needed.

Experience shows that labor market policies do respond to changing circumstance. Whether they do so appropriately is harder to assess, not least because their distributional implications are unavoidably controversial. Like macroeconomic policy, however, labor policy should avoid unambiguously inefficient coordination failures and dynamic inconsistencies. Implementing such prescriptions is of course not as easy as writing them here, for at least two reasons. The first difficulty is that assessing the persistence and character of shocks is not as straightforward in reality as it would be if a natural rate of unemployment moved predictably slowly. Labor demand, labor supply and wages are all influenced by expectations, and the structural component of cyclical dynamics cannot be disentangled in aggregate time-series data that commingle shocks, policy influences and changes of the environment in which macroeconomic and labor policy choices are made.

The second difficulty is one familiar to macroeconomic policymakers. Knowing that the pros and cons of labor market rigidity depend on circumstances, one might want to try and be flexible in upswings and rigid in downswings. But policy cannot have it both ways, because the labor market thinks ahead. Reforms of life- and career-shaping labor market policies cannot quickly influence behavior, and they modify the implications of choices made a long time ago. Even at cyclical frequency, credibility is as crucial for labor policy as for monetary policy, because wages and employment are influenced by expectations of future policies. In a slump, job destruction depends on current firing costs, and job creation on expected future firing costs. Just like price setters can derail price stability when they suspect that monetary authorities will *ex post* try and boost demand, so a poorly credible and badly timed labor market deregulation can backfire, increasing job destruction but not job creation, if it is expected to be reversed soon.

The challenge is that, also familiar to macroeconomic policymakers, of committing to sensible policy flexibility. Labor market flexibility can speed up adjustment after crises, but it would be wishful to suppose that it can quickly and painlessly restore equilibrium. The stance of not only monetary and fiscal but also labor policies can contribute to establishing the credibility that is a crucial determinant of successful adjustment. A coherent package of time-consistent policies should include elements of labor market management which, depending on the character of shocks and of the necessary adjustment, may call for contingent rigidities, like those resulting in recessions from generous unemployment benefits or job security provisions. Unprecedented and unusual crises unfortunately make it difficult not only to assess the pros and cons of different labor market institutions, but also to steer expectations through suitable reform processes. In the 1970s it was a mistake to address structural weaknesses with expansionary fiscal and monetary policies, but it was difficult in real time to disentangle the effects of structural and institutional changes from those of plausibly temporary aggregate shocks. Germany at the turn of the millennium took some time to realize that capital outflows required and justified more labor market flexibility. The Great Moderation fostered hopes that policy rules could

successfully stabilize advanced economies at low levels of inflation, but the Great Recession quickly brought interest rates to the zero lower bound.

Interactions between macroeconomic and labor market dynamics imply that macro policy should be aware of structural and policy issues in the labor market, and that labor policies can contribute to address cyclical stabilization issues. The effects of structural trends and cyclical fluctuations on the pros and cons of labor market rigidities imply that labor policies need to be revised and adapted to specific circumstances. Perhaps most importantly, the dynamic nature of labor markets implies that expectations management is as crucial to labor policy as to monetary policy. Policymakers should be ready to react appropriately to cyclical and structural developments in labor as well as monetary, financial and goods markets. As long as policies are clearly motivated in terms of plausible advantages and disadvantages of price stability and labor market rigidities, it must be possible to maintain credibility while remaining open to the possibility that changing circumstances will call for a reassessment of current policies.

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