International Institute for Labour Studies
International Labour Organization

The employment challenge

Job creation in times of crisis

2010

Summary

This paper argues that typical (active or passive) labour market policies, such as those that have been put in place in reaction to the current crisis have effects on both aggregate demand at the macroeconomic level and efficiency at the microeconomic one. The macroeconomic effect has fiscal implications, which may raise concerns regarding fiscal sustainability regarding some of these programs, in particular during crisis times when public finances are already under pressure. In this regard, the analysis in this paper shows that labour market policies are subject to similar limitations as to their effectiveness as general government consumption: Higher public debt, wider economic openness and more normal cyclical conditions weaken the capacity of such policies to stimulate job creation. In addition, high structural unemployment rates limit the chances for such policies to accelerate the labour market recovery. The paper argues that such country-specific circumstances must be taken into account when implementing the recommendations from the Global Jobs Pact in individual member countries. Finally, the paper demonstrates that early action in form of (additional) government spending can have substantial benefits in terms of faster job recovery and lower (long-term) fiscal deficits.

Introduction[1]

Labour markets around the world are still frozen. Nevertheless, policy makers are likely to start phasing out stimulus measures in the course of this year amidst fears of fiscal sustainability given massively inflated public debt and the build up of new asset price bubbles. Planned discretionary measures are still sizeable but political discontent is increasingly being felt as to sharing the final bill that is being presented to tax payers. Similarly, on the monetary side, policy makers have started to phase out some of the exceptional measures put in place to provide liquidity to the market, amidst mounting fear of inflationary pressure, at least in some G20 countries and in particular asset markets. Such an early exit from stimulus measures, however, will adversely affect a sustainable labour market recovery. It will weigh on quickly restoring aggregate demand, further pushing up job destruction and prolonging unemployment spells for those currently without a job. This paper argues that a shift in policy orientation towards a more active use of labour market policies can help restore labour markets without jeopardizing long-term macroeconomic stability.

Tightening fiscal and monetary policies too early and too abruptly may durably lower employment opportunities, with adverse consequences for labour market participation and potential employment growth. Amidst still depressed aggregated demand, the economy will take longer to return to full capacity, leaving a larger share of workers out of job – or even out of the labour force. In addition, it will also limit the means that governments can spend on specific labour market policies and which would help stimulate hiring, ameliorate job search and matching, and mitigate job destruction. In this respect, spending on labour market programs often comes with multiple benefits at both the macro- and the micro-economic level. Properly designed labour market policies help job seekers to find new employment opportunities more rapidly, thereby limiting the damage to their disposable income. Equally, it may strengthen incentives for firms to advertise new vacancies. Finally, such policies can help reorient job searchers to new occupations in different sectors when a wave of structural change is approaching such as at the current juncture. This means that the cost of inaction and a premature exit of such measures can be substantial: It may result in rising or durably high unemployment, pushing unemployed workers to leave the workforce or – where alternative, non-market sources of incomes are not available, which is the case in many emerging G20 countries – to move into the informal economy.

Typically, labour market programs are very cost-effective, which is also confirmed by analysis in this paper. They foster job creation and mitigate job destruction at similar rates as generic public spending, but at a fraction of its costs. At the current juncture, this means that governments can improve the state of both their public finances and the labour market situation by reorienting part of their spending to these specific policies. In this regard, the International Labour Conference had adopted in June 2009 the Global Jobs Pact (GJP) to support countries in designing effective labour market policy responses and to coordinate international efforts in that area. The GJP identifies a number of policies essential to deal with the labour market consequences of the crisis. Not all of the measures are immediately fiscally relevant, and some may be implemented as simple administrative measures (e.g. minimum wages). To the extent that they are, however, such measures do not only mitigate the impact of the crisis, they are themselves part of larger fiscal packages and hence are currently coming under the scrutiny of finance ministers as exit strategies from stimulus packages are being discussed and – soon – implemented. In addition, to the extent that they add to an already large stock of public debt by widening the fiscal deficit, such programmes have been running the risk of (further) lowering the effectiveness of public spending in stimulating the economy.

[1] This paper has been prepared by Ekkehard Ernst, Lead Economist at the International Institute for Labour Studies of the International Labour Organization and his team consisting of Uma Rani Amara and Matthieu Charpe. It has benefited from valuable input and discussions with Raymond Torres, Sandrine Cazes, Sher Verick.

E-mail address for correspondence: ernste@ilo.org

Also, some labour market programmes require additional, complementary measures to be fully effective, which in turn will further add to the existing macroeconomic challenges. These macroeconomic effects need to be carefully weighed against the micro-economic improvements that some of these policies yield. Indeed, not all policies among the options suggested by the GJP will be equally effective on both the macro- and the micro-economic level. In times of recovery and as exit from stimulus measures looms closer, those policy options need to be identified and implemented that promise the largest benefits for labour markets without jeopardizing fiscal sustainability.

Identifying such policies and implementing them properly, however, is no easy task as this note shows. Country characteristics such as the level of public debt, its openness or the existence of a large stock of structurally unemployed workers can decrease the effectiveness of policy interventions on the labour market enormously. Also, some policies are more effective over the long-run than in the short term and may weigh on public finances without much immediate benefit but larger gains in the future. Finally, some policies are better in limiting job destructions and inflows into unemployment (benefit schemes) whereas others are more helpful for stimulating job creation and outflows from unemployment into employment. Care needs to be taken in identifying the labour market challenges that individual countries face when designing the appropriate policy mix.

Identifying the labour market challenge will, therefore, be the starting point of this paper, to be discussed in the following section. This will be done by taking into account that countries started to experience labour market difficulties at different moments in time. Also, countries may not have been exposed to the same type of shock, even though the crisis was global in nature. Importantly, it will be shown that first signals arise that the labour market recession might have longer-lasting effects as unemployed workers are leaving the labour force, unemployment increasingly becomes structural and the share of vulnerable and informal employment is increasing. This will be followed by a discussion on the extent to which the deep upheaval on the labour market has triggered a process of sectoral restructuring, whereby job destruction is unlikely to be reverted by job creation in the same sector. For the moment, only tentative conclusions can be drawn on the basis of existing empirical material. Nevertheless, the extent to which restructuring is occurring is important to assess as under such conditions, unemployed workers will no longer be able to find (re-)employment opportunities in their earlier sector of (job) experience, flows of workers and jobs across sectors are likely to increase, with the potential of rising structural unemployment rates and hysteresis effects.

In section 2, the paper presents an overview of the measures implemented so far, both regarding the extent to which countries have intervened in the macro-economy and regarding the particular labour market programmes put in place. The section provides an overview of different policy components and how they differ across countries. In particular, it will be shown that countries have so far privileged infrastructure spending and tax over measures directed towards the labour market. Moreover, most spending measures have been implemented as temporary one-offs without the focus on improving medium-term job creation dynamics. Indeed, relatively cheaper labour market programmes have so far not occupied a large part of crisis response packages, even though they may eventually yield higher long-term benefits. The section estimates the cost of such (labour market) inaction reaching up to 2% of GDP as a long-term (additional) budgetary burden when appropriate measures are not being taken. The note also presents an assessment regarding the likely short-term developments of labour market spending given past experiences: Most programmes will be expanded only to relatively limited extent, even though they have the potential to contribute substantially to the labour market recovery.

In section three, the paper takes a closer look into the effectiveness of these different labour market programmes. This will be done on the basis of a new analysis of the impact of labour

market policies on unemployment dynamics. Particular attention will be paid to the macroeconomic effects of specific policies and a distinction between their short- and long-term effects will be made. The detailed conclusions that arise from this analysis for individual labour market programmes and their costs and benefits for the labour market recovery will be further corroborated by relevant studies in the literature. More importantly, the analysis distinguishes the effectiveness of different programmes depending on country characteristics, such as its degree of openness or its position in the business cycle, to optimally design policy packages that develop maximum effectiveness. On this basis, the last section discusses the conditions for successful implementation of various policy options such as those put forward by the Global Jobs Pact following the analysis in this paper. In particular, this section discusses to what extent differences in the available fiscal space of a country – i.e. the capacity to finance various spending programmes – will affect the optimal choice of policy options, besides affecting the overall amount of spending that can be implemented.

What is the size of the labour market challenge?

The global economic crisis has left deep imprints on the labour market. After years of strong employment growth, the sudden drop in production has dried up job creation and let to a simultaneous increase in job destruction. As a consequence employment started to decline in most G20 countries – and often substantially so – and continues to do so in early 2010. Unemployment rates soared, even in countries that still experienced positive output growth rates in 2008/09 (Majid 2009). Even in those countries where net job losses have remained limited (so far), under-employment in form of shorter working hours or involuntary part-time have increased rapidly. This proved to be an effective way to keep measured unemployment under control. However, such policies come at a substantial (fiscal) cost and will eventually be replaced or phased out, when a likely rapid increase in unemployment can be experienced. In addition, they may disguise – unsuccessfully in the long term – structural shifts in the economy that have been triggered by the crisis. In this sense, short-term success stories in terms of smaller growth of unemployment may come at higher long-term increases in structural joblessness.

In order to fully appreciate the different options that policy makers have to take into account at this current juncture, this first section will provide an account of what has happened on the labour market so far. Besides the size of economic slack that has pushed unemployment rates up in the short run, this section will also present a first assessment regarding the extent to which the labour market has been affected in structural terms. In particular, this section discusses how much structural adjustment will need to take place before employment growth can be put back on a sustainable path. This latter aspect is especially relevant when considering the rapid increase in the number of long-term unemployed in the US or the rapid increase in structural unemployment in some European countries.

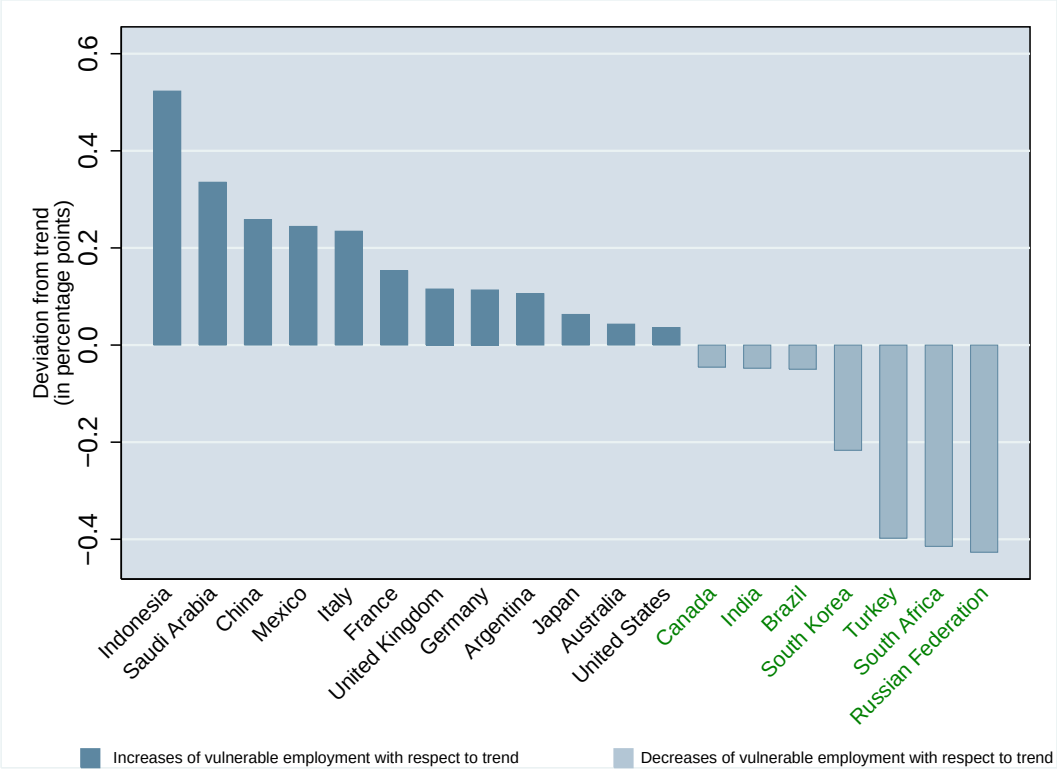
Some deterioration in working conditions was already felt before the crisis…

Even though employment continued to grow at a fast pace thanks to the rapid expansion until the end of 2007, some deterioration in working conditions have already been visible in certain G20 countries. In particular, vulnerable employment progressed in a majority of G20 countries during much of the 2000s, and did so despite stronger economic dynamism (see Figure 1 and a recent study jointly published by ILO and WTO (2009)).[2] Indeed, some of the global imbalances in international capital flows that have been underlying the crisis are believed to be causally linked to the social imbalances to which these figures point

[2] Vulnerable employment is measured as the proportion of own-account workers and contributing family members in total employment

(International Institute for Labour Studies (IILS) 2008a; International Institute for Labour Studies (IILS) 2008b).

Figure 1: Changes in vulnerable employment (2000-2008 with respect to long-term trend)



Note: The chart displays deviations from long-term trend of vulnerable employment rates over the period 2000-2008.

Source: Own calculations on the basis of ILO, Global Employment Trends (2010).

…which have worsened with the onset of the crisis

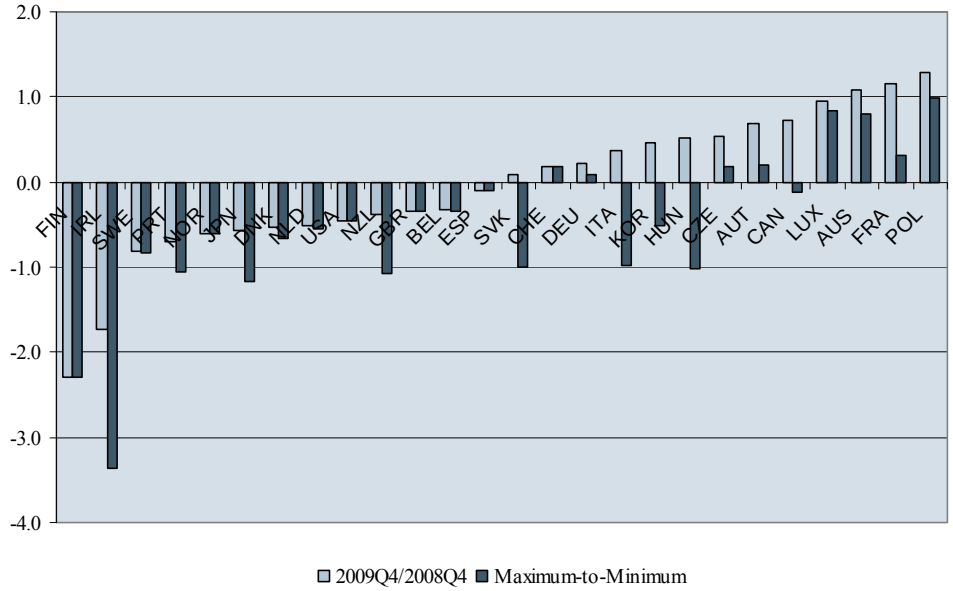
With the onset of the crisis, these developments have worsened substantially. Employment growth has stopped or turned negative in most G20 countries during the 2009. Indeed, employment levels have reached their peak at the beginning of 2008 at the latest – some countries such as the USA saw employment falling already since December 2007 – but the decline accelerated substantially when the economic crisis reached a global stage towards the end of 2008. At current rates, the trough for employment is expected only towards the middle of 2010 for high-income G20 countries and may have already been reached for emerging G20 countries (International Institute for Labour Studies (IILS) 2009a). At any rate, the employment recovery will be gradual and may be drawn out as long as until the second half of 2013 before returning to pre-crisis levels. The speed of employment recovery will not only depend on the pace at which production returns to its potential growth level but also on policies that help creating new jobs and integrate currently without a job or out of the labour force into employment.

The flip-side of these massive employment losses has been the rapid increase in unemployment across G20 countries. Even among emerging G20 countries where employment continued to withhold major losses (China, Indonesia), unemployment increased against a continuous rise in the labour force that outpaced the creation of new jobs. Overall, the unemployment rate increased by around 2 percentage points between the end of 2007 and the end of 2009, with most of the increase taking place during the second half of 2008. A larger increase in unemployment has partly been avoided due to the extension of certain

labour market programmes, such as short-time work arrangements, the reduction in working time (mainly over-time) or the switch to (involuntary) part-time of a substantial number of employees. Indeed, the incidence of part-time increased up to 5 percentage points in some countries and hours worked dropped by up to 6% (International Institute for Labour Studies (IILS) 2009a).

Reduced hours and other work-time sharing agreements helped somewhat to limit increases in the unemployment rate. However, as the crisis lingers on, there is increasing evidence for a rise in the number of those that drop entirely out of the labour market. Following the rapid increase in unemployment and acceleration in employment losses, there is a tendency visible in labour market developments for a shrinking labour force and that in a majority of OECD countries and when compared to the previous business-cycle peak (see Figure 2). Indeed, as labour market conditions worsened, both an increasing number of workers dropped out of the labour force ("discouraged workers") and migratory flows became more restricted or return migration set in (such as in Italy and Spain). Together this caused labour force participation rates to fall in the first half of 2009 by up to 2 percentage points (see IILS (2009a), ch. 1). In addition, these aggregate trends masks that worker discouragement is highly concentrated among certain groups on the labour market, in particular younger and older workers. At least in advanced economies, older workers are often covered by special unemployment benefit regimes or early retirement systems. Younger workers, however, have typically no other choice than to continue schooling or – if that is not an option – to wait for better times, thereby permanently compromising their future chances on the labour market. The fall in the labour force, therefore, does not bode well for the sustainability of the ongoing recovery and may further limit the possibilities for countries to return to previous employment levels quickly.

Figure 2: Crisis-related changes in labour force



Note: The graph displays labour force growth rates (i) between 2008Q4 and 2009Q4 and (ii) between the business cycle high- and low-points for 27 OECD countries.

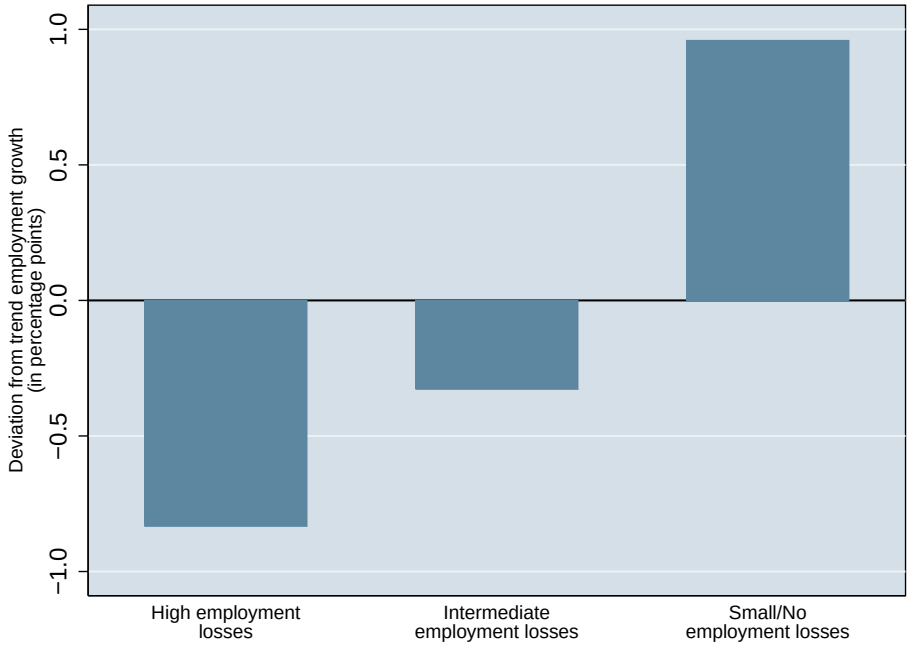
Source: OECD, Economic Outlook, EO 86.

Some countries have resisted the labour market crisis better...

Countries have shown large differences in their labour market reaction to the crisis. While some countries with only moderate declines in GDP have seen a doubling of un- or

underemployment, others have managed to keep their unemployment rates almost stable despite massive losses in GDP. The following Figure 3 suggests that employment growth differs between countries with high labour market resilience in comparison to those with low labour market resilience by up to 2 percentage points, when matched against their historical trends. Partly, these differences may be explained by differences in the cyclical situation, whereby countries with lower employment losses may only be at the beginning of their labour market recession, while those with larger losses have been already experiencing its full effect. A further worsening of labour market conditions in the first group of countries might then still be expected. On the other hand, even though the first group in Figure 3 has lost on average 1 percentage point of employment with respect to its own past performance, no quick labour market recovery may be coming up. Indeed, the crisis may have triggered another, structural challenge whereby sectoral reallocation of workers and jobs will lengthen the adjustment period before the unemployment rate returns to levels observed during the earlier years in the 2000s.

Figure 3: Employment intensity of growth



Note: The figure displays the deviation from trend employment growth in 2009 based on an Okun's curve estimation of the relationship between output and employment growth. The estimation has been done over the period before the crisis (i.e. up to 2007, with varying length depending on country sample). The country group "High employment losses" contains Denmark, Spain, Finland, Ireland, Iceland, Portugal, Slovak Republic, Sweden, the United Kingdom and the USA; "Intermediate employment losses" contains Canada, the Czech Republic, Greece, Hungary, Italy, Japan, Mexico, Netherlands, New Zealand and Turkey; "Small/no employment losses" contains Australia, Austria, Belgium, Switzerland, Germany, France, Republic of Korea, Luxembourg, Norway and Poland.

Source: Own calculations; OECD Economic Outlook database no. 86

Another decisive factor that might explain differences in labour market performance between these three country groups may be related to differences in the (labour market) policy stance. This is especially the case regarding the third group in Figure 3 and which experiences gains in employment growth with respect to historical trends in similar situations. In particular, some countries in this group have introduced work-time share arrangements or have extended existing provisions (Germany, Austria, Switzerland). Others have benefited from targeted

support measures to prop up income of low-income households, thereby helping to stabilize aggregate demand and hence employment (e.g. Australia). Even though underemployment may have increased in these countries as well – in particular when working time is taken into account – less people are losing touch with the world of work as job losses are more limited in this country group.

...but most are likely to expect additional pressure from sectoral shifts...

The economic crisis is likely to have started a sectoral shift of economic activity and jobs. Certain sectors – such as financial services, real estate and construction – have built up substantial capacities during the upswing that are now being idle and unlikely to be used quickly with the recovery. Further pressure comes from still depressed credit activity and a higher user cost of capital, also due to a re-appreciation of risk by the banking sector. As a consequence, especially housing related services are likely to experience a permanent downward shift due to the more restricted capacity of households to borrow for expanding housing capacity. Additional pressure on certain sectors comes from the fact that with the onset of the crisis, savings rate have increased in almost all countries. While this is a break with the path in particular in countries such as the US, the UK and Spain, it also means that those countries where large pans of the economy have relied upon strong private consumption may experience lower growth rates. In particular, the retail industry and sectors producing durable consumer goods (such as the automobile industry) may experience sluggish demand growth in the coming years. This will have wider implications also for other industries such as logistics services in the transport industry related to wholesale and retail trade. To the extent that this increase in the savings rate is permanent, the sectoral shift will gradually move resources away from these industries.

Some of these shifts are certainly only of temporary nature and linked to the substantial decline in world aggregate demand. However, to the extent that certain activities have been related to the economic bubble, the extra capacity that has been accumulated in these sectors is likely to be withdrawn gradually from the market, causing a permanent shift in jobs and firms from these sectors to others. Analysis carried out at the International Institute for Labour Studies indicate that for financial and real estate services alone, a permanent shift of 1.5-2% of total employment could arrive over the next decade (Escudero 2009). These trends are likely to strengthen to the extent that further financial market regulation and taxation has the potential to scale down the sector even more. In any case, given the current head winds that the sector is facing both economically and politically, it may take some time before employment losses there will have been recovered. Indeed, as wealthy individuals have been losing substantial amount of their assets – with consequences for fee income streams – given the political mood for at least a temporary hike in regulation and taxation of banks, the financial industry is likely to face some more bumpy times ahead.

Further shifts in sectoral demand can also be expected from the stimulus packages that are currently been put in place. Indeed, most stimulus packages have an element of support measures for technological and sectoral change in favour of environmental friendly sectors and economic activities ("green economy"). These measures are likely to create demand for new jobs in areas where currently little or no skill potential is available. Hence part of the spending that is currently rolled out in this area is likely to be characterised by relatively low employment intensity rates. Only gradually and through targeted efforts are these sectors likely to be able to satisfy their demand for new staff. Some countries, such as the Republic of Korea have solved the problem partly by targeting green economy spending for low-skilled workers. Such spending is, however, unlikely to create a permanent shift of resources to these activities and rather resembles public works programmes (see discussion below).

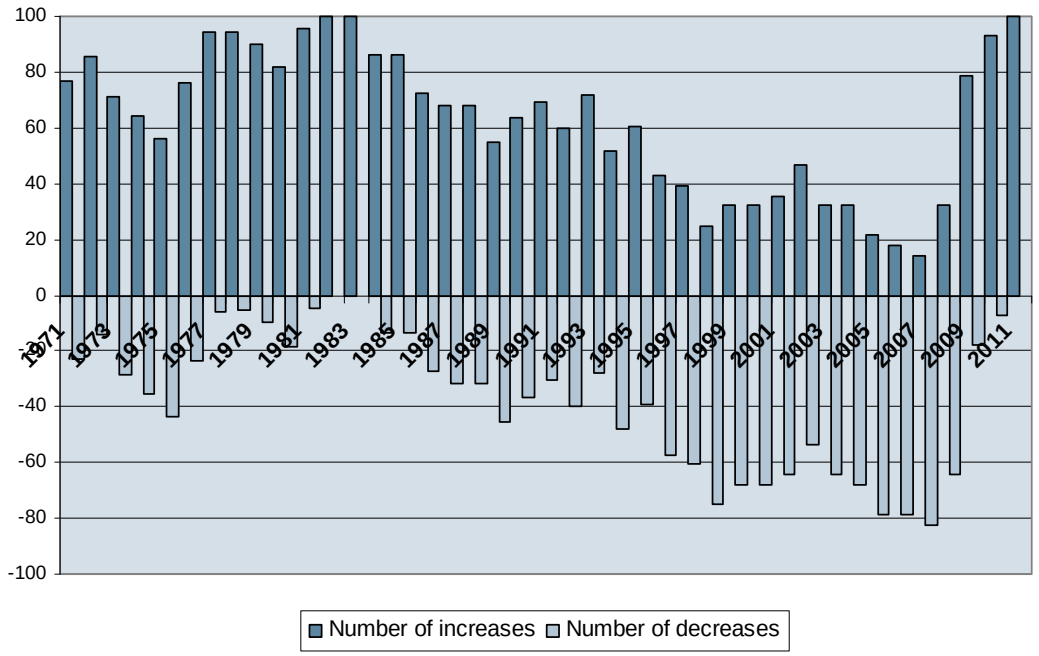
…which is likely to increase structural unemployment rates over the medium term.

In addition to sectoral change, the coming economic recovery is likely to be fragile and muted. Financial sector crises typically take longer than others before growth resumes at earlier growth rates. Partly, this is related to the fact that households and firms need to de-leverage before they can go back on a stronger consumption and investment path. As presented in WoW2009, ch. 1, this will cause employment to get back to pre-crisis levels only gradually. Indeed, in advanced economies, the adjustment period may take as much as 5.5 years. Even though in emerging countries this seems to be smaller, one needs to take into account that the size of the active population is increasing in these countries more rapidly as well, putting additional pressure on labour markets.

As a consequence, both sectoral shift and low growth means that employment growth and the employment intensity of growth is likely to decline further and stay at a relatively depressed rate instead of going up as suggested above. Indeed, some long-term challenges are already visible on the labour market, at least for advanced economies. Recent estimates of changes in structural unemployment rates across OECD countries indicate a swift turn around from earlier falling rates (see figure 2). Indeed, for 2011, increases in structural unemployment rates are forecasted for all 30 OECD countries, a substantial change in fortunes considering that still in 2008, structural unemployment rates have been declining in more than 80% of OECD countries.

The once again rising duality of the labour market that this indicates is likely to make things more complicated regarding the effectiveness of exit strategies that are currently being put in place. At any rate, it demonstrates the importance for policies to shift in the course of the recovery from demand stimulating to more structural policies that will help to cope with the rapidly increasing burden of long-term unemployed people.

Figure 4: Increases and decreases in structural unemployment in the OECD: 1971-2011



Note: The graph displays the frequency of increases and decreases among OECD countries during a given year between 1970 and 2011. Data for 2009 are preliminary estimates, 2010 and 2011 are forecasted values.

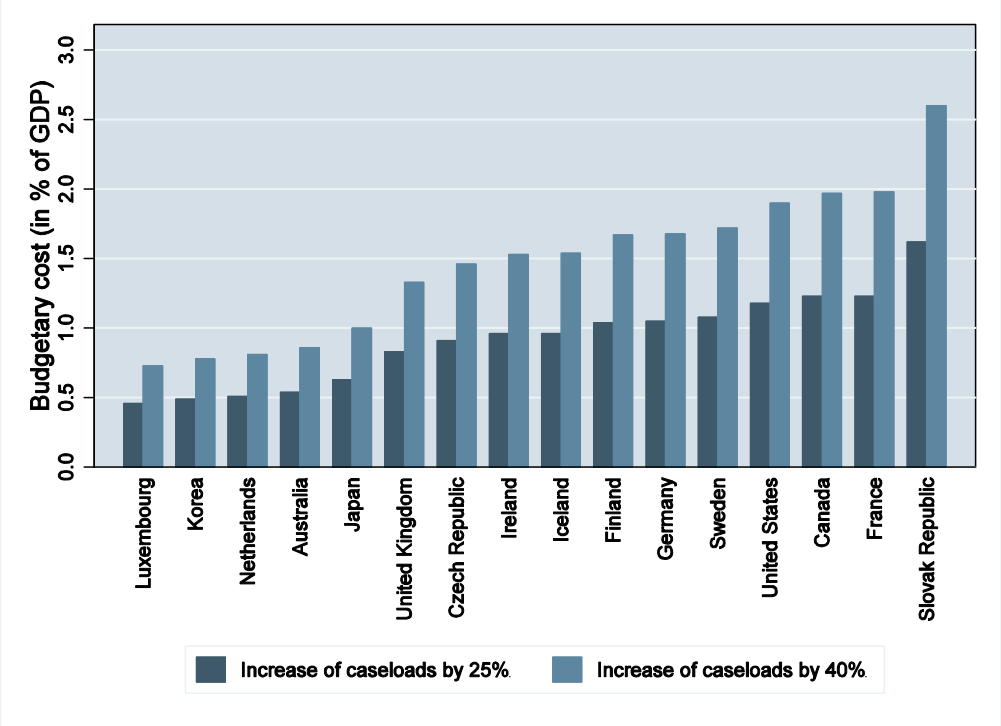
Source: OECD Economic Outlook, no. 86

In sum, the ongoing developments on the labour market and the crisis-related adjustment processes that have already taken place seem to suggest an increasing structural problem for job creation and employment generation. Lower labour force growth and higher structural unemployment rates indicate that the shock of the global crisis is likely to leave permanent imprints on labour market dynamics. Also, the likely changes to the financial industry and other sectors has the potential to increase – at least over the medium-term – the need for structural adjustment and hence the need for policies that help employees during the transition period in finding new, alternative employment opportunities quickly.

Consequences for fiscal policies

The structural changes on the labour market identified above do not bode well for fiscal sustainability. First, countries need to avoid deepening of the structural problems in the short-run by keeping up with current stimulus measures and preventing further losses in the labour force. At the current juncture of already high fiscal deficits and large increases in public debt, there is a temptation to move out of stimulus measures quickly. As the estimations in the chart below demonstrate, however, an earlier exit – and a related stronger increase in unemployment rates – will have substantial consequences both for joblessness and fiscal policies, even if only passive measures for income maintenance are considered. Indeed, with an increase in caseloads of 40% on a permanent basis, additional budgetary burden of more than 2% of GDP will arise in certain OECD countries. Even if the caseload increase would only be around 25%, on average the public purse will have to finance an additional 1% in these countries.

Figure 5: Budgetary cost of inaction (in % of GDP)



Note: The chart displays long-term budgetary costs of increases in unemployment caseloads of 25% and 40% with respect to baseline unemployment in 2008. The calculations only consider passive income maintenance.

Source: Own calculation based on OECD Benefits and Wages database.

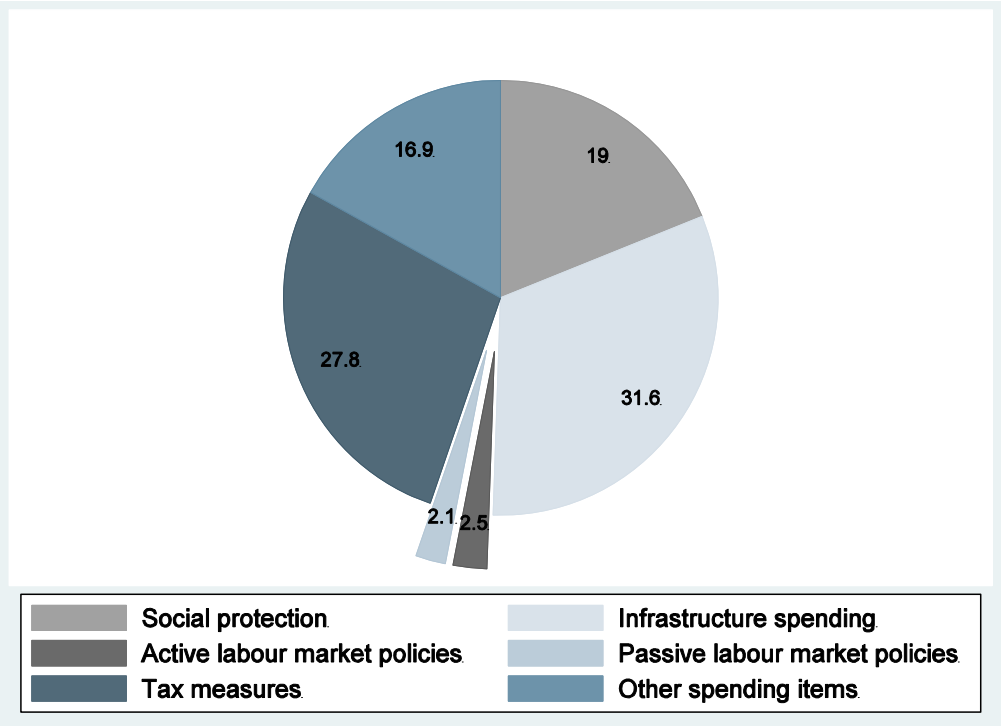
In addition and over the longer-term, policies will not only finance passive measures to provide some income maintenance but will increasingly need to focus on the structural problems that have already been built up as a consequence of the crisis. Active labour market

policies will, therefore, also need to be increased, putting additional burden on public finances but with the expectations that in the longer-run, this will help to swiftly bring down spending on both passive and active labour market measures. The extent to which countries have already expanded both types of labour market spending and the appropriate focus and policy mix going forward in the recovery will be underlying the discussion in the remainder of the paper.

Country efforts to address the crisis

With the onset of the crisis, countries were quick to react. However, most (fiscal) effort went into financial sector safeguarding measures and only very little into labour market programs (see IILS (2009b) and Figure 6). Rather, the latter ones were part of larger stimulus packages to get the economy back and running. This section presents an overview of the measures implemented so far, both regarding the extent to which countries have intervened in the macro economy and regarding the particular labour market programmes put in place. We will also provide a decomposition of different measures and differences in implementation across G20 countries, in particular regarding infrastructure measures, green economy projects and labour market programmes. Regarding the latter, an assessment is made of spending on active vs. passive labour market programmes as well as an evaluation on the likely increase of spending for such programmes following a further deterioration on the labour market throughout this year.

Figure 6: Composition of fiscal stimulus measures in G-20 countries



Source: OECD (2009) Fiscal Packages Across OECD Countries: Overview and Country Details, OECD Paris, March; Andes, Scott and D. Castro(2009) "Driving a Digital Recovery: IT investments in the G-20 Stimulus Plan" The Information Technology and Innovation Foundation, September; Robins, N., R. Clover and C. Singh (2009) "Building a Green Recovery" May 2009, HSBC Global Research, New York; Reid, Patricia (2009) "Oppurtunity in the Times of Crisis: Stimulus Packages and the Green New Deal" Working Policy Paper August 2009, Canada-Europe Transatlantic Dialogue: Seeking Transnational Solutions to 21st Century Problems; Meyer-Ohlendorf, N., B. Gorlach, K. Umpfenbach, M. Mehling (2009) "Economic Stimulus in Europe - Accelerating Progress towards Sustainable Development" Background Paper, ESDN Meeting, Prague June 2009; Zhang, Y, N. Thelen and A. Rao (2009) "Social Protection in Fiscal Stimulus Packages: Some Evidence" A UNDP-ODS Working Paper, New York September 2009; Ministry websites of various countries and other national sources.

Most of the G20 countries have responded to the global economic crisis by letting play their automatic stabilisers built into their social security and tax system (International Labour Office (ILO) 2009). Spending on unemployment benefits has increased tremendously as job losses increased, and many governments have tried to increase resources for active labour market programs. They further expanded fiscal stimulus through discretionary measures. The bulk of this extra spending is provided by only four countries – US, China, Germany and Japan – who account for about 78% of the overall global stimulus measures announced and spend between 1.4% and 2.1% of their respective GDP. For most of the European countries the measures are lower than these figures. In most developing economies the fiscal stimulus is less than 1% of their respective GDP.

Spending components I: Infrastructure investment

In response to the financial crisis, spending on infrastructure has been the most popular stimulus measure in all the G20 countries. Government spending in infrastructure not only creates jobs in the short run and can help economies recover, but is also expected to sustain long-term growth. In particular, the spending on infrastructure is expected to have also spill-over effects in other sectors, for instance when improvements in transport infrastructure help firms in different sectors to integrate at less cost. A part of the infrastructure investment is being spent on education and research infrastructure (Canada, France, Germany and United Kingdom); roads, bridges, transport, etc. (Canada, China, France, India, Indonesia, Mexico, Saudi Arabia, United Kingdom and the United States); and maintaining public buildings (especially in France and Spain). The stimulus packages have also given considerable importance to *social housing,* to address the needs of vulnerable workers in developed (Canada, France and Spain) and developing countries (Brazil).

Another strategy that has found widespread support in these stimulus packages is the *broadband infrastructure investments and next-generation networks* (Australia, Canada, Germany, United Kingdom and the United States). These projects can be initiated quickly, are labour intensive and hence have considerable short-term employment generation potential (Qiang 2009). There has been some estimation that predicts that $5 billion stimulus would create almost 100,000 new jobs directly in short-term and about 2.5 million jobs as network effects (Communication Workers of America 2008). Other estimate about 500,000 jobs retained or created directly under a broadband subsidy of $10 billion (Atkinson; Castro;Ezell 2009). Investments in broadband infrastructure would also have spill over effects in a number of other sectors, both in the short and long run.

Finally, countries have aimed at introducing a *Green criterion* when selecting infrastructure projects. This includes investments in energy efficiency and low-carbon alternatives in a number of areas, like road and air transport (China, Japan); new housing or home renovations (Australia, Brazil, Canada, Mexico, the United States); cleaner environment (China and the United States).[3] Some countries, like in China the government forcefully front-loaded the overall RMB4 trillion infrastructure stimulus package and are using it to advance medium-

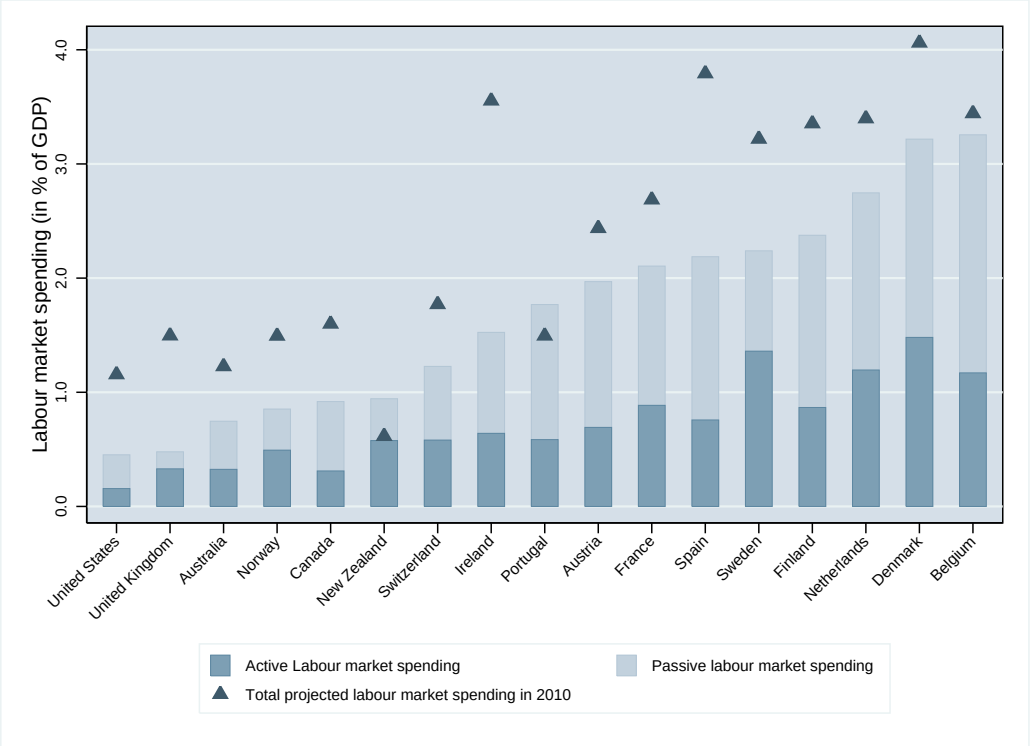
[3] See Reid (Reid 2009) for a detailed overview of green economy programmes as part of G20 stimulus packages.

term goals. This seems obvious from the extent of which they have planned investment in energy efficiency and low-carbon alternatives to road and air transport.

Spending components II: Labour market policies

In reaction to dramatically soaring unemployment and underemployment rates, countries have rapidly and substantially expanded labour market measures. In particular passive labour market spending has increased by around 20% among OECD countries. On the active side, the increase in labour market spending has been more muted (at least regarding the GDP effect) but further spending increases can be expected here as the current downturn may also to lead to a rise in the long-term unemployment as discussed in the previous section (see Figure 7 for our estimations on spending increases for labour market policies). Based on past experiences regarding the evolution of labour market spending in reaction to unemployment developments, we are forecasting that labour market spending is likely to increase by up to 1.5 percentage points of GDP in some OECD countries this year. In addition, however, countries will need to continue stimulating employment creation not only through labour market policies but also through continuous support for aggregate demand so as to guarantee that a sufficiently large number of vacancies are available for the rising number of job seekers.

Figure 7: Actual vs. projected spending on labour market programmes (2007 vs. 2010 in % of GDP)



Note: The figure displays spending on labour market policies in 2007 as a share of GDP and broken down into active and passive labour market spending. In addition, the figure displays forecasted total labour market spending in 2010.

Source: Own calculation (see Annex 5 for details).

Active labour market policies

Active labour market programs play an important role in G20 country's strategies to reduce unemployment both in the short-run and long-run. The most common element in the stimulus packages, as part of the labour market policies was *training programmes* for the workers in most of the G20 countries. There were some exceptions like Brazil, Italy, India, Mexico and Russia where these programmes were not part of the fiscal stimulus measures. The mechanism of training programmes varied across countries: Argentina and Germany provided

(additional) training for low-skilled youth with income support; China implemented on-the-job training and special skills training programs; other countries focus more on skill development and vocational training programmes. In Spain, subsidies were given for university studies for jobseekers between the age of 25 and 40, and a similar policy was introduced for youth in United Kingdom, so as to postpone their entry into the labour market. Another active labour market policy, *hiring subsidies* has been implemented by France, Japan, Korea and United Kingdom. At times of crisis this could be an important counter-cyclical measure as it would encourage displaced and young workers to enter the labour market. Some of the measures undertaken by countries have largely been targeted towards young workers, disabled workers and the unemployed. The hiring subsidies could be effective if well targeted.

Small and medium-sized enterprises (SME) have also been a popular target for support measures in most G20 countries. As a large proportion of employment in most of these countries is concentrated in SMEs, this is considered to be a particularly effective strategy for preserving and creating jobs. The support has been in the form of subsidies, tax reductions and access to credit. Many countries have lowered business costs through *reductions in social security contributions* (Argentina, France, Spain, Turkey, and United Kingdom) or other payroll taxes. *Subsidies* have also been given to firms to maintain employment and avoid layoffs through on-the-job training and working hour's reduction (China, Korea, and Mexico). *Tax reductions*, aimed to SMEs but also consumption, such as VAT can have larger employment effects. There have been tax reductions for new investments (China, France, Italy, United States); for exporters (India); extension of time for tax and customs duty payments (Korea). China, has offered exemption of administrative fees for 3 years and business taxes for those who are unemployed and opening new businesses, which helps not only in creating employment but also boosting growth. A major constraint for most SMEs at times of crisis is *access to credit,* and the high cost of borrowings. Most countries have tried to extend special credit facility to the SMEs at low interest rates, easing the collateral requirements and making it easily accessible. This strategy was adopted in most of the G20 countries.

Passive labour market policies

One of the most effective passive labour market policies has been *unemployment benefits.* Countries have reacted to the current crisis by extended the scope, the replacement rates and the duration of their unemployment benefit schemes. For instance, Brazil, Canada, France, Italy, Japan, Korea and United States have expanded these benefits for a longer duration and also covering a larger population. There has also been an attempt to expand partial unemployment benefits, especially in France, so that workers can stay in their employment relationship.

Social assistance

Support for the poor and vulnerable has been increased in G20 countries through both targeted and untargeted social transfers. These include vouchers to low-income or rural households (in some cities in China, Indonesia), school feeding and similar schemes, and support for low-income housing (Brazil, Germany, China, Indonesia, Spain) or rental subsidies (Italy, Spain); additional cash allowances for those with children (Argentina, Australia); extraordinary bonus for low income families (Italy, Spain); extension of conditional cash transfer (Brazil); and increase in social assistance for low-income households with children (Germany, Korea, South Africa, United Kingdom). There has also been provision for continuous access to health and contingency benefits for those who are unemployed (France). Although such support has been crucial for limiting hardship, it is not clear how well these programs have been targeted given the lack of properly developed social protection systems in some of the countries.

The crisis has also revealed that in many developing countries there is a growing need for developing a more coherent approach to social protection. In China significant efforts were made to increase pension benefits, expand rural pension schemes, and broaden rural health insurance. The latter measures have been implemented in addition to increasing the threshold for minimum living allowance under China's Dibao program and providing a one-time income support for 74 million low-income people.

Tax measures

Tax cuts, a category of fiscal stimulus that is the fastest to implement but is understood to have a lower short-term impact on economic activity accounted for a large share of the overall stimulus packages in the G20 countries. Most of the G20 countries have implemented tax cuts direct or indirect as part of the fiscal stimulus package. In some of the countries the tax cuts are also targeted towards certain groups like low income households (France) or those with children (the United States). The tax cuts are supposed to affect aggregate demand indirectly through increased spending or investment. However, given the smaller tax base in developing countries, tax cuts there would have a smaller impact than public spending, which would create jobs instantaneously. Spending potentially also has spill-over effects into other sectors thus having a larger impact on the aggregate demand. In most developing economies tax cuts would lead to increased savings, in the absence of social security provisions. Indonesia and Korea relied on tax cuts for the bulk of their packages, with reductions in personal income taxes in the former and corporate income taxes in the latter. In Indonesia, the fiscal package is dominated by tax cuts did little to support economic activity; rather it was pre-election spending that provided a more important and timely boost (World Bank 2009).

What should countries do now?

Despite the substantial amount of stimulus that countries have been putting in place, the labour market situation is still bleak. As discussed in section 2, some measures have helped in averting the worst but moving forward additional measures will be necessary to stimulate job creation and prevent further job destruction. On the other hand, public finances have already been stretched enormously and there is mounting fear that public debt levels reach unsustainable levels. Countries will, therefore, be tempted to tighten fiscal policies again and soon, possibly before serious signs of a labour market recovery have set in. However, even if countries continue keeping the economy afloat, such policies may increasingly lose effectiveness given the rising levels of debt and the larger and larger share of long-term unemployed workers. Besides setting up a medium-term budgetary framework, countries must, therefore, also be ready to reorient their current policy setting to take into account the changes in the economic environment that the crisis has created. The following section gives some indications regarding the principles on which such reorientation should be based and how country characteristics should shape policy responses. In particular, the section stresses the importance of a more extensive and active use of labour market policies in comparison to more generic measures that have been put in place until now.

Labour market policies and unemployment dynamics

At the current juncture of severely adverse macroeconomic conditions, the existing evidence on labour market programme effectiveness is only of limited help in selecting policy options. Under more tranquil circumstances, some consensus has emerged in the past regarding the importance of certain policies such as training programmes for stimulating employment growth and bringing unemployed workers back to jobs. In contrast, no in-depth study exists as to the effectiveness of these labour market policies under macroeconomic and financial sector crisis conditions. These conditions need to be taken into account, however, if countries want to select the right mix of policies at the current juncture as policy multipliers vary widely depending on the general macroeconomic environment. In the following we present a novel approach that is meant to – at least partially – overcome this missing link between labour market policies and the aggregate state of the economy and employment. In particular,

on the basis of a new database on unemployment dynamics, the macro- and microeconomic implications of fiscal and labour market policies are analysed. This will allow us to take the fiscal implications of labour market policies explicitly into account and providing a more accurate picture of policy effectiveness under the current circumstances.[4]

We distinguish between detailed fiscal and labour market policy options and assess their (relative) impact on the unemployment dynamics. This will help when addressing the different labour market challenges that have been identified in the first part of this paper as economies are moving out of recession. In particular, it will allow assessing the timing when policies need to switch from income support policies to those that facilitate long-term adjustment processes on the labour market. In this regard, we have split total government consumption (excluding interest payments) into wage and non-wage government spending, the former being principally related to spending on public employment whereas the latter relates to policies directly relevant to support consumption in the private sector. Within this category also fall various labour market programmes, which we have detailed further in our analysis. A first distinction of these labour market programmes was made between active and passive measures. The active ones were then further differentiated into direct job creation, hiring incentives, training programmes and spending on public employment services; whereas the passive measures regroup all those pertaining to income maintenance, at least temporarily.

On the basis of this analysis, general government spending seems to have a strong impact on unemployment dynamics, increasing outflows and lowering inflows (see Figure 8). The impact also does not seem to wear off much over the longer term, although further analysis of the components suggest that this is the result of two countervailing developments: Non-wage government spending has strongest effects on unemployment outflows in the short-term, whereas wage government spending (i.e. public employment) has a higher long-term than short-term elasticity on outflows. This may have to do with the particular skill composition of labour demand in the public sector, which may not easily adjust to skill mismatches on the (private sector) labour market. On the other hand, regarding unemployment inflows, government non-wage spending is more effective both with respect to government wage-spending and over the longer-term. The latter effect suggests that – given the amount of non-wage spending already spent so far – unemployment inflows are likely to slow down over the coming quarters, in line with some tendency already visible in the data for the US. On the other hand, such spending may not be sufficient to stimulate unemployment outflows and job creation as the longer term effect of such spending is likely to be more muted.

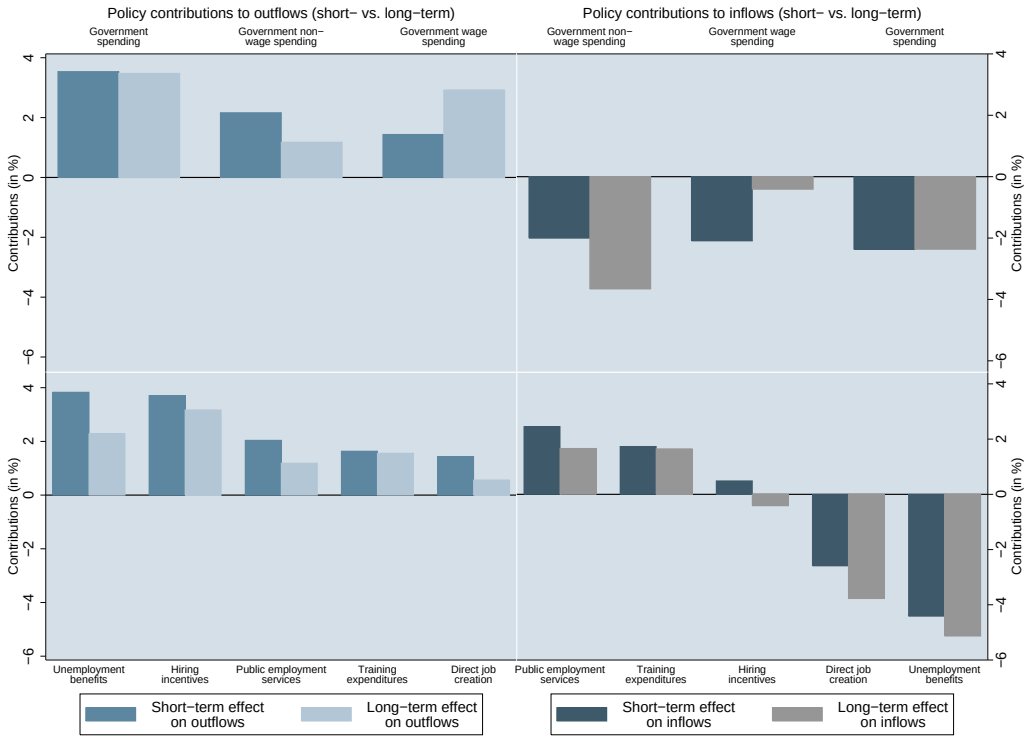
Our analysis also allows us to give a more detailed picture of various labour market programmes, including both passive and active measures. Moreover, the particular macroeconomic focus and the detailed analysis of competing labour market programmes allow us to get a more detailed picture of the different policy trade-offs that countries are currently facing. In particular, direct job creation outside the public sector seems to come with a high amount of deadweight costs as it lowers unemployment inflows substantially more than it increases unemployment outflows. In other words, the programmes often seem to benefit those already in a job or who would have been hired even in the absence of such policie. It is noteworthy that this result holds even though the macroeconomic effects on aggregate demand are taken into account in this framework. The absence of economically or statistically significant effects of direct job creation on unemployment outflows is also confirmed when considering long-term feedback effects through the interest rate (see Figure 8). On the other hand, hiring subsidies seem to have the expected effect on outflows more than on inflows (on which the estimated effect is statistically not significantly different from zero), and this both in the short- and in the long-run.

[4] See Annex 4 for an overview of the model and a detailed summary of the estimation results.

Expenditures on training programmes and public employment services have the expected (positive) effects on unemployment outflows in our analysis, confirming existing evidence in the literature. The estimated effects in Figure 8 do not take into account the particular design of PES or training programs in the countries of our sample. Some countries may actually experience much better effects of these policies on unemployment dynamics by combining them with appropriately designed unemployment benefits. Nevertheless, it should be noted that these programs come with a strong increase in unemployment inflows as well: This seems to be an indication that measured unemployment rates depend significantly on program design in as much as that the participation in certain programs requires official inscription in the unemployment register. As such, these programs are not only an effective way of bringing unemployed workers back to employment they also seem to constitute a useful instrument to activate those that currently have very limited ties with the labour market or have drop out of the labour force altogether. The macroeconomic long-term effects of these policies, however, seem to be less significant than those in the short-run, partly related to the significant cost of these programs that weigh on public finances. In reality, these costs may be compensated by the individual long-term benefits regarding improved job matching rates and higher salaries; our estimates do not allow to properly take these into account.

Finally, as regards the impact of unemployment benefits on labour market dynamics, these seem to bring the strongest effect among labour market policies on unemployment inflows, both in the short- and the long-run. In addition, such benefit systems – where they are in place – yield a positive contribution to unemployment outflows and job creation and help reduce unemployment inflows and job destruction (see Figure 8). This confirms the importance of such policies within the framework of stabilization policies. In contrast to fears expressed in the microeconomic literature, the results of our analysis suggests that such benefit systems are acting in a stabilizing manner both on unemployment out- and inflows, thereby not overly distorting the process of job separation. Indeed, certain authors, such as Den Haan (2007), had suggested that the tax wedge that is likely to increase in times of economic hardship due to such benefit systems may increase the inflow rate into unemployment, making labour market recovery more protracted. Our results do not suggest that this effect is particularly strong; rather, and in line with other studies such as Acemoglu (2001), the positive impact on aggregate demand seems to dominate any possible negative side-effect from such systems.

Figure 8: Policy contributions to unemployment flows (short- vs. long-run effects)



Note: The chart presents the contributions (in %) to unemployment in- and outflows of different fiscal and labour market policies. Contributions are calculated with respect to the average spending shock across the country sample for each individual policy. Short-term effects are based on exogenous interest rates, long-term effects take the impact of an increase in government debt on real long-term interest rates into account.

Source: Own calculations, see Annex 4 for details and detailed regression results.

Designing an employment-friendly medium-term exit strategy

Different active and passive labour market measures have widely different effects on unemployment dynamics, both in the short- and the long-run. Our analysis shows how different margins of labour market adjustment benefit more or less depending on the type of measure that is implemented. For the moment, however, these estimates represent an evaluation of policy effectiveness during normal cyclical conditions and for a country with average characteristics. In the current situation, where countries are going through more extreme conditions, some of the measures analysed above may lose effectiveness whereas others may prove particularly efficient. In particular, country characteristics such as the level of public debt or a country's openness to trade play an important role. In addition, the cyclical conditions will also affect whether fiscal and labour market policy interventions are effective or not. More specifically in relation to spending on labour market policies, the importance of long-term and structural unemployment needs to be assessed in analysing policy effectiveness. We will address these questions building up on the evaluation framework as presented in the preceding section.

Public debt

A first aspect concerns the build-up of public debt. Indeed, strong increases in public debt levels are being expected over the medium term (see Table 1). As a consequence, there is a fear that credit conditions for private businesses are becoming more expensive in the longer-term to the extent that public and private bond emissions rival for limited global savings. Crowding out of private investment may take place, in particular in emerging countries with

less well-developed domestic capital markets that need to rely on international capital flows to finance their investment opportunities (Ağca;Celasun 2009).[5] As a consequence of such crowding out, an increase in public debt would limit the effectiveness of government spending, at least past a certain threshold. According to recent estimates by Reinhart and Rogoff (2010), this threshold – considered to be at around 85-90% of GDP – may already have been reached by some advanced G20 economies following the current depression. As public debt levels reaches this threshold (real) long-term interest rates start to increase, shaving off some of the positive spending effects on economic activity. In addition, in less advanced economies which typically suffer from smaller domestic capital markets and the need for external financial investment of their public bonds, risk premia will go up and the maturity of new bond issues goes down past a certain debt level, making financing the budget deficit more expensive and more risky and with consequences also for financing conditions of the private sector (Pettis 2001).

Table 1: Evolution of public debt in G20 countries (in % of GDP)

Country	*2007*	*2009*	*2010*	*2014*
Argentina	67.9	60.5	58.1	46.4
Australia	9.8	16.9	22.7	27.8
Brazil	66.8	68.5	65.9	58.8
Canada	64.2	78.2	79.3	68.9
China	20.2	20.2	22.2	20.0
France	63.8	78.0	85.4	96.3
Germany	63.4	78.7	84.5	89.3
India	80.5	84.7	85.9	78.6
Indonesia	35.1	31.5	31.2	27.1
Italy	103.5	115.8	120.1	128.5
Japan	187.7	218.6	227.0	245.6
Republic of Korea	29.6	34.9	39.4	35.4
Mexico	38.2	47.8	47.9	44.3
Russia	7.4	7.2	7.7	7.2
Saudi-Arabia	18.5	14.5	12.5	9.3
South Africa	28.5	30.8	33.5	34.8
Turkey	39.4	48.1	49.6	52.8
United Kingdom	44.1	68.7	81.7	98.3
United States of America	61.9	84.8	93.6	108.2
G20	62.0	75.1	80.2	85.9
G20 (advanced)	78.2	98.9	106.7	118.4
G20 (emerging)	37.4	38.9	39.6	36.2

Note: Averages are based on 2008 PPP GDP weights.

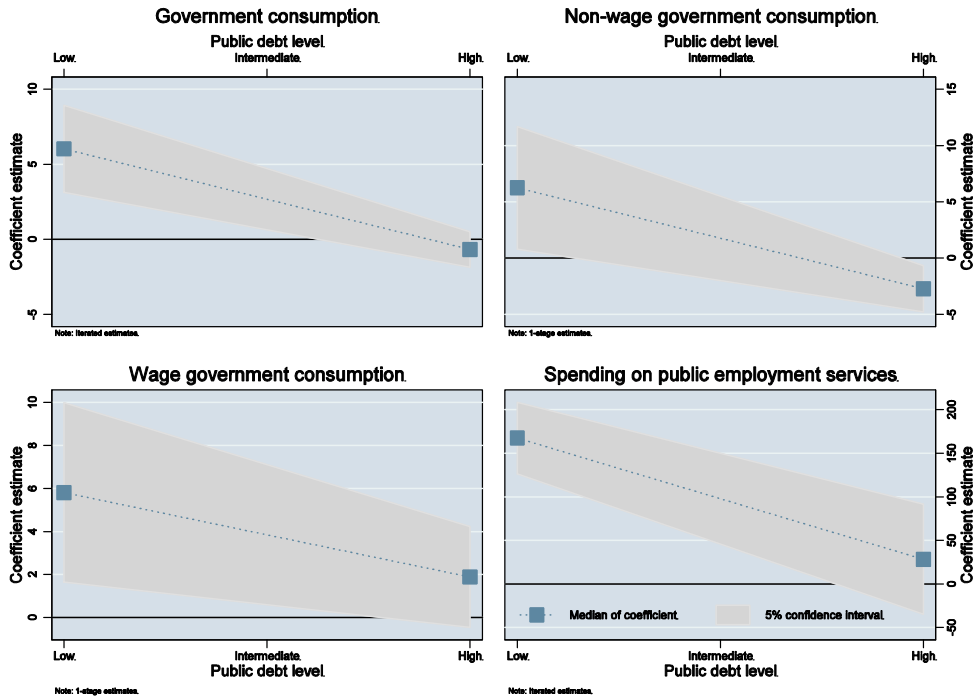
Source: IMF (2009).

More generally, the framework in which fiscal policy is embedded plays an important role for its effectiveness. First of all, coordination between fiscal and monetary policy is necessary of government outlays to have maximum impact on economic activity. When monetary policy makers increase interest rates in reaction to additional government spending, the positive impact on activity will be smaller or even absent. In open economies, central banks can

[5] The hope that deficit-driven fiscal stimulus can be self-financing through higher tax revenue as a result of improved economic activity has no empirical basis. On the contrary, available evidence points to the fact that these additional revenues almost never making fully up for the additional spending, leaving governments with a permanently larger deficit (Uhlig and Trabandt 2009) and rising public debt.

prevent the currency appreciation that could result from higher domestic absorption by lowering interest rates. Much will depend, however, on the cyclical situation: When the economy is running at or close to potential, monetary policy makers will be less inclined to guarantee the effectiveness of additional fiscal spending than at moments of large economic slack.

Figure 9: Policy effectiveness at different levels of public debt



Note: The figure displays coefficient estimates for the effect of various policy measures on unemployment outflows at various levels of public debt ratios in our sample.

Source: Own calculations

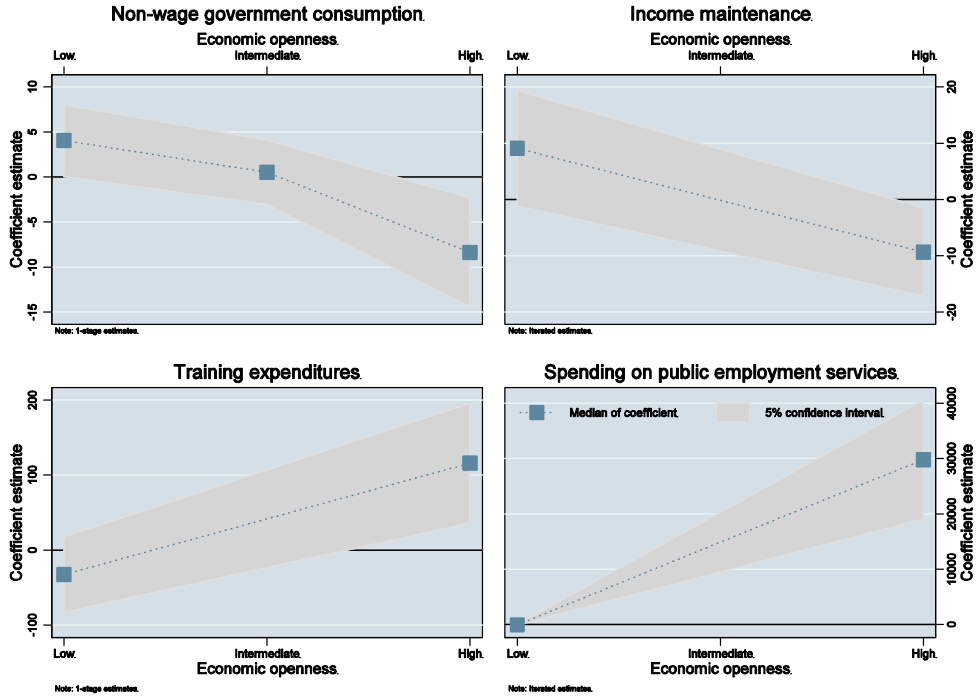
Economic opening

Another factor concerns the degree of opening to international trade. As several studies forcefully demonstrate, the effectiveness of fiscal policy interventions – whether automatic or discretionary – depends on a variety of country characteristics as well as on the stance of other macroeconomic policies. One of the most prominent factors to influence fiscal policy effectiveness is the degree of a country's openness to trade and international capital flows: With open borders and flexible exchange rates, much of the extra spending flows to foreign countries in the form of higher imports and through higher interest rates. Indeed, available estimates show that very open countries or those that let their exchange rate float freely benefit from the smallest fiscal multiplier, which – for same cases – is even zero. This strong interaction between the degree of openness and fiscal policy effectiveness is also a likely explanation for the fact that in many developing and emerging countries, fiscal multipliers are typically smaller than in more developed regions. In addition, fiscal policy is often pro-cyclical in these countries as budgets are constrained and only relaxed when the economy is doing well already (Ilzetzki;Vegh 2008; Ilzetzki; Mendoza;Vegh 2009).

Using a standard measure, we have applied the same methodology and re-estimated the coefficients of effectiveness indicators for several policies at different levels of economic openness for countries in our sample. The results displayed in Figure 10 confirm the general insights discussed in the earlier section on fiscal multipliers as regards non-wage government

consumption and policies for income maintenance: When countries are more open to international trade, leakages are larger and domestic public spending proves to be less effective in stimulating unemployment outflows. However, when analysing some labour market policies in more detail, some of them actually seem to be more effective when countries are open to trade. In particular training programs and spending on public employment services seem to have stronger positive effects on unemployment outflows when countries are internationally more integrated. This may have to do with the effect of these programs on the microeconomic efficiency that helps to overcompensate the macroeconomic leakages and seems to be particularly relevant when workers face stiff competition from international trade.

Figure 10: Policy effectiveness at different levels of economic openness



Note: The figure displays coefficient estimates for the effect of various policy measures on unemployment outflows at various levels of economic openness in our sample.

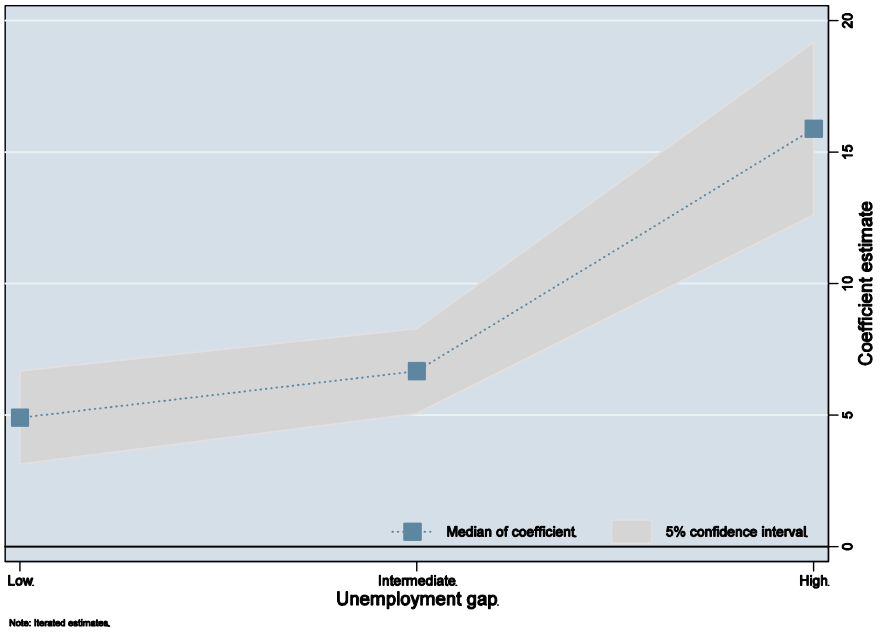
Source: Own calculations

Financial market recovery and cyclical conditions

Of particular relevance for policy effectiveness is a well-functioning financial market. Indeed, when financial market investors cannot escape from a liquidity trap, monetary policy will be largely ineffective or constrained by the fact that it cannot set interest rates below zero. In such situations, fiscal multipliers can become very large in comparison to what the studies cited above suggest: For the Great Depression, several authors demonstrate that fiscal multipliers during this period in the US have been larger than 2, suggesting that for every dollar of extra public spending, economic activity increased by more than 2 dollars (Christiano; Eichenbaum;Rebelo 2009; Woodford 2010). At the same time, when cyclical conditions normalize and financial markets provide an effective tool for monetary policy makers to smooth the business cycle, fiscal policies – especially if they are decided discretionarily – often turn out to be wrongly timed and ineffective. This seems to be a particular problem for developing countries, partly because of a less well elaborate fiscal framework or because of significantly larger problems for policy makers in these countries to assess the cyclical conditions properly and timely (Ilzetzki et al. 2009).

Hence, the cyclical conditions – and the underlying health of the financial sector – are affecting the effectiveness of (labour market) policies. This will have implications for their design, their timing their composition. Depending on whether or not a fast recovery is taking place, countries will need to switch from demand management to structural policies more or less rapidly. Indeed, the following Figure 11 demonstrates the weakening of policy effectiveness for general government spending depending on the size of the unemployment gap, i.e. the difference between the actual and the structural unemployment rate. Spending is most effective on unemployment outflows when the unemployment gap is wide and decreases – without being completely ineffective – with smaller unemployment gaps. For other, labour market policies, a similar decrease in policy effectiveness was not discernible in the data, suggesting that depending on the cyclical position, the microeconomic effect of these policies may – at least partially – compensate for a smaller aggregate demand effect and vice versa.

Figure 11: Policy effectiveness of government consumption depending on cyclical conditions



Note: The figure displays coefficient estimates for the effect of general government consumption on unemployment outflows at various levels of the average unemployment gap (i.e. the difference between the actual and the structural unemployment rate) in our sample.

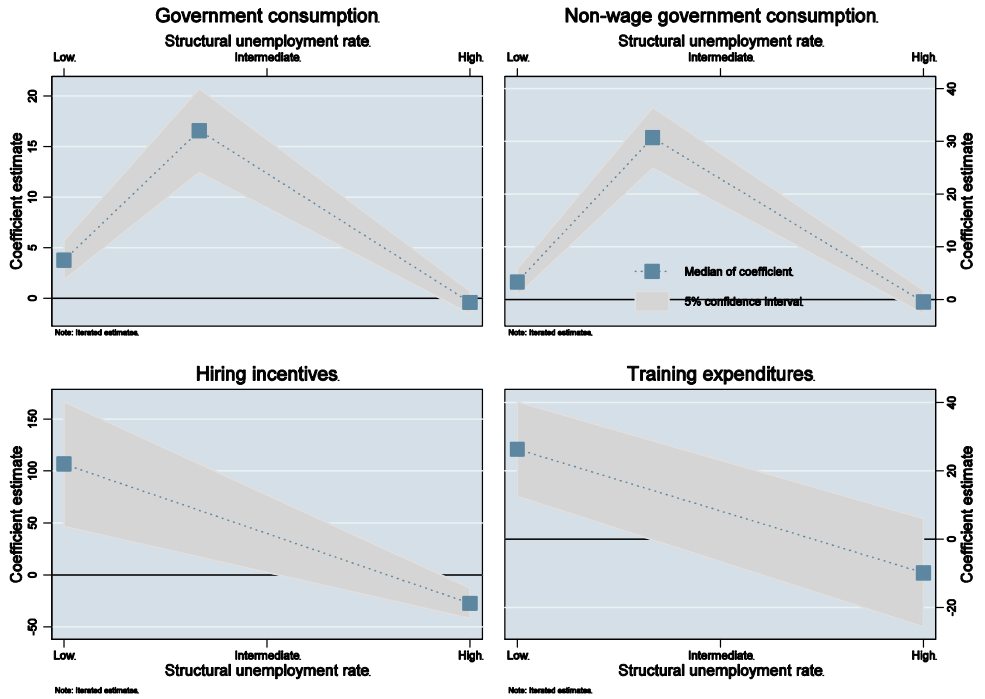
Source: Own calculations

Structural unemployment

Of particular concern coming out of the crisis will be the expected increase in long-term or structural unemployment. Indeed, as discussed in the opening section, structural unemployment is rising among all OECD countries, with similar developments discernible also in some emerging countries, which will require labour market policies to reorient their efforts to activation of those that have increasingly weak ties with the labour market or that have left already the labour force. In this regard, our estimates show that this will be no easy task. Indeed, general government consumption losses its effectiveness with very high structural unemployment rates, and that disregarding which component of spending is analysed (see Figure 12, first and second panel). Interestingly, policy effectiveness is maximum with low-intermediate levels of structural unemployment rate, probably because of the relatively unspecific nature of such spending that is of not much help for the specific groups that remain when structural unemployment rates fall to very low level. Analysing labour market policies in more detail further confirms this result. Policies that are typically

considered to be of great use when activating long-term unemployed – hiring incentives and training programs – show strong signs of weakening effectiveness when structural unemployment rates increase (see Figure 12, third and forth panel).

Figure 12: Policy effectiveness at different levels of structural unemployment rates



Note: The figure displays coefficient estimates for the effect of various policy measures on unemployment outflows at various levels of the structural (or long-term) unemployment rate in our sample.

Source: Own calculations

Consequences for the optimal design of labour market policies

What are the lessons that can be drawn from these results and the discussion in earlier sections? How do they affect the optimal design of labour market policies in light of the labour market assessment given in the opening section? Clearly, the above results suggest that policies will need to be decided country-specifically as differences continues to persist – despite similarities in cyclical conditions – as to the degree of economic opening, the level of public debt and the structural unemployment rate. At least three general principles can, however, be derived from these results:

1. Countries will need to gradually switch from generic demand management policies to more targeted labour market and structural policies when recovering from the crisis. In particular, those labour market policies that contribute more to job creation than general/generic government spending should be privileged in reorienting public spending when following the guiding principles of the Global Jobs Pact. Moreover, as the effectiveness of labour market policies is being less influenced by cyclical conditions than other public spending categories they should become a more prominent place when economies are recovering.

2. Countries with lower public debt – most notably some of the emerging G20 countries – will be able to support their macro-economy longer and with smaller losses in policy effectiveness than countries with larger stocks of public debt.

3. Countries need to target structural unemployment rates quickly and decisively, even during the recovery phase. This may imply further support to aggregate demand than what countries are currently undertaking. Once structural unemployment rates have increased substantially, policies will lose effectiveness, no matter how well targeted they may be. Measures to limit unemployment inflows – such as part-time and work sharing agreements – that currently have been put in place should be maintained until more normal cyclical conditions hold. However, countries should privilege measures that stimulate unemployment outflows to prevent a further increase in unemployment duration of those who already lost their job.

4. More open economies should switch to specific labour market policies more quickly than countries with a larger domestic economy. In particular, measures to improve the speed and quality of labour market adjustment process – such as for instance training expenditures or well-functioning public employment services – should be a more important focus in these countries that aggregate demand management.

Policy options: Job creation in times of crisis

These lessons seem to constitute relatively tight constraints on what policies can achieve to promote employment growth. There are, however, some options what countries could do to improve their labour market outcomes. More importantly, there are policy choices that countries should refrain from if they want to avoid further deterioration of their employment situation. We will discuss these options in the following based on estimated relationships underlying the analysis in the preceding section (see Figure 13).

The baseline scenario reflects the continuation of job-centred policies as implemented with the onset of the crisis. These measures, though costly to the public purse in the short run, would in five years time lead to fiscal deficits similar to those of an early exit strategy. In particular, by putting greater emphasis on labour market measures, they will be able to limit further increases in job destruction, avoid a downward spiral of wages and boost job creation.

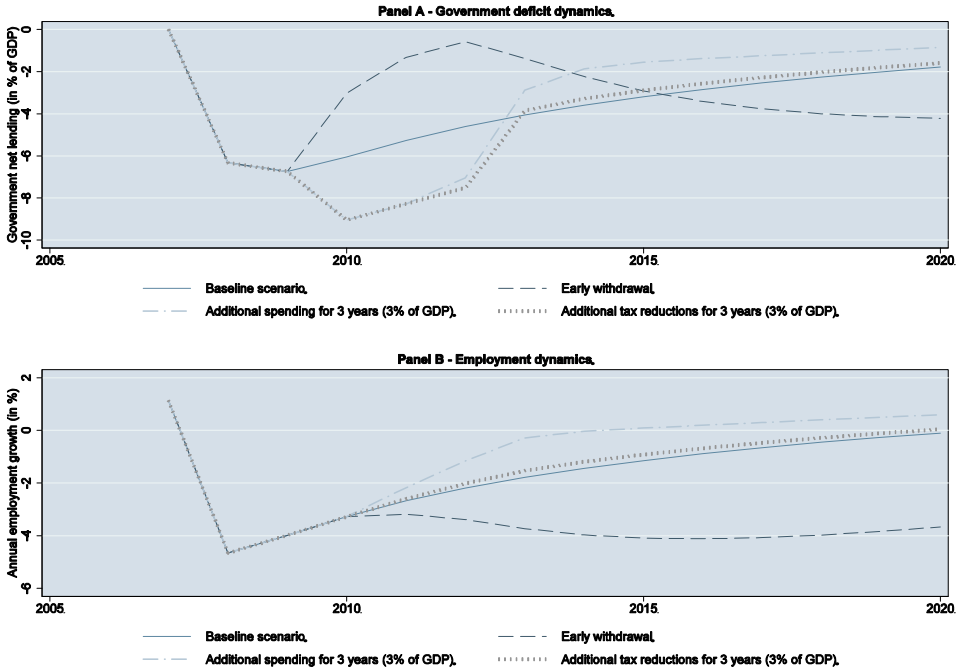
In contrast an early exit from job-centred measures would significantly aggravate the employment outlook. Such an early exit from stimulus would improve fiscal balances in the short run. However, it is crucial to note that this improvement would prove short lived and would come at the cost of substantially worsened labour market dynamics. In particular, it suggests that, if restrictive measures were adopted now, employment would be 4% lower in five years time (by the end of 2014). Shortly after early exit measures were adopted, fiscal deficits would deteriorate once again. This reflects the fact that i) many workers would move out of the labour market, depriving the economy from valuable resources and reducing the tax base; and, ii) unemployment and labour market inactivity resulting from early exit measures have a strong bearing on spending, as noted above.

Two additional policy scenarios consider a further increase in spending over the next 3 years in the order of magnitude of 3% of GDP or – alternatively – a reduction in taxes over the same time horizon and of the same amount. As the graph demonstrates, only the spending scenario would lead to sufficiently strong reaction of employment to warrant such an effort. Interestingly, the additional employment growth is sufficiently strong to overcompensate the initial deterioration of public finances. Four years after the first additional spending measure has been set up, public deficits will actually be lower than under the baseline scenario.

It should be said that none of the four scenarios consider the structural challenges that arises from the crisis for labour markets. Necessary sectoral reallocation of resources and jobs are not being properly reflected in these simulations and policy measures need to be implemented along the lines suggested in the earlier discussion. However, to the extent that these measures also have some fiscal implications, our scenario simulations demonstrate that those measures

that develop aggregate demand effects in the short-run show superior labour market effects over the medium term with the potential to also improve the fiscal balance at the same time.

Figure 13: Exit scenarios from the crisis



Note : The chart displays four different exit scenarios from the crisis. Scenario 1 is at current policies; scenario 2 describes an early exit where deficits are aimed at being brought back to baseline within 3 years; scenario 3 suggests an additional 3% of GDP spending shock for 3 years (starting in 2010) and return to stimulus exit afterwards and scenario 4 suggests an additional 3% of GDP tax revenue cut for 3 years (starting in 2010) and return to stimulus exit afterwards. For technical details, see Annex 1.

Conclusion

The current global financial and economic crisis poses serious challenges to labour markets across the globe. Most countries have not yet felt the full impact of the crisis on their labour markets but are already running out of (fiscal) ammunition as public budgets have been stretched to safeguard the financial system. Our results show that despite these difficulties, countries still have margins of adjustment to react to the labour market crisis. In particular, by reorienting current spending programmes specifically to labour market measures, they will be able to limit further increases in job destruction and help to re-boost job creation. Indeed, many labour market measures are at least as effective or even more than generic government spending in stimulating the labour market. Moreover, currently, these measures only represent a very small share of total stimulus measures that have been put in place.

When implementing these measures, care must be taken of introducing them quickly. The longer the labour market crisis continues, the higher will be structural unemployment rates and the more unemployed workers get discouraged and leave the labour market. The cost of inaction is, as shown in this paper, indeed as high as 2-3% of GDP and our estimates might rather be at the lower bound. Moving ahead quickly is also important to maintain policy effectiveness. Indeed, as public debt is piling up, any measure will lose effectiveness, which further worsens the economic and fiscal outlook. In this respect, implementing the Global Jobs Pact quickly will insure countries to return to safer grounds and to support the labour market recovery.

Bibliography

Acemoglu, D. 2001. "Good jobs vs. bad jobs", in *Journal of Labor Economics*, Vol. 19, No. 1, pp. 1-21.

Ağca, S.; Celasun, O. 2009. How does public external debt affect corporate borrowing costs In emerging markets?, Working Paper 09/266 (Washington, DC, International Monetary Fund (IMF)).

Atkinson, R.; Castro, D.; Ezell, S. 2009. *The digital road to recovery: A stimulus plan to create jobs, boost productivity, and revitalize America,*(Washington, DC, Information Technology and Innovation Foundation).

Baccaro, L.; Rei, D. 2005. Institutional determinants of unemployment in OECD countries: A time series cross-section analysis (1960-98), Discussion Paper 160 (Geneva, International Institute for Labour Studies (IILS)).

Baker, D. et al. 2005. "Labor market institutions and unemployment: A critical assessment of the cross-country evidence", in D. R. Howell (ed.): *Fighting unemployment: The limits of free market orthodoxy* (Oxford, Oxford University Press).

Bassanini, A.; Duval, R. 2006. "The determinants of unemployment across OECD countries", in *OECD Economic Studies*, Vol. 42, No. 1, pp. 7-86.

Beck, T.; Demirgüc-Kunt, A.; Levine, R. 2000. "A new database on financial development and structure", in *World Bank Economic Review*, Vol. 14, pp. 597-605.

Calmfors, L.; Driffill, J. 1988. "Bargaining structure, corporatism and macroeconomic performance", in *Economic Policy*, Vol. 9, pp. 14-61.

Christiano, L.; Eichenbaum, M.; Rebelo, S. 2009. When is the government spending multiplier large?, Working Paper 15394 (Cambridge, MA, National Bureau of Economic Research).

Communication Workers of America 2008. Proposal to stimulate broadband investment. Washington, DC.

Davis, S.J.; Schuh, S.; Haltiwanger, J. 1998. *Job creation and destruction* (Cambridge, MA, MIT Press).

Davis, S.J. et al. 2008. Business volatility, job destruction and unemployment, Working Paper 14300 (Cambridge, MA, National Bureau of Economic Research (NBER)).

Den Haan, W. 2007. "Shocks and the unavoidable road to higher taxes and higher unemployment", in *Review of Economic Dynamics*, Vol. 10, No. 3, pp. 348-366.

Elsby, M.; Hobjin, B.; Sahin, A. 2008. Unemployment dynamics in the OECD, Working Paper 14617 (Cambridge, MA, National Bureau for Economic Research (NBER)).

Escudero, V. 2009. Effects of the crisis on the financial sector: Trends and policy issues, Discussion Paper 197 (Geneva, International Institute for Labour Studies).

Ilzetzki, E.; Vegh, C. 2008. Procyclical fiscal policy in developing countries: Truth or fiction?, Working Paper 14191 (Cambridge, MA., National Bureau of Economic Research (NBER)).

Ilzetzki, E.; Mendoza, E.; Vegh, C. 2009. *How big (small?) are fiscal mulitpliers?*, mimeo

International Institute for Labour Studies (IILS) 2008a. *World of Work Report 2008: Income inequalities in the age of financial globalization* (Geneva, International Labour Organization).

International Institute for Labour Studies (IILS) 2008b. *A global policy package to address the global crisis* (Geneva, International Labour Organization).

International Institute for Labour Studies (IILS) 2009a. *World of Work Report 2009: The global jobs crisis and beyond* (Geneva, International Labour Organization).

International Institute for Labour Studies (IILS) 2009b. *The financial and economic crisis: A decent work response* (Geneva, International Labour Organization (ILO)).

International Labour Office (ILO) 2009. *Protecting people, promoting jobs. A survey of country employment and social protection policy responses to the global economic crisis* (Geneva, ILO).

International Labour Office (ILO) 2010. *Global Employment Trends* (Geneva, ILO).

International Labour Organization; World Trade Organization 2009. *Globalization and informal employment in developing countries,*(Geneva, ILO and WTO).

International Monetary Fund (IMF) 2009. The state of public finances cross-country fiscal monitor: November 2009, Staff Position Note SPN/09/25 (Washington, DC, International Monetary Fund).

Majid, N. 2009. The global recession and developing countries, Employment Working Paper 40 (Geneva, International Labour Office).

Nickell, S.; Nunziata, L.; Ochel, W. 2005. "Unemployment in the OECD since the 1960s. What do we know?", in *Economic Journal*, Vol. 115, No. 1, pp. 1-27.

Petrongolo, B.; Pissarides, C. 2008. "The ins and outs of European unemployment", in *American Economic Review*, Vol. 98, No. 2, pp. 256-262.

Pettis, M. 2001. *The volatility machine: Emerging economies and the threat of financial collapse* (Oxford, Oxford University Press).

Qiang, C.Z.-W. 2009. "Broadband Infrastructure Investment in Stimulus Packages: Relevance for Developing Countries".

Reid, P. 2009. Oppurtunity in the times of crisis: Stimulus packages and the Green New Deal, Working Policy Paper August (Ottawa, Canada-Europe Transatlantic Dialogue, University of Carleton).

Reinhart, C.M.; Rogoff, K.S. 2010. Growth in a time of debt, Working Paper 15639 (Cambridge, MA, National Bureau for Economic Research (NBER)).

Shimer, R. 2007. Reassessing the ins and outs of unemployment, Working Paper 13421 (Cambridge, MA., National Bureau of Economic Research (NBER)).

Stockhammer, E.; Klär, E. 2008. Capital accumulation, labour market institutions, and unemployment in the medium run, Discussion Paper 834 (Berlin, German Institute for Economic Research (DIW)).

Uhlig, H.; Trabandt, M. 2009. How far are we from the slippery slope? The Laffer curve revisited, Working Paper 15343 (Cambridge, MA, National Bureau of Economic Research (NBER)).

Woodford, M. 2010. Simple analytics of the government expenditure multiplier. *American Economic Association Annual Meeting*. Atlanta.

World Bank 2009. *Transforming the rebound into recovery: A World Bank economic update for East Asia and Pacific Region* (Washington, DC, World Bank).

Annex 1: Technical details

General remarks

The empirical analysis of the labour market has long concentrated on understanding the determinants of employment and unemployment levels rather than on labour market flows. With the onset and wide diffusion of labour market matching theories, however, the theoretical questions have shifted towards understanding the flows rather than the stocks on the labour market. These theoretical advancements are only gradually matched by corresponding empirical studies, mainly related to the lack of relevant data. While information on job vacancies can still be considered an easily available statistic, other information related to gross worker flows or unemployment in- and outflows need to be constructed from scratch. In this respect, recent advancements by various researchers make the direct empirical analysis of the flow dynamics available for a wider community. The analysis of gross job and worker flows has been pushed forward by various authors, including Davis et al. (1998) and Davis et al. (2008), often, however, on the basis of individual country analysis. More recently, the construction of unemployment flows - in and out of the pool of unemployed - allows cross-country comparisons of labour market dynamics (see, for instance, Elsby et al. (2008), Shimer (2007) and Petrongolo (2008)).

For the purpose of this study, we have exploited this newly available information on unemployment dynamics, trying to understand the economic and institutional determinants and their influence on the effectiveness of certain policy interventions. The use of data on unemployment dynamics has the particular advantage of combining insights from micro and macro-studies: On the micro side, the use of unemployment flows also to distinguish different margins of the labour markets that are influenced by policies, looking at the most appropriate tool at the current juncture of economic recovery to promote job creation. On the macro side, the particular methodology that we are using here allows to take the aggregate demand effect of such policies properly into account.

Specifically, we have considered whether typical determinants of unemployment stocks - such as unit labour costs, the user cost of capital, changes in the terms of trade or labour force participation trends - carry over to the flow analysis of unemployment (Baccaro;Rei 2005; Baker et al. 2005; Nickell; Nunziata;Ochel 2005; Bassanini;Duval 2006; Stockhammer;Klär 2008). Besides economic factors, this also includes consideration for institutional determinants such as labour market institutions or changes in financial and product market regulation. In particular, we are interested whether standard theories of labour market rigidities can explain in an economically sensible way the information related to unemployment in- and outflows. As we will see in the analysis, this is generally the case, albeit with some exceptions.

In addition, we have developed a new methodology to take the macroeconomic effects of labour market policies into account when analysing programme effectiveness. As discussed in the previous section, most microeconomic studies analyse policy effectiveness *ceteris paribus*, i.e. assuming that the economy is running at normal speed. This is often justified as many programmes are run on a relatively limited scale, with a clearly identified scope on a local or sectoral level. Often, these programmes at the experimental level do not develop a large, fiscally relevant impact and are meant to understand the relative merit of different programme designs. However, at the current juncture, with a large scale increase in spending on certain labour market programmes, these will also have a macroeconomic effect, which needs to be taken into account when assessing the implications of these programmes for labour market dynamics. Moreover, programmes impact differently on the various margins of the labour market. In this respect, our analysis of unemployment flows allows to assess to what extent different programmes will be useful in stimulating unemployment outflows, i.e. job creation, as compared to programmes that limit unemployment inflows. In the recovery phase, the effectiveness of programmes will be the higher, the better they allow to support such outflows.

Finally, the analysis of unemployment dynamics presented in this paper also controls for different characteristics of financial markets and financial market reforms. This is relevant with regard to recent debates in the literature on the effectiveness of fiscal policies but also related to the fact that this crisis

has caused severe disruption on financial markets. Integrating such considerations into our analytical framework follows a recent trend in macroeconomic analysis that has accelerated with the onset of the crisis during which financial market played centre stage. Given the importance of financial markets in the transmission of certain policy interventions – in particular but not exclusively monetary policy – this will be an important characteristic to control for. In this paper, we are making use of a new database on financial sector reforms prepared by the IMF and an update of the World Bank Financial Structure database (see Beck et al. (2000)).

A macroeconomic analysis of unemployment dynamics: Methodology

The analysis is based on a macroeconomic model interacting aggregate supply with aggregate demand. For the sake of simplicity, the analysis considers that public spending measures have a direct impact on aggregate demand (instead of indirectly through private consumption). The analysis has been carried out both as a short-run model where long-term (real) interest rates are considered to be exogenous to changes in government spending patterns and as in the long-run where interest rates are changing as a reaction to government spending and public debt. This short-run analysis is the appropriate time horizon for assessing the exit strategy at the current juncture given stable expectations regarding interest rates on public bonds. On the other hand, for countries to assess the long-run implications of their spending programs, the macroeconomic feedback mechanism needs to be included as well. In this box, we will concentrate on the short-term analysis only.

The analysis includes a feedback loop from unemployment in- and outflows to different spending items. These feedback loops reflect both automatic stabilization and discretionary spending in reaction to changes in labour market conditions, which will affect the unemployment dynamics in turn. Taking such a feedback mechanism into account is essential for our argument to properly assess the unemployment dynamics in the macroeconomic environment. Moreover, in- and outflow equations are estimated simultaneously, allowing for changes in different adjustment margins of the labour market to occur in a concurrent manner. In particular, we are estimating the following 3-equations model using 3-stage least squares (3SLS) estimation techniques for the short-run dynamics:

$$\begin{aligned} Inflows_t &= Outflows_{t-1} + Macro_t + LM_t + Policy_t + \alpha_{ij,t} + \varepsilon_{i,t} \\ Outflows_t &= Inflows_{t-1} + Macro_t + LM_t + Policy_t + \alpha_{oj,t} + \varepsilon_{o,t} \\ Policy_t &= Outflows_t + Inflows_t + \alpha_{pj,t} + \varepsilon_{p,t} \end{aligned} \tag{A4.1}$$

where the variable $Macro_t$ refers to macroeconomic conditions, LM_t to labour market conditions, and $Policy_t$ to (fiscally relevant) policy interventions. The system contains also equation-specific country fixed effects, $\alpha_{ij,t}$ $\alpha_{oj,t}$ and $\alpha_{pj,t}$ as well as error terms, $\varepsilon_{i,t}$, $\varepsilon_{o,t}$ and $\varepsilon_{p,t}$. The latter is measured in terms of spending on particular programmes with respect to GDP, so as to properly account for the budgetary burden that is implied by different fiscal and labour market policy options.

Regarding the long-term dynamics, an aggregate supply curve as added to the model by means of a forth equation that takes the effect of government spending dynamics on (long-term) real interest rates into account:

$$\begin{aligned} Inflows_t &= Outflows_{t-1} + Macro_t + LM_t + Policy_t + \alpha_{ij,t} + \varepsilon_{i,t} \\ Outflows_t &= Inflows_{t-1} + Macro_t + LM_t + Policy_t + \alpha_{oj,t} + \varepsilon_{o,t} \\ Policy_t &= Outflows_t + Inflows_t + \alpha_{pj,t} + \varepsilon_{p,t} \\ RIRL_t &= Policy_t + Debt_t + Savings_t + \alpha_{rj,t} + \varepsilon_{r,t} \end{aligned} \tag{A4.2}$$

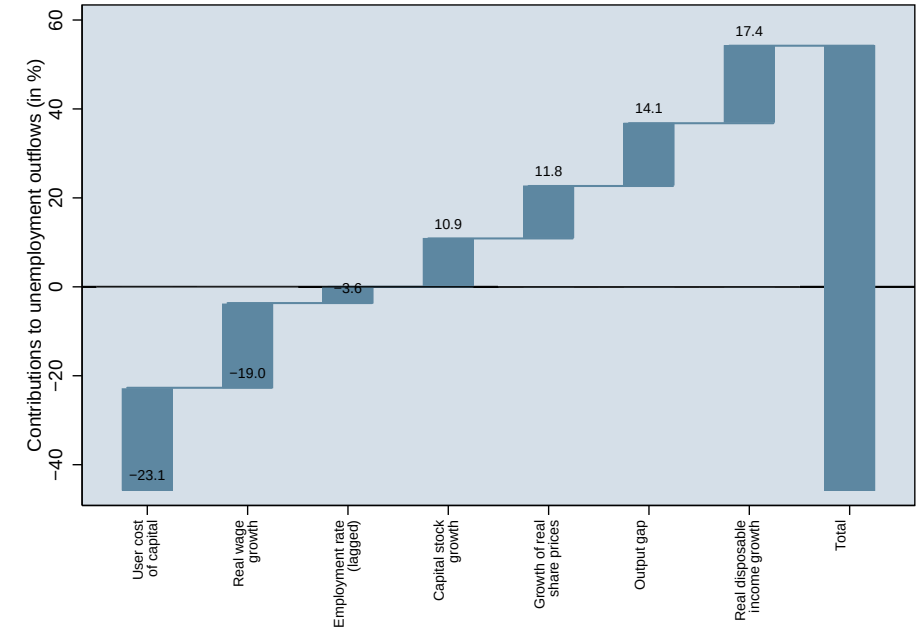
where in addition to the variables before, $RIRL_t$ refers to the real long-term interest rate, $Debt_t$ to public sector debt, $Savings_t$ to private sector financial assets and $\alpha_{rj,t}$ to country fixed effects in the real interest rate equation. In the estimations report below, we effectively aggregated the last two terms

into liquid liabilities, a country's total net assets. As the real long-term interest rate is also contained among the macroeconomic variables, $Macro_t$, this forth equation effectively serves to link the macroeconomic savings and investment dynamics to the flows in and out of unemployment.

A macroeconomic analysis of unemployment dynamics: Results

We start by estimating the unemployment flow equations individually in order to select appropriate control variables for the macroeconomic and labour market conditions. The following two figures give an overview of the economic control variables that we retained for our system of equations approach as well as the relative importance of each of these variables for unemployment in- and outflows. With the notable exception of real import growth in the unemployment inflow equation, all retained variables enter with the expected sign. In particular, the user cost of capital (or its gross equivalent, the real interest rate) decreases outflows and increases inflows; an increase in real disposable income or aggregate demand (as measured by the output gap) increases outflows and decreases inflows; an increase in real wages lowers outflows; an increase in the labour force and total factor productivity growth increases inflows. Favourable trade developments as measured by an increase in the terms of trade decrease unemployment inflows but do not affect unemployment outflows. Finally, there is some reversal to the mean that can be detected in the data as unemployment outflows decrease with higher employment rates.

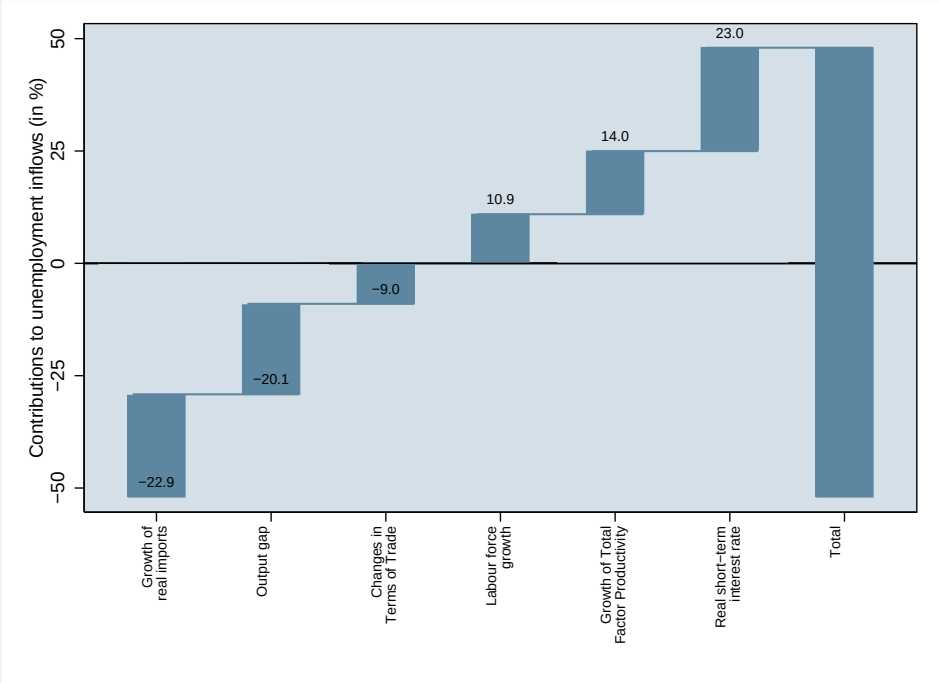
Figure 14: Economic determinants of unemployment outflows



Note: The chart presents the contribution of various economic determinants to unemployment outflows. The contributions are normalised so as to add up to 100% of the total variance of unemployment inflows in the data sample. The contributions are based on the baseline, part-equilibrium regression. Note that our output gap measure is positive when actual production is above potential and vice versa.

Source: Own calculations

Figure 15: Economic determinants of unemployment inflows



Note: The chart presents the contribution of various economic determinants to unemployment inflows. The contributions are normalised so as to add up to 100% of the total variance of unemployment inflows in the data sample. The contributions are based on the baseline, part-equilibrium regression. Note that our output gap measure is positive when actual production is above potential and vice versa.

Source: Own calculations

On the basis of these individual equations, variables have been selected in order to estimate systems A4.1 (short-term dynamics) and A4.2 (long-term dynamics). The results of these estimations are summarised in Tables 1 and 2 at the end of this annex. The general equilibrium methodology described in the two systems of equations allows assessing the data well. Standard economic determinants help explain a substantial part of the (within-country) variation of unemployment in- and outflows. Across specifications and depending on the particular estimator used between 30 and 95% of the sample variation is explained by such variables. In particular, both demand (investment, disposable income, output gap) and supply (real wages, user cost of capital, productivity, terms of trade) factors are relevant to explain the data on the basis of a standard search and matching labour market model. In addition, labour market variables add explanatory variables and are – almost always – linked in a statistically significant manner to unemployment in- and outflows.

Labour market regulation and institutions – specifically employment protection legislation and changes in trade union density – have been analysed only in the context of our short-term estimates. This can be justified given the absence of any direct link to public finances that these might have. Table 2 shows that they are related to unemployment flows with the expected sign: Employment protection legislation lowers outflows but does not lead consistently to a (statistically) significant decline in inflows (see, for instance, Table 2, eqs. 2,4,5). Unionization rates on the other hand seem to have a strong, positive effect on inflows but also increase unemployment outflows, at least in certain specifications (see Table 2, eqs. 8,9). Finally, the relationship between wage bargaining centralization and outflows is U-shaped (as in the original Calmfors-Driffill hypothesis, see Calmfors and Driffill (1988)) whereas inflows are (only insignificantly) negatively related to this indicator (in both the linear and non-linear specification; not reported here).

Financial market development also influences unemployment dynamics (see Table 2, eqs. 2,3 8-10). In general, it seems to lead to more labour market turbulence with higher in- and outflows in the

unemployment pool. In this respect, certain financial market reforms seem to lead to better labour market outcomes than others: Whereas banking sector reforms lead to higher inflows and lower outflows, securities market reforms lead to increased labour market turbulence (not reported). In the case of the long-term estimates, financial market variables have only been used for the aggregate supply curve where they lead to a reduction in the interest rate, which feeds back into higher unemployment outflows and lower unemployment inflows.

Labour market programmes develop distinct effects on different margins of the labour market, but not always where they are expected. For instance, direct job creation seems to be most effective in limiting unemployment inflows more than they would help in supporting unemployment outflows. Hiring incentives, on the other hand, do have the expected effect in bringing unemployed workers back to employment while still having a deadweight loss (unemployment inflows fall, suggesting that some currently employed also benefit from the programme).

As regards the long-run dynamics, (deficit-financed) government spending programmes always increase the real long-term interest rate, at least with a lag. At the same time, high savings rates or the availability of sufficient private sector funds helps to bring down the interest rate burden. This confirms that in the data there is at least some evidence for (moderate) crowding out of private activity following government deficit spending. The estimates confirm what has already been exposed in the main text: Some (labour market) spending programmes see substantial diminishing returns in their effectiveness, once the long-run supply constraint is taken into account. This is the case, most notably, with spending on public employment services, which looses statistical significance once the macroeconomic closure is added.

Finally, Table 4 and Table 5 present the estimation results underlying the contribution chart in the main text.

Simulating exit strategies

On the basis of a small macroeconomic model, different exit scenarios have been established for G20 countries. The scenarios focus on the interaction between labour market dynamics and government finances. In particular, the macroeconomic model that has been used for this analysis assumes a dynamic relation between government spending, employment creation and job destruction. In this model, an increase in government spending is estimated both to prevent jobs from getting lost and to help unemployed workers return to employment more rapidly. For the sake of simplicity, the analysis considers that public spending measures have a direct impact on aggregate demand (instead of indirectly through private consumption), which will stimulate labour demand at the firm level.

The analysis also includes a feedback loop from unemployment in- and outflows to government spending and net lending. These feedback loops reflect both automatic stabilization and discretionary spending in reaction to changes in labour market conditions, which, in turn, will affect the unemployment dynamics. Taking such a feedback mechanism into account is essential for our argument to properly assess the fiscal-labour market dynamics in the macroeconomic environment. Moreover, unemployment in- and outflow equations are estimated simultaneously, allowing for changes in different adjustment margins of the labour market to occur over the cycle and during the recovery phase.

The theoretical model behind the scenarios has been set up both as a short-run model where long-term (real) interest rates are considered to be exogenous to changes in government spending patterns and as a long-run specification where interest rates are changing in reaction to government spending and rising public debt. This short-run analysis is the appropriate time horizon for assessing the exit strategy at the current juncture given stable expectations regarding interest rates on public bonds. On the other hand, for countries to assess the long-run implications of their spending programs, the macroeconomic feedback mechanism needs to be included as well. For the purpose of this policy brief we have concentrated on the short-term analysis only.

The model is estimated for (advanced) G20 countries, using panel data estimation techniques. The sample covers the years 1970-2007 to make the results robust against business cycle specificities that might have characterised countries during a particular period. The country sample was limited by data availability. The model focuses on the short-term dynamics in order to separate the importance of the stance of fiscal policy for the labour market from other influences. Equation specifications have been determined on the basis of individual estimations against a variety of different specification options. The final simulations are being carried out on the basis of simultaneous equation estimates using 3SLS simultaneous equation techniques.

The baseline scenario considers the endogenous behaviour of the system following an initial adverse shock to labour demand in the order of magnitude observed during the crisis. No other influences are present and the dynamics are self-reverting after a – long – adjustment period. The early exit scenario considers that governments try to close the budget balance prematurely by tightening public spending to pre-crisis levels within three years following the full impact of the crisis on government budgets. This scenario considers that no additional tightening is attempted thereafter, leaving the system adjusting itself to this policy shock. The two remaining scenarios consider additional stimulus measures either through additional spending or additional tax reductions both for 3 years and at the order of magnitude of 3% of GDP.

The following estimated equation has been used for the simulation:

$$\begin{aligned}
Inflows_t &= \underset{(0.072)}{0.932}\, Inflows_{t-1} + \underset{(0.716)}{2.518}\, ETPR_{t-1} - \underset{(0.059)}{0.311}\, Outflows_t + \underset{(2.101)}{5.207}\, \Delta POPT_{t-1} \\
&\quad + \underset{(0.080)}{0.090}\, \Delta TFP_t + \underset{(0.004)}{0.004}\, Rirl_{t-1} - \underset{(1.223)}{2.230}\, GovSpending_{t-1} + \underset{(0.827)}{1.450}\, TInd_{t-1} \\
&\quad - \underset{(0.033)}{0.045}\, EPL_{t-1} + \alpha_{ij,t} + \varepsilon_{i,t} \\
Outflows_t &= \underset{(0.052)}{0.752}\, Outflows_{t-1} + \underset{(0.696)}{3.579}\, ETPR_t - \underset{(0.090)}{0.154}\, Inflows_t + \underset{(0.678)}{3.687}\, \Delta Investment_t \\
&\quad + \underset{(0.407)}{0.022}\, \Delta RDispInc_t - \underset{(0.005)}{0.002}\, Ucc_t - \underset{(0.019)}{0.058}\, \Delta WIRate_t + \underset{(1.161)}{5.387}\, GovSpending_{t-1} \\
&\quad - \underset{(0.033)}{0.072}\, EPL_{t-1} + \alpha_{oj,t} + \varepsilon_{o,t} \\
GovSpending_t &= \underset{(0.004)}{0.018}\, Inflows_{t-1} - \underset{(0.003)}{0.019}\, Outflows_{t-1} + \alpha_{pj,t} + \varepsilon_{p,t} \\
\Delta Employment_t &= \underset{(0.004)}{0.018}\, Outflows_t - \underset{(0.005)}{0.015}\, Inflows_t + \alpha_{ej,t} + \varepsilon_{e,t}
\end{aligned}$$

where *Inflows*: Unemployment inflows, *Outflows*: Unemployment outflows, *GovSpending*: Government consumption-to-GDP ratio, *ETPR*: Employment-to-population ratio, *ΔPOPT*: Annual growth rate of working-age population, *ΔTFP*: Annual growth rate in total factor productivity, *Rirl*: Real long-term interest rates, *TInd*: Indirect taxes-to-GDP ratio, *EPL*: Index of strictness of employment protection legislation, *ΔInvestment*: Annual growth rate of capital outlays, *ΔRDispInc*: Annual growth rate of real disposable household income, *Ucc*: User cost of capital (i.e. real long-term interest rate + real capital depreciation rate), *ΔWIRate*: Annual change in the wage-to-interest rate ratio. The system includes equation-specific country fixed effects, $\alpha_{ij,t}$, $\alpha_{oj,t}$, $\alpha_{pj,t}$ and $\alpha_{ej,t}$. Standard errors of the estimated coefficients are provided in parentheses. A subscript "t-1" indicates that the variable has been estimated with a lag of one year, all other variables have been estimated as contemporaneous effects.

Table 2: Short-term unemployment dynamics with fiscal and labour market policies

	(1)			(2)			(3)			(4)			(5)			(6)			(7)			(8)		
	Unemployment inflows	Unemployment outflows	Government consumption	Unemployment inflows	Unemployment outflows	Government consumption	Unemployment inflows	Unemployment outflows	Government consumption	Unemployment inflows	Unemployment outflows	Government wage consumption	Unemployment inflows	Unemployment outflows	Government wage consumption	Unemployment inflows	Unemployment outflows	Government non-wage consumption	Unemployment inflows	Unemployment outflows	Government non-wage consumption	Unemployment inflows	Unemployment outflows	Government consumption
Inflow (lagged)	1.012***		0.011***	0.926***		0.012***	0.901***		0.015***	0.948***		-0.008***	1.000***		-0.006**	1.022***		0.018***	0.986***		0.020***	0.826***		0.017***
	(0.071)		(0.004)	(0.066)		(0.004)	(0.070)		(0.004)	(0.073)		(0.003)	(0.078)		(0.003)	(0.080)		(0.003)	(0.085)		(0.003)	(0.050)		(0.004)
Employment rate (lagged)	3.987***			2.589***			3.759***			3.313***			4.090***			3.929***			4.601***			0.329		
	(0.752)			(0.670)			(0.679)			(0.741)			(0.757)			(0.866)			(0.875)			(0.413)		
Population growth (lagged)	5.798**			1.650			2.369			9.883***			10.511***			6.353**			5.150**			3.312*		
	(2.763)			(2.653)			(2.096)			(2.876)			(2.715)			(3.120)			(2.343)			(2.007)		
TFP growth	0.246**			0.133			0.070			0.291***			0.330***			0.352***			0.245***			0.214**		
	(0.105)			(0.110)			(0.088)			(0.108)			(0.101)			(0.112)			(0.083)			(0.084)		
Real long-term interest rate (lagged)	0.011***			0.014***			0.014***			0.020***			0.024***			0.012***			0.012***			0.006**		
	(0.004)			(0.003)			(0.003)			(0.005)			(0.005)			(0.004)			(0.004)			(0.002)		
Share of indirect taxes (lagged)	3.253***			2.577**			1.860**			4.293***			4.080***			1.902*			1.238*			1.592**		
	(1.066)			(1.090)			(0.855)			(1.237)			(1.165)			(1.021)			(0.751)			(0.741)		
Unemployment outflows	-0.436***			-0.370***			-0.394***			-0.435***			-0.413***			-0.444***			-0.467***			-0.238***		
	(0.063)			(0.056)			(0.057)			(0.064)			(0.068)			(0.071)			(0.072)			(0.036)		
Share of government consumption (lagged)	-4.624***	-0.306		-2.607**	0.869		-0.136	6.450***														-0.476	4.614***	
	(1.290)	(1.111)		(1.187)	(1.188)		(1.249)	(1.212)														(0.782)	(1.162)	
Employment protection legislation (lagged)	-0.038	-0.077**								-0.022	-0.075**		-0.034	-0.078**		-0.138***	-0.112***		-0.157***	-0.147***				
	(0.035)	(0.031)								(0.042)	(0.035)		(0.042)	(0.034)		(0.046)	(0.039)		(0.047)	(0.042)				
Unemployment outflows (lagged)		0.622***	-0.015***		0.634***	-0.015***		0.654***	-0.014***		0.621***	-0.010***		0.664***	-0.009***		0.596***	-0.007**		0.562***	-0.006**		0.645***	-0.013***
		(0.046)	(0.003)		(0.046)	(0.003)		(0.050)	(0.003)		(0.047)	(0.003)		(0.049)	(0.003)		(0.051)	(0.003)		(0.057)	(0.003)		(0.042)	(0.003)
Employment rate		3.411***			2.945***			4.503***			2.687***			3.382***			3.189***			4.792***			1.311**	
		(0.697)			(0.710)			(0.676)			(0.716)			(0.685)			(0.778)			(0.782)			(0.559)	
User cost of capital		-0.001			0.004			0.010**			0.002			0.007			-0.001			0.003			-0.009**	
		(0.005)			(0.005)			(0.004)			(0.006)			(0.005)			(0.005)			(0.005)			(0.004)	
Wage-Interest rate ratio		-0.079***			-0.081***			-0.050***			-0.077***			-0.070***			-0.075***			-0.053***			-0.110***	
		(0.022)			(0.024)			(0.018)			(0.023)			(0.020)			(0.024)			(0.018)			(0.027)	
Gross fixed capital formation		4.611***			4.768***			3.756***			4.353***			4.247***			4.624***			3.693***			5.050***	
		(0.785)			(0.805)			(0.625)			(0.845)			(0.759)			(0.938)			(0.743)			(0.919)	
Growth in real disposable household income		0.274			0.636			0.291			0.174			0.190			-0.053			-0.239			1.784***	
		(0.478)			(0.509)			(0.391)			(0.567)			(0.498)			(0.546)			(0.411)			(0.508)	
Inflow into unemployment		0.013			-0.006			-0.085			-0.040			0.025			-0.025			-0.134			-0.133	
		(0.078)			(0.079)			(0.089)			(0.081)			(0.083)			(0.085)			(0.095)			(0.083)	
Employment protection legislation				-0.060*	-0.096***		-0.078**	-0.108***																
				(0.034)	(0.032)		(0.035)	(0.032)																
Private credit by deposit money banks to GDP				0.205***	0.104*		0.208***	0.134**														0.175***	0.162***	
				(0.059)	(0.056)		(0.063)	(0.059)														(0.045)	(0.062)	
Share of government wage consumption (lagged)										-6.141***	-1.023		-0.395	5.124***										
										(1.982)	(1.698)		(2.024)	(1.652)										
Share of government non-wage consumption (lagged)																-7.583***	-1.807		-6.402***	3.714*				
																(2.364)	(2.021)		(2.468)	(2.127)				
Changes in trade union membership																						0.032***	0.021	
																						(0.011)	(0.014)	
Changes in trade union membership (lagged)																								
Direct job creation (lagged)																								
Hiring incentives (lagged)																								
User cost of capital (lagged)																								
Public employment services (lagged)																								
Training expenditures (lagged)																								
Spending on unemployment benefits (lagged)																								
Observations	152	152	152	156	156	156	156	156	156	132	132	132	132	132	132	132	132	132	132	132	132	193	193	193
R-squared	0.974	0.988	0.929	0.979	0.988	0.930	0.976	0.980	0.930	0.976	0.989	0.950	0.972	0.987	0.950	0.975	0.989	0.822	0.974	0.983	0.821	0.985	0.984	0.928

Table 2 (cont'd): Short-term unemployment dynamics with fiscal and labour market policies

	(9)			(10)			(11)			(12)			(13)			(14)			(15)			(16)		
	Unemployment inflows	Unemployment outflows	Government consumption	Unemployment inflows	Unemployment outflows	Government consumption	Unemployment inflows	Unemployment outflows	Direct job creation	Unemployment inflows	Unemployment outflows	Direct job creation	Unemployment inflows	Unemployment outflows	Hiring incentives	Unemployment inflows	Unemployment outflows	Hiring investives	Unemployment inflows	Unemployment outflows	Hiring incentives	Unemployment inflows	Unemployment outflows	Public employment services
Inflow (lagged)	0.763***		0.022***	0.748***		0.022***	0.949***		0.002***	0.980***		0.002***	0.871***		0.001***	0.875***		0.001***	0.901***		0.001***	0.981***		0.000
	(0.057)		(0.004)	(0.060)		(0.004)	(0.065)		(0.000)	(0.070)		(0.000)	(0.066)		(0.000)	(0.066)		(0.000)	(0.070)		(0.000)	(0.063)		(0.000)
Employment rate (lagged)	1.176***			1.432***			2.295***			2.677***			2.181***			2.526***		0.007	2.653***			2.828***		
	(0.427)			(0.441)			(0.786)			(0.776)			(0.756)			(0.765)		(0.005)	(0.736)			(0.844)		
Population growth (lagged)	2.987**			2.766*			8.217**			8.432***			7.975***			8.089***			7.889***			7.348**		
	(1.458)			(1.415)			(3.292)			(2.738)			(3.071)			(3.015)			(2.388)			(3.375)		
TFP growth	0.041			0.027			0.294**			0.270***			0.315***			0.310***			0.295***			0.333***		
	(0.062)			(0.061)			(0.118)			(0.099)			(0.109)			(0.106)			(0.085)			(0.118)		
Real long-term interest rate (lagged)	0.006**			0.006**			0.007**			0.007**			0.006**			0.005			0.006*			0.012***		
	(0.002)			(0.002)			(0.003)			(0.003)			(0.003)			(0.003)			(0.003)			(0.004)		
Share of indirect taxes (lagged)	0.937*			0.902*			1.833			1.230			0.407						-0.764			2.973**		
	(0.542)			(0.527)			(1.138)			(0.937)			(1.110)						(0.845)			(1.512)		
Unemployment outflows	-0.307***			-0.339***			-0.259***			-0.282***			-0.252***			-0.279***			-0.280***			-0.253***		
	(0.038)			(0.039)			(0.054)			(0.054)			(0.052)			(0.052)			(0.051)			(0.056)		
Share of government consumption (lagged)	0.915	12.027***		0.359	10.613***																			
	(0.892)	(1.240)		(0.950)	(1.275)																			
Employment protection legislation (lagged)																								
Unemployment outflows (lagged)		0.629***	-0.011***		0.594***	-0.011***		0.589***	-0.000		0.586***	-0.000		0.594***	-0.000		0.597***	-0.000		0.581***	-0.000		0.603***	-0.000
		(0.051)	(0.003)		(0.049)	(0.003)		(0.053)	(0.000)		(0.050)	(0.000)		(0.052)	(0.000)		(0.052)	(0.000)		(0.050)	(0.000)		(0.058)	(0.000)
Employment rate		2.318***			2.564***			3.468***			3.903***			3.337***			3.139***			3.852***			3.453***	
		(0.599)			(0.607)			(0.931)			(0.902)			(0.932)			(0.946)			(0.894)			(1.062)	
User cost of capital		-0.001			-0.000			-0.003			0.002			-0.002						0.002			0.002	
		(0.004)			(0.004)			(0.005)			(0.005)			(0.005)						(0.005)			(0.006)	
Wage-Interest rate ratio		-0.061***			-0.058***			-0.093***			-0.090***			-0.085***			-0.083***			-0.071***			-0.091***	
		(0.020)			(0.019)			(0.026)			(0.022)			(0.025)			(0.024)			(0.021)			(0.027)	
Gross fixed capital formation		3.565***			3.379***			5.561***			4.518***			5.137***			4.955***			3.930***			5.718***	
		(0.672)			(0.642)			(0.918)			(0.823)			(0.861)			(0.846)			(0.745)			(0.953)	
Growth in real disposable household income		1.177***			1.072***			0.610			0.374			0.770			0.687			0.673			0.660	
		(0.364)			(0.346)			(0.540)			(0.471)			(0.530)			(0.520)			(0.447)			(0.558)	
Inflow into unemployment		-0.415***			-0.421***			0.062			-0.001			-0.031			-0.050			-0.118			0.091	
		(0.107)			(0.105)			(0.084)			(0.087)			(0.092)			(0.093)			(0.098)			(0.082)	
Employment protection legislation																								
Private credit by deposit money banks to GDP	0.204***	0.242***		0.205***	0.237***																			
	(0.051)	(0.068)		(0.053)	(0.070)																			
Share of government wage consumption (lagged)																								
Share of government non-wage consumption (lagged)																								
Changes in trade union membership	0.034***	0.045***																						
	(0.012)	(0.016)																						
Changes in trade union membership (lagged)				0.024*	0.037**																			
				(0.013)	(0.016)																			
Direct job creation (lagged)							-17.127	-1.910		-39.665***	25.836*													
							(13.168)	(12.943)		(13.519)	(13.712)													
Hiring incentives (lagged)													27.573*	39.427**		27.525*	36.426**		7.432	77.578***				
													(15.076)	(16.311)		(14.673)	(16.592)		(15.299)	(17.821)				
User cost of capital (lagged)																	-0.005							
																	(0.005)							
Public employment services (lagged)																						54.288	34.331	
																						(34.326)	(34.722)	
Training expenditures (lagged)																								
Spending on unemployment benefits (lagged)																								
Observations	193	193	193	193	193	193	142	142	142	142	142	142	142	142	142	142	142	142	142	142	142	130	130	130
R-squared	0.982	0.969	0.927	0.980	0.971	0.927	0.976	0.988	0.630	0.974	0.987	0.630	0.977	0.988	0.862	0.976	0.987	0.864	0.975	0.985	0.862	0.977	0.987	0.817

Table 2 (cont'd): Short-term unemployment dynamics with fiscal and labour market policies

	(17)			(18)			(19)			(20)			(21)		
	Unemployment inflows	Unemployment outflows	Public employment services	Unemployment inflows	Unemployment outflows	Training spending	Unemployment inflows	Unemployment outflows	Training spending	Unemployment inflows	Unemployment outflows	Unemployment benefits	Unemployment inflows	Unemployment outflows	Unemployment benefits
Inflow (lagged)	0.977***		0.000	0.926***		-0.000	0.925***		0.000	0.938***		0.004***	0.955***		0.005***
	(0.069)		(0.000)	(0.063)		(0.000)	(0.069)		(0.000)	(0.068)		(0.001)	(0.074)		(0.001)
Employment rate (lagged)	3.492***			2.831***			3.632***			2.015**			1.456*		
	(0.883)			(0.805)			(0.848)			(0.808)			(0.754)		
Population growth (lagged)	6.508**			10.188***			9.935***			6.991**			4.597**		
	(3.123)			(3.399)			(3.111)			(3.330)			(2.313)		
TFP growth	0.360***			0.273**			0.298***			0.248**			0.143*		
	(0.109)			(0.115)			(0.106)			(0.119)			(0.083)		
Real long-term interest rate (lagged)	0.015***			0.004			0.006			0.006			-0.000		
	(0.004)			(0.004)			(0.004)			(0.004)			(0.003)		
Share of indirect taxes (lagged)	3.025**			0.607			0.446			1.418			-0.128		
	(1.393)			(1.301)			(1.175)			(1.214)			(0.822)		
Unemployment outflows	-0.291***			-0.277***			-0.322***			-0.280***			-0.307***		
	(0.058)			(0.054)			(0.057)			(0.066)			(0.067)		
Share of government consumption (lagged)															
Employment protection legislation (lagged)															
Unemployment outflows (lagged)		0.578***	-0.000		0.586***	-0.001***		0.570***	-0.001***		0.594***	-0.006***		0.766***	-0.006***
		(0.054)	(0.000)		(0.053)	(0.000)		(0.048)	(0.000)		(0.053)	(0.001)		(0.056)	(0.001)
Employment rate		4.197***			3.754***			4.446***			2.943***			3.222***	
		(1.009)			(0.918)			(0.851)			(0.899)			(0.830)	
User cost of capital		0.006			-0.000			0.003			-0.001			0.003	
		(0.005)			(0.005)			(0.005)			(0.005)			(0.005)	
Wage-Interest rate ratio		-0.080***			-0.087***			-0.077***			-0.094***			-0.071***	
		(0.024)			(0.025)			(0.021)			(0.024)			(0.018)	
Gross fixed capital formation		5.423***			5.644***			5.242***			5.540***			3.646***	
		(0.857)			(0.862)			(0.748)			(0.836)			(0.683)	
Growth in real disposable household income		0.393			0.718			0.583			0.350			0.166	
		(0.494)			(0.520)			(0.442)			(0.520)			(0.394)	
Inflow into unemployment		0.092			0.077			0.076			0.087			-0.062	
		(0.082)			(0.082)			(0.082)			(0.081)			(0.089)	
Employment protection legislation															
Private credit by deposit money banks to GDP															
Share of government wage consumption (lagged)															
Share of government non-wage consumption (lagged)															
Changes in trade union membership															
Changes in trade union membership (lagged)															
Direct job creation (lagged)															
Hiring incentives (lagged)															
User cost of capital (lagged)															
Public employment services (lagged)	106.061***	94.498***													
	(37.036)	(35.144)													
Training expenditures (lagged)				20.828	13.922		28.139*	27.599**							
				(15.006)	(13.111)		(15.966)	(13.302)							
Spending on unemployment benefits (lagged)										-5.570	-4.184		-14.896***	16.848***	
										(4.646)	(4.032)		(4.703)	(4.324)	
Observations	130	130	130	142	142	142	142	142	142	142	142	142	142	142	142
R-squared	0.975	0.986	0.817	0.976	0.988	0.858	0.973	0.988	0.857	0.976	0.989	0.689	0.972	0.983	0.688

Note: All equation systems are estimated using 3SLS. All regressions contain country fixed effects. Standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Source: Own estimations

Table 3: Long-term unemployment dynamics with fiscal and labour market policies

	(1)				(2)				(3)				(4)			
	Unemployment inflows	Unemployment outflows	Government consumption	Real long-term interest rate	Unemployment inflows	Unemployment outflows	Government consumption	Real long-term interest rate	Unemployment inflows	Unemployment outflows	Government consumption	Real long-term interest rate	Unemployment inflows	Unemployment outflows	Government consumption	Real long-term interest rate
Inflow (lagged)	0.961***		0.012***		0.892***		0.006		0.962***		0.012***		0.944***		0.001***	
	(0.076)		*(0.004)*		*(0.067)*		*(0.004)*		*(0.076)*		*(0.004)*		*(0.067)*		*(0.000)*	
Employment rate (lagged)	4.685***				3.776***				4.727***				1.748**			
	(0.766)				*(0.698)*				*(0.770)*				*(0.733)*			
Population growth (lagged)	6.632***				6.076***				6.602***				9.565***			
	(2.242)				*(2.155)*				*(2.248)*				*(2.703)*			
TFP growth	0.094				0.143*				0.087				0.190*			
	(0.086)				*(0.082)*				*(0.086)*				*(0.098)*			
Real long-term interest rate	0.019***				0.025***				0.020***				0.019***			
	(0.005)				*(0.005)*				*(0.005)*				*(0.004)*			
Share of indirect taxes (lagged)	1.872**				1.981**				1.821**				0.084			
	(0.884)				*(0.854)*				*(0.889)*				*(0.985)*			
Unemployment outflows	-0.378***				-0.252***				-0.373***				-0.155***			
	(0.061)				*(0.057)*				*(0.061)*				*(0.053)*			
Share of government	-3.205**	4.711***			-1.598	5.743***			-3.185**	4.576***						
	(1.303)	*(1.125)*			*(1.175)*	*(1.126)*			*(1.303)*	*(1.132)*						
Employment protection	-0.009	-0.047			-0.012	-0.059*			-0.011	-0.047						
	(0.036)	*(0.032)*			*(0.034)*	*(0.034)*			*(0.038)*	*(0.034)*						
Unemployment outflows (lagged)		0.675***	-0.014***			0.680***	-0.011***			0.679***	-0.014***			0.602***	-0.000	
		(0.050)	*(0.003)*			*(0.050)*	*(0.003)*			*(0.050)*	*(0.003)*			*(0.051)*	*(0.000)*	
Employment rate		4.707***				3.879***				4.915***				2.619***		
		(0.672)				*(0.675)*				*(0.688)*				*(0.942)*		
User cost of capital		0.007												-0.024***		
		(0.005)												*(0.005)*		
Wage-Interest rate ratio		-0.053***				-0.054***				-0.052***				-0.094***		
		(0.018)				*(0.020)*				*(0.019)*				*(0.024)*		
Gross fixed capital formation		3.934***				4.487***				3.858***				4.945***		
		(0.663)				*(0.709)*				*(0.668)*				*(0.882)*		
Growth in real disposable		0.037				0.086				0.027				0.442		
		(0.391)				*(0.419)*				*(0.395)*				*(0.509)*		
Inflow into unemployment		-0.070				-0.076				-0.064				0.005		
		(0.087)				*(0.082)*				*(0.087)*				*(0.088)*		
Government net lending (lagged)				-0.246***								-0.243***				
				(0.051)								*(0.051)*				
Liquidity liabilities (lagged)				-6.340***				-4.687***				-6.280***				-4.424***
				(1.253)				*(1.089)*				*(1.249)*				*(1.105)*
Real long-term interest rate						-0.003				0.012**						
						(0.006)				*(0.006)*						
Government net lending								-0.423***								-0.256***
								(0.048)								*(0.048)*
Direct job creation (lagged)													-69.546***	0.143		
													(12.020)	*(13.469)*		
Hiring incentives (lagged)																
Training expenditures																
Public employment services (lagged)																
Observations	150	150	150	150	150	150	150	150	150	150	150	150	140	140	140	140
R-squared	0.972	0.981	0.929	0.474	0.973	0.982	0.927	0.438	0.972	0.980	0.929	0.474	0.970	0.987	0.621	0.485
RMSE	0.134	0.147	0.011	2.097	0.131	0.143	0.011	2.169	0.135	0.150	0.011	2.097	0.135	0.119	0.001	2.009

Table 3 (cont'd): Long-term unemployment dynamics with fiscal and labour market policies

	(5)				(6)				(7)				(8)			
	Unemployment inflows	Unemployment outflows	Government consumption	Real long-term interest rate	Unemployment inflows	Unemployment outflows	Government consumption	Real long-term interest rate	Unemployment inflows	Unemployment outflows	Government consumption	Real long-term interest rate	Unemployment inflows	Unemployment outflows	Government consumption	Real long-term interest rate
Inflow (lagged)	0.896***		0.001***		0.902***		0.001***		0.894***		0.000		0.995***		-0.000	
	(0.072)		*(0.000)*		*(0.072)*		*(0.000)*		*(0.071)*		*(0.000)*		*(0.071)*		*(0.000)*	
Employment rate (lagged)	2.784***				2.808***				3.815***				4.024***			
	(0.745)				*(0.749)*				*(0.855)*				*(0.902)*			
Population growth (lagged)	9.210***				9.200***				11.320***				7.965**			
	(2.373)				*(2.394)*				*(2.971)*				*(3.112)*			
TFP growth	0.284***				0.285***				0.273***				0.374***			
	(0.084)				*(0.085)*				*(0.102)*				*(0.109)*			
Real long-term interest rate	0.016***				0.017***				0.017***				0.031***			
	(0.004)				*(0.005)*				*(0.005)*				*(0.005)*			
Share of indirect taxes (lagged)	-1.202				-1.118				-0.270				2.816**			
	(0.863)				*(0.870)*				*(1.153)*				*(1.422)*			
Unemployment outflows	-0.242***				-0.237***				-0.295***				-0.235***			
	(0.052)				*(0.052)*				*(0.057)*				*(0.057)*			
Share of government Employment protection																
Unemployment outflows (lagged)		0.590***	-0.000			0.595***	-0.000			0.578***	-0.001***			0.585***	-0.000	
		(0.050)	*(0.000)*			*(0.050)*	*(0.000)*			*(0.049)*	*(0.000)*			*(0.054)*	*(0.000)*	
Employment rate		3.552***				3.744***				4.428***				3.891***		
		(0.932)				*(0.944)*				*(0.883)*				*(1.037)*		
User cost of capital		0.000								0.009*				0.002		
		(0.005)								*(0.005)*				*(0.006)*		
Wage-Interest rate ratio		-0.068***				-0.067***				-0.070***				-0.081***		
		(0.021)				*(0.022)*				*(0.021)*				*(0.025)*		
Gross fixed capital formation		4.184***				4.210***				5.291***				5.845***		
		(0.771)				*(0.776)*				*(0.761)*				*(0.894)*		
Growth in real disposable		0.651				0.650				0.531				0.364		
		(0.460)				*(0.463)*				*(0.445)*				*(0.508)*		
Inflow into unemployment		-0.144				-0.124				0.022				0.066		
		(0.100)				*(0.100)*				*(0.086)*				*(0.083)*		
Government net lending (lagged)				-0.158***				-0.163***				-0.152***				-0.088*
				(0.052)				*(0.053)*				*(0.053)*				*(0.050)*
Liquidity liabilities (lagged)				-6.519***				-6.427***				-5.452***				-7.325***
				(1.320)				*(1.330)*				*(1.318)*				*(1.184)*
Real long-term interest rate						0.006										
						(0.006)										
Government net lending Direct job creation (lagged)																
Hiring incentives (lagged)	-10.557	69.200***			-12.303	65.593***										
	(14.969)	*(18.255)*			*(14.995)*	*(18.252)*										
Training expenditures									28.631*	25.585*						
									(15.300)	*(13.657)*						
Public employment services (lagged)													57.239	48.016		
													(36.027)	*(35.726)*		
Observations	140	140	140	140	140	140	140	140	140	140	140	140	128	128	128	128
R-squared	0.972	0.985	0.863	0.484	0.971	0.985	0.863	0.484	0.971	0.986	0.854	0.481	0.972	0.986	0.815	0.545
RMSE	0.131	0.127	0.001	2.010	0.132	0.128	0.001	2.010	0.133	0.124	0.001	2.016	0.128	0.114	0.000	1.857

Note: All equation systems are estimated using 3SLS. All regressions contain country fixed effects. Standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Source: Own estimations

Table 4: Policy contributions to unemployment dynamics (short-term)

	(1) Government consumption			(2) Government wage-consumption			(3) Government non-wage consumption			(4) Direct job creation			(5) Hiring incentives			(6) Training expenditures			(7) Public employment services			(8) Unemployment benefits		
	Unemployment inflows	Unemployment outflows	Government consumption	Unemployment inflows	Unemployment outflows	Government wage consumption	Unemployment inflows	Unemployment outflows	Government non-wage consumption	Unemployment inflows	Unemployment outflows	Direct job creation	Unemployment inflows	Unemployment outflows	Hiring incentives	Unemployment inflows	Unemployment outflows	Training expenditures	Unemployment inflows	Unemployment outflows	Public employment services	Unemployment inflows	Unemployment outflows	Unemployment benefits
Inflow (lagged)	0.962***		0.015***	0.850***		-0.006*	0.886***		0.021***	0.917***		0.002***	0.860***		0.001***	0.880***		0.000	0.938***		0.000	0.925***		0.005***
	(0.081)		(0.004)	(0.082)		(0.003)	(0.089)		(0.003)	(0.079)		(0.000)	(0.075)		(0.000)	(0.075)		(0.000)	(0.078)		(0.000)	(0.076)		(0.001)
Employment rate (lagged)	4.661***			3.863***			4.684***			2.877***			2.841***			3.618***			4.745***			0.958		
	(0.802)			(0.842)			(0.943)			(0.822)			(0.783)			(0.887)			(0.998)			(0.785)		
Population growth (lagged)	5.909***			9.456***			4.320**			8.532***			7.695***			10.365***			5.845*			4.662**		
	(2.209)			(2.631)			(2.155)			(2.615)			(2.304)			(2.987)			(3.152)			(2.186)		
TFP growth	0.078			0.194**			0.204***			0.261***			0.288***			0.294***			0.356***			0.138*		
	(0.084)			(0.097)			(0.075)			(0.095)			(0.082)			(0.102)			(0.107)			(0.079)		
Real long-term interest rate (lagged)	0.008			0.017***			0.008			0.007			0.006			0.002			0.020***			-0.003		
	(0.005)			(0.007)			(0.005)			(0.005)			(0.005)			(0.005)			(0.006)			(0.005)		
Share of indirect taxes (lagged)	1.949**			2.864**			0.830			0.693			-0.896			0.238			3.246**			0.127		
	(0.873)			(1.131)			(0.673)			(0.959)			(0.854)			(1.214)			(1.415)			(0.820)		
Unemployment outflows	-0.441***			-0.465***			-0.477***			-0.309***			-0.300***			-0.338***			-0.289***			-0.312***		
	(0.065)			(0.069)			(0.075)			(0.057)			(0.054)			(0.059)			(0.061)			(0.069)		
Share of government consumption (lagged)	-3.207**	4.791***																						
	(1.383)	(1.144)																						
Employment protection legislation (lagged)	-0.044	-0.077**		-0.040	-0.080**		-0.156***	-0.157***		-0.068*	-0.053		-0.020	-0.015		-0.020	-0.038		-0.140*	-0.108*		-0.007	-0.047	
	(0.038)	(0.032)		(0.045)	(0.036)		(0.049)	(0.045)		(0.037)	(0.037)		(0.036)	(0.038)		(0.039)	(0.034)		(0.072)	(0.060)		(0.035)	(0.035)	
Unemployment outflows (lagged)		0.643***	-0.015***		0.610***	-0.010***		0.509***	-0.005*		0.564***	-0.000		0.557***	-0.000		0.558***	-0.001***		0.549***	-0.000		0.770***	-0.006***
		(0.050)	(0.003)		(0.049)	(0.003)		(0.061)	(0.003)		(0.051)	(0.000)		(0.050)	(0.000)		(0.049)	(0.000)		(0.054)	(0.000)		(0.057)	(0.001)
Employment rate		4.720***			3.340***			5.198***			4.008***			3.996***			4.373***			5.336***			2.648***	
		(0.672)			(0.725)			(0.866)			(0.958)			(0.950)			(0.893)			(1.080)			(0.893)	
User cost of capital		0.001			0.002			0.000			0.001			0.001			0.002			0.008			0.003	
		(0.005)			(0.006)			(0.005)			(0.005)			(0.005)			(0.005)			(0.006)			(0.005)	
Wage-interest rate ratio		-0.054***			-0.066***			-0.049***			-0.085***			-0.068***			-0.075***			-0.074***			-0.070***	
		(0.017)			(0.019)			(0.017)			(0.021)			(0.020)			(0.021)			(0.024)			(0.018)	
Gross fixed capital formation		3.629***			3.783***			3.157***			4.147***			3.633***			5.050***			5.148***			3.602***	
		(0.625)			(0.727)			(0.709)			(0.807)			(0.733)			(0.739)			(0.869)			(0.682)	
Growth in real disposable household income		0.069			0.159			-0.267			0.345			0.645			0.575			0.185			0.153	
		(0.374)			(0.469)			(0.392)			(0.459)			(0.439)			(0.434)			(0.497)			(0.388)	
Inflow into unemployment		-0.088			-0.091			-0.254**			-0.070			-0.177*			0.014			0.060			-0.127	
		(0.089)			(0.085)			(0.106)			(0.097)			(0.105)			(0.088)			(0.087)			(0.094)	
Share of government wage consumption (lagged)				-4.671**	3.208*																			
				(2.198)	(1.763)																			
Share of government non-wage consumption (lagged)							-4.683*	5.056**																
							(2.606)	(2.306)																
Direct job creation (lagged)										-42.727***	23.740													
										(14.397)	(14.550)													
Hiring incentives (lagged)													10.923	83.181***										
													(16.296)	(19.347)										
Training expenditures (lagged)																28.993*	27.346**							
																(15.921)	(13.722)							
Public employment services (lagged)																			103.655**	86.180**				
																			(42.774)	(40.150)				
Spending on unemployment benefits (lagged)																						-16.892***	14.670***	
																						(4.651)	(4.496)	
Observations	152	152	152	132	132	132	132	132	132	142	142	142	142	142	142	142	142	142	130	130	130	142	142	142
R-squared	0.972	0.981	0.929	0.972	0.986	0.950	0.971	0.978	0.820	0.970	0.986	0.630	0.974	0.984	0.862	0.972	0.987	0.857	0.973	0.985	0.817	0.972	0.982	0.688

Note: All equation systems are estimated using 3SLS. All regressions contain country fixed effects. Standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Source: Own estimations

Table 5: Policy contributions to unemployment dynamics (long-term)

	(1) Government consumption				(2) Government wage consumption				(3) Government non-wage consumption				(4) Direct job creation				(5) Hiring incentives				(6) Training expenditures				(7) Public employment services				(8) Unemployment benefits			
	Unemployment inflows	Unemployment outflows	Government consumption	Real long-term interest rate	Unemployment inflows	Unemployment outflows	Government wage consumption	Real long-term interest rate	Unemployment inflows	Unemployment outflows	Government non-wage consumption	Real long-term interest rate	Unemployment inflows	Unemployment outflows	Direct job creation	Real long-term interest rate	Unemployment inflows	Unemployment outflows	Hiring incentives	Real long-term interest rate	Unemployment inflows	Unemployment outflows	Training expenditures	Real long-term interest rate	Unemployment inflows	Unemployment outflows	Public employment services	Real long-term interest rate	Unemployment inflows	Unemployment outflows	Unemployment benefits	Real long-term interest rate
Inflow (lagged)	0.961***		0.012***		0.908***		-0.000		0.911***		0.010***		0.949***		0.001***		0.895***		0.001***		0.894***		0.000		0.972***		-0.000		0.949***		0.005***	
	(0.076)		*(0.004)*		*(0.078)*		*(0.003)*		*(0.085)*		*(0.003)*		*(0.076)*		*(0.000)*		*(0.073)*		*(0.000)*		*(0.073)*		*(0.000)*		*(0.075)*		*(0.000)*		*(0.076)*		*(0.001)*	
Employment rate (lagged)	4.685***				4.240***				4.260***				2.625***				2.785***				3.689***				4.717***				0.807			
	(0.766)				*(0.794)*				*(0.895)*				*(0.788)*				*(0.749)*				*(0.860)*				*(0.986)*				*(0.781)*			
Population growth (lagged)	6.632***				10.879***				6.460***				9.660***				9.180***				11.317***				7.097**				4.388**			
	(2.242)				*(2.574)*				*(2.442)*				*(2.673)*				*(2.373)*				*(2.936)*				*(3.156)*				*(2.199)*			
TFP growth	0.094				0.229**				0.231***				0.250***				0.283***				0.278***				0.352***				0.120			
	(0.086)				*(0.095)*				*(0.086)*				*(0.097)*				*(0.085)*				*(0.101)*				*(0.108)*				*(0.079)*			
Real long-term interest rate (lagged)	0.019***				0.034***				0.021***				0.018***				0.016***				0.016***				0.034***				0.006			
	(0.005)				*(0.006)*				*(0.006)*				*(0.005)*				*(0.004)*				*(0.005)*				*(0.006)*				*(0.005)*			
Share of indirect taxes (lagged)	1.872**				2.796**				1.075				0.654				-1.211				-0.022				2.963**				0.340			
	(0.884)				*(1.114)*				*(0.781)*				*(0.992)*				*(0.891)*				*(1.204)*				*(1.433)*				*(0.839)*			
Unemployment outflows	-0.378***				-0.376***				-0.426***				-0.239***				-0.241***				-0.291***				-0.236***				-0.293***			
	(0.061)				*(0.065)*				*(0.071)*				*(0.055)*				*(0.052)*				*(0.057)*				*(0.058)*				*(0.065)*			
Share of government consumption (lagged)	-3.205**	4.711***																														
	(1.303)	*(1.125)*																														
Employment protection legislation (lagged)	-0.009	-0.047			0.019	-0.037			-0.104**	-0.107**			-0.032	-0.023			0.004	0.006			0.006	-0.016			-0.090	-0.057			0.016	-0.017		
	(0.036)	*(0.032)*			*(0.042)*	*(0.036)*			*(0.047)*	*(0.042)*			*(0.035)*	*(0.036)*			*(0.034)*	*(0.037)*			*(0.037)*	*(0.034)*			*(0.070)*	*(0.060)*			*(0.035)*	*(0.035)*		
Unemployment outflows (lagged)		0.675***	-0.014***			0.651***	-0.009***			0.568***	-0.005**			0.605***	-0.000			0.590***	-0.000			0.581***	-0.001***			0.578***	-0.000			0.789***	-0.006***	
		(0.050)	*(0.003)*			*(0.051)*	*(0.002)*			*(0.055)*	*(0.002)*			*(0.052)*	*(0.000)*			*(0.051)*	*(0.000)*			*(0.050)*	*(0.000)*			*(0.054)*	*(0.000)*			*(0.057)*	*(0.001)*		
Employment rate		4.707***				3.234***				4.563***				3.689***				3.566***				4.254***				4.559***				2.760***			
		(0.672)				*(0.719)*				*(0.817)*				*(0.967)*				*(0.940)*				*(0.898)*				*(1.083)*				*(0.946)*			
User cost of capital		0.007				-0.004				0.007				0.007				0.000				0.006				0.006				0.031***			
		(0.005)				*(0.006)*				*(0.005)*				*(0.005)*				*(0.005)*				*(0.005)*				*(0.006)*				*(0.005)*			
Wage-interest rate ratio		-0.053***				-0.060***				-0.054***				-0.086***				-0.068***				-0.070***				-0.077***				-0.070***			
		(0.018)				*(0.021)*				*(0.019)*				*(0.023)*				*(0.021)*				*(0.021)*				*(0.025)*				*(0.018)*			
Gross fixed capital formation		3.934***				4.231***				3.923***				4.594***				4.173***				5.307***				5.718***				3.797***			
		(0.663)				*(0.777)*				*(0.785)*				*(0.856)*				*(0.773)*				*(0.762)*				*(0.913)*				*(0.694)*			
Growth in real disposable household income		0.037				0.200				-0.237				0.363				0.656				0.512				0.247				0.116			
		(0.391)				*(0.497)*				*(0.434)*				*(0.489)*				*(0.460)*				*(0.444)*				*(0.512)*				*(0.396)*			
Inflow into unemployment		-0.070				-0.108				-0.129				-0.038				-0.146				0.005				0.067				-0.101			
		(0.087)				*(0.086)*				*(0.094)*				*(0.096)*				*(0.101)*				*(0.088)*				*(0.085)*				*(0.098)*			
Government net lending (lagged)				-0.246***				-0.090*				-0.239***				-0.166***				-0.159***				-0.148***				-0.095*				-0.168***
				(0.051)				*(0.051)*				*(0.050)*				*(0.053)*				*(0.053)*				*(0.053)*				*(0.051)*				*(0.051)*
Liquid liabilities (total economy; lagged)				-6.340***				-4.418***				-2.471**				-6.109***				-6.508***				-5.541***				-7.362***				-4.809***
				(1.253)				*(1.169)*				*(1.150)*				*(1.350)*				*(1.325)*				*(1.319)*				*(1.197)*				*(1.228)*
Share of government wage consumption (lagged)					-0.916	6.527***																										
					(2.056)	*(1.749)*																										
Share of government non-wage consumption (lagged)									-8.552***	2.752																						
									(2.443)	*(2.140)*																						
Direct job creation (lagged)													-62.276***	9.273																		
													(13.590)	*(14.472)*																		
Hiring incentives (lagged)																	-9.271	71.203***														
																	(15.468)	*(18.955)*														
Training expenditures (lagged)																					27.543*	26.080*										
																					(15.282)	*(13.730)*										
Public employment services (lagged)																									70.153*	50.128						
																									(41.456)	*(40.310)*						
Spending on unemployment benefits (lagged)																													-19.648***	8.734*		
																													(4.498)	(4.477)		
Observations	150	150	150	150	130	130	130	130	130	130	130	130	140	140	140	140	140	140	140	140	140	140	140	140	128	128	128	128	140	140	140	140
R-squared	0.972	0.981	0.929	0.474	0.966	0.985	0.947	0.433	0.969	0.984	0.813	0.435	0.969	0.986	0.622	0.484	0.972	0.985	0.863	0.484	0.972	0.986	0.855	0.481	0.972	0.986	0.815	0.545	0.971	0.976	0.685	0.478

Note: All equation systems are estimated using 3SLS. All regressions contain country fixed effects. Standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Source: Own estimations

Annex 2: Forecasting labour market spending

The forecast of the increase in labour market policy spending uses a regression based ARIMA model (Auto-regressive Integrated Moving Average). The aim is to find a structure of lags which remove autocorrelations from the forecast errors. The term auto-regressive stands for the lags of the stationarize series appearing in the forecasting equation, moving average stands for the lags of the forecast errors, and integrated means that times series must be differentiated to be stationary[6].

ARIMA(p,d,q) model can be defined according to three dimensions: p the number of auto-regressive elements, d the number of first difference necessary to stationarize the series, and q the number of lagged forecast error in the prediction equation. In most cases, we use an ARIMA(1,0,0) or ARIMA(2,0,0). The time series are stationary and one (or two) autoregressive element is sufficient to produce white noise error terms. A regression based ARIMA consists in adding an explanatory variable, the rate of unemployment in our case, to the structure of AR and MA terms. There are two main steps to be followed:

Step 1: Identifying the order of differencing:

The first step consists in identifying the order of differencing needed to stationarize the data. We first use the auto-correlation function plot to look at the degree of auto-correlation. High degree of auto-correlation indicates the need for a first difference. In most cases, the time series for active and passive labour market spending is stationarize by taking the ratio over GDP, which is mean reverting.

Step 2: Identifying the number of AR and AM terms:

In order to determine the number of autoregressive and moving average terms, one has to look at the auto-correlation and partial autocorrelation diagrams. In particular, the number of partial autocorrelation significantly different from zero gives the number of autoregressive elements that must be included in the ARIMA. The number of autocorrelation significantly different from zero gives the number of moving average element. In most cases, the ARIMA models integrate one or two autoregressive terms and no moving average. The structure of the ARIMA is chosen according to its ability to produce white nose error term. The following equation, including sometimes a second auto regressive term, is estimated for each country:

$$Y_t = \hat{\beta}_0 + \hat{\beta}_1 Y_{t-1} + \hat{\beta}_2 U_t + \varepsilon_t$$

where Y_t refers to labour market spending as a share of GDP and U_t to the annual rate of unemployment.

[6] Based on notes by Robert Nau http://web.duke.edu/~rnau/411home.htm Chapter 10