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Labour market  
and collective bargaining  
in Iceland: sharing the spoils  
without spoiling the shares

**Urban Sila**

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ECONOMICS DEPARTMENT

**LABOUR MARKET AND COLLECTIVE BARGAINING IN ICELAND: SHARING THE SPOILS  
WITHOUT SPOILING THE SHARES**

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**By Urban Sila**

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## Abstract/Résumé

### **Labour market and collective bargaining in Iceland: sharing the spoils without spoiling the shares**

Iceland has high living standards, low poverty, high inclusiveness and one of the most sustainable pension systems. It is the most highly unionised country in the OECD and, in the past, successful social pacts have protected the lowest paid workers during crises, and on occasion helped fight inflation. Nevertheless, Iceland experiences recurrent bursts of social tensions and labour unrest that often result in large wage awards, particularly in times of economic boom. Iceland is prone to accentuated economic cycles, and the pro-cyclical nature of collective bargaining aggravates these harmful dynamics.

Social partners often have disagreements over what has been agreed in the past and they can have differing views on the state of the economy. Trust among the social partners has been undermined and wage co-ordination is low. There is a large number of unions, many of them very small, and wage demands are often not consistent with macroeconomic stability. Labour unrest frequently originates in the public sector as wages lag behind the private sector.

Fostering trust and increasing wage co-ordination would make collective bargaining more effective and help sustain the benefits of the system for future generations. A technical committee should be established to provide reliable and impartial information to wage negotiators. Wage negotiations could start with “wage guidelines” issued by the major labour and employer confederations. State mediator should have greater powers in order to improve wage co-ordination and support the “wage guidelines”.

This working paper relates to the 2017 OECD Economic Survey of Iceland  
(<http://www.oecd.org/eco/surveys/economic-survey-iceland.htm>).

JEL classification: J21, J24, J31, J51, J52, J53

Keywords: labour market, wages, wage negotiations, collective bargaining, trade unions, employers, dispute resolution, mediation, productivity, competitiveness

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### **Marché du travail et négociations collectives en Islande: partager le butin sans gâcher les parts**

L’Islande se caractérise par des niveaux de vie élevés, un faible taux de pauvreté et une forte inclusivité, et son système de retraite est l’un des plus viables. C’est aussi le pays de l’OCDE où le taux de syndicalisation est le plus élevé et, dans le passé, les pactes sociaux ont réussi à protéger des crises les travailleurs les moins bien payés, et contribué à l’occasion à lutter contre l’inflation. Cependant, l’Islande connaît régulièrement des épisodes de tensions et mouvements sociaux qui aboutissent souvent à de larges augmentations salariales, particulièrement en période de dynamisme économique. Le pays a également tendance à avoir des cycles économiques très marqués, et le caractère procyclique des négociations collectives aggrave encore cette dynamique.

Les partenaires sociaux sont fréquemment en désaccord sur ce qui a été convenu dans le passé, et peuvent avoir des avis divergents sur l’état de l’économie. La confiance qui les unissait a été mise à mal, et la coordination salariale est faible. Il existe un grand nombre de syndicats, dont certains de très petite taille, et souvent, les exigences salariales ne sont pas compatibles avec la stabilité macroéconomique. Les mouvements sociaux ont souvent pour point de départ le secteur public, où les salaires sont inférieurs à ceux du secteur privé.

Favoriser la confiance et développer la coordination salariale permettraient de rendre les négociations collectives plus efficaces et contribueraient à pérenniser les avantages du système pour les générations futures. Il faudrait mettre sur pied un comité technique chargé de fournir des informations fiables et impartiales aux personnes chargées des négociations salariales, qui pourraient débiter par la rédaction de « lignes directrices » émanant des principales confédérations de salariés et d’employeurs. Les médiateurs de l’État devraient avoir davantage de pouvoirs pour améliorer la coordination salariale et défendre ces « lignes directrices ».

Ce Document de travail se rapporte à l’Étude économique de l’OCDE de Islande 2017  
(<http://www.oecd.org/fr/eco/etudes/etude-economique-islande.htm>).

Classification JEL: J21, J24, J31, J51, J52, J53

Mots clés : marché du travail, salaire, employées, syndicat, médiation, productivité, compétitivité

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## **LABOUR MARKET AND COLLECTIVE BARGAINING IN ICELAND: SHARING THE SPOILS WITHOUT SPOILING THE SHARES**

By Urban Sila<sup>1</sup>

Iceland suffers from recurrent bursts of social tensions and labour unrest. These often result in large wage awards that are inconsistent with macroeconomic stability. As seen in Figure 2.1, episodes of high wage growth have occurred regularly over the last thirty years, often in the environment of low inflation. Recently, Iceland has again experienced a period of elevated tensions and industrial disputes. In 2015, despite sluggish productivity growth and inflation below the central bank's target of 2.5%, wage bargaining conflicts erupted resulting in negotiated nominal wage awards - which set the minimum for all workers covered by the agreement – of more than 20% over three years. As often before, the government facilitated the wage agreements by introducing fiscal measures, including tax cuts, at an estimated net cost of 0.5% of GDP. Wages have been rising steeply and together with króna appreciation, this has caused external competitiveness to plummet.

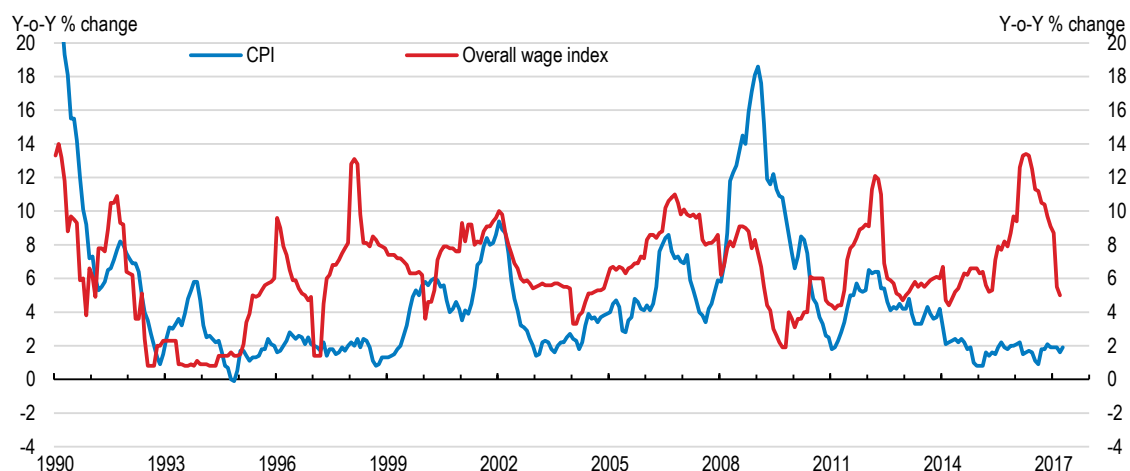
After 2015, tensions in the labour market have continued. Recent hikes in wages of elected officials and the fact that government has not provided sufficient funds for social housing, as agreed in the previous negotiation round, left many trade unions angry. Fishermen were on a disruptive strike from mid-December 2016 to mid-February 2017, resulting in loss of international market share for the fishing industry. In 2015, government, municipalities and major confederations of employers and workers entered an agreement (SALEK) to improve wage formation and coordination, based on Nordic examples. But there have been disagreements, and further implementation of the agreement is for now put on hold.

Yet, the system has had many successes, Iceland is the most highly unionised country in the OECD and wage bargaining is a cornerstone of the economy. In the past, social partners showed good policy cooperation, in particular in times of crisis. Trade unions and employer organisations in cooperation with the government entered the National Pact of 1990, a social pact against inflation, and successfully called for wage restraint in the face of a long history of high inflation and instability. The social pact also played an important role during the financial crisis. Unions and employers, again working with the government, focused on various policy measures to combat the crisis and to protect the lowest paid workers. While average wages lost significant value, wages of the lowest paid were maintained or even increased in real value (Ólafsdóttir and Ólaffson, 2014). Iceland has the lowest poverty rate among the OECD countries.

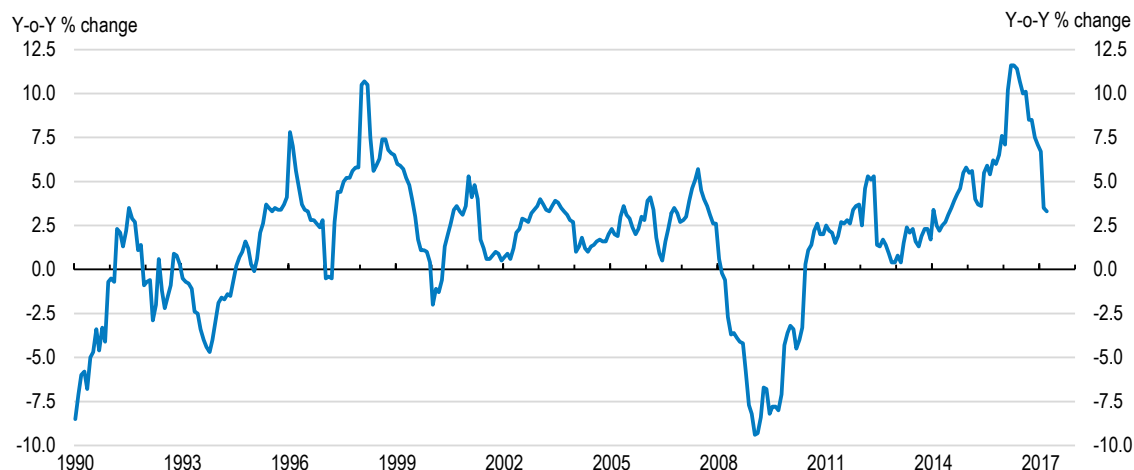
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1. Urban Sila (OECD/Economics Department). The author would like to thank Douglas Sutherland, Patrick Lenain, Alvaro Pereira (OECD/Economics Department), Andrea Garnerio (OECD/Directorate for Employment, Labour and Social Affairs) and Icelandic officials for valuable discussions and comments. Special thanks are due to Damien Azzopardi for statistical support and Brigitte Beyeler (both OECD/Economics Department) for technical preparation.

Figure 1 **There have been recurrent episodes of high wage awards**  
**A. Wage Index and CPI**



**B. Real wages**



Source: Statistics Iceland; and OECD Consumer Prices (MEI) dataset.

The wage formation system and trade unions have played an important role in promoting income equality, inclusiveness and reducing poverty. Over the years the social partners have taken on joint custodianship of much of welfare policy, embodying one of the key pillars of the Icelandic labour market. This includes a fully-funded occupational pension system, sickness funds, rehabilitation funds for long-term ill or injured workers, and funds for continuous education of lower skilled workers and life-long learning. The Icelandic labour market model has been at the same time successful in maintaining a flexible labour market with high labour market participation and low unemployment.

Paradoxically, the Icelandic bargaining model has been less successful in times of economic boom. During such periods the trade unions have often approached collective rounds fragmented and with little regard for wider consequences of their demands. The situation is exacerbated due to a high number of unions (about 200), some of them very small, often organised along occupational lines (Holden, 2016; SALEK, 2016). A very large number of agreements need to be reached and there is a high potential for co-ordination failure. As the unemployment rate is normally low in Iceland, in times of boom the scarcity of labour supply may foster strong wage demands in some sectors. The Central bank of Iceland (2016) estimates that real wages in Iceland are much more responsive to the unemployment gap compared to other countries - a negative unemployment gap makes wages grow

more steeply - consistent with the notion that wage demands are more extreme in good times, while more conciliatory in bad times.

Unions often approach the negotiations with "the need to correct wage development of past years", particularly in the public sector. In turn, wage demands by one union get translated into high wage demands by others, unleashing leap-frogging of wage demands, where wage settlements have a strong tendency to exceed the wage outcome of previous settlements as each union tries to get their members the largest award (SALEK, 2016; Holden, 2016; OECD, 2015a). Excessively high wage growth results in the loss of competitiveness and pressure on inflation (see also Annex). Eventually, the central bank has to react to the build-up of inflationary pressure, resulting in appreciation of the krona and slowing of the economy.

Iceland is a small open economy with a limited production base and exposed to terms of trade shocks, making it prone to boom and bust cycles. In addition, fiscal policy and also monetary policy have often failed to act in a firm counter-cyclical manner (OECD, 2015a). High wage pressures in good times work pro-cyclically and contribute to the overheating of the economy, thereby adding to these harmful dynamics. Growing imbalances may eventually even lead to another bust. It is therefore in everyone's interest that the structural weaknesses of collective bargaining are corrected. This would ensure that benefits of growth are shared widely without disruptive strikes and risks to growth and stability.

This paper first describes the main features of the Icelandic labour market. It discusses unionisation and main characteristics of collective bargaining. It also analyses the recent large wage awards and their impact on competitiveness. The following section analyses the institutional framework of Icelandic wage negotiations and offers some policy recommendations. Trust among the negotiating parties should be fostered, and a shared understanding of the state of economy can facilitate this. Wage coordination should be improved and state mediator could be given greater powers. Finally, the paper also offers some discussion on digitalisation and changes in the organisation of work and their impact on collective bargaining.

## **Collective bargaining and the labour market**

### ***The Icelandic labour market is flexible but labour productivity is low***

The Icelandic labour market is quite flexible, with substantial labour mobility, flexible hours and wages, and variable participation (Central bank of Iceland, 2016; Ólafsdóttir and Ólaffson, 2014; Ólafsdóttir, 2010). The strictness of Iceland's employment protection is low. Rules for hiring and firing are lenient. Companies can easily adjust to changed demand by expanding or reducing staffing levels or by raising or lowering the number of hours worked. Furthermore, the number of part-time and full-time employed varies with the business cycle. Similarly to other Nordic countries, but unlike many European countries, Icelandic law stipulates only a few rights concerning the labour market. Instead, the protection of employees is set through collective agreements. There are no specific laws on the minimum wage, but as collective agreements determine minimum standards, negotiated wages under the contract effectively serve as minimum wages.

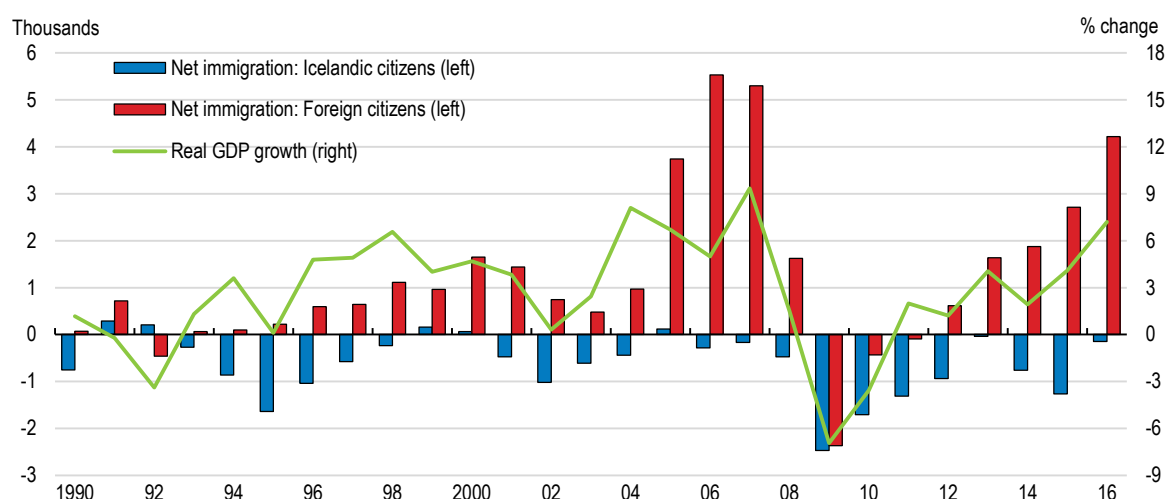
The labour market is flexible also in terms of significant seasonal variation in employment and migration across borders (OECD, 2015a). The flow of migrants is heavily affected by the business cycle (Figure 2). Migration of foreign nationals has increased especially after Iceland opened its labour market to other European countries after joining the EEA (European Economic Area). Icelanders particularly emigrate from Iceland in times of recession, while foreigners flow in when economy is strong. Generally, Icelandic nationals out-migrate primarily to the other Nordic countries (Ólafsdóttir



and Ólafsson, 2014). While immigrants often in-migrate to work in the booming low-skill jobs - recently in tourism and construction - many Icelanders who out-migrate are highly skilled (OECD, 2015a). Such high labour mobility can also have implications for wage negotiations. For instance, mobile Icelandic workers, such as doctors and nurses, can easily find jobs in other Nordic countries and leave the country when they perceive wages in Iceland are too low.

Greater labour market flexibility has contributed to a low unemployment rate. On average, over the 1974-2008 period, the unemployment rate stood at about 2.5%, well below the OECD average of 6.3% (Figure 3, panel A). Only in the recent financial crisis did unemployment rate rise above 8%, but it has since dropped to around 3%. In addition, the incidence of long-term unemployment is very low. Only 16% of the unemployed had been unemployed for more than a year in 2015, below the OECD average of 34%, and the percentage of the labour force unemployed for a year or longer is about 0.6%, more than three times lower than the OECD average.

Figure 2. **Migration flows are heavily influenced by the economic cycle**



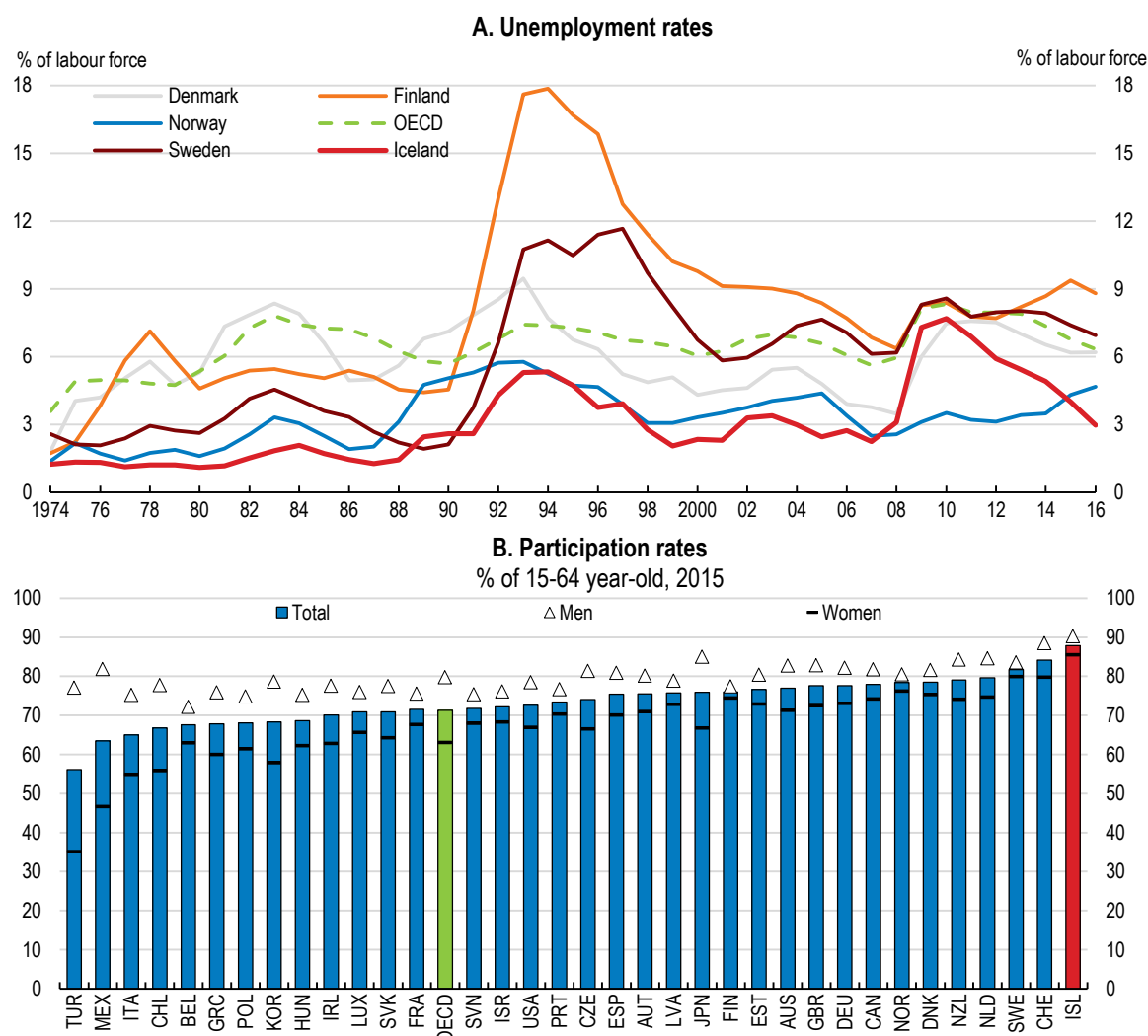
Source: Statistics Iceland; and OECD Analytical database.

The labour force participation rate of the working age population is 88%, the highest among OECD countries (Figure 3, panel B). The participation rate is high across all age groups, but particularly high for young workers (15-24) - which in fact is partly problematic, as Iceland faces a problem of high school dropout - and older workers (54+). Icelandic workers also work relatively long hours compared to other western and Nordic economies. Icelanders retire very late; the average effective age of labour-market exit for men is 69.4, and for women 68 years, about 5 years above the OECD average for both (see also Figure 2.8 panel A below; OECD, 2015b).

Living standards are high, but mostly on the account of work effort, as labour productivity is relatively low (Figure 4). Measured in PPP, GDP per capita in Iceland is about 13% above the OECD average. The employment rate is 19 percentage points above the OECD average, and working hours of employed persons are about 6.5% above the OECD average. In contrast, labour productivity (GDP per hour) is 11% below the OECD average. Iceland is the only Nordic country with productivity below the OECD average. Furthermore, the growth of labour productivity has also been slow. The average annual increase in labour productivity for the total economy since 2008 has been mere 0.4%, among the lowest for OECD countries.

Slow productivity growth is not commensurate with large wage awards that have been recently agreed in wage negotiations. Moreover, reducing the amount of work and raising productivity could improve the work-life balance of Icelandic workers. According to the OECD Well-being indicators (OECD, 2015c), Iceland ranks in the bottom fifth of OECD countries on the high share of employees working very long hours and on how little time workers devote to leisure and personal care.

Figure 3. Unemployment rate has been low and labour force participation is high



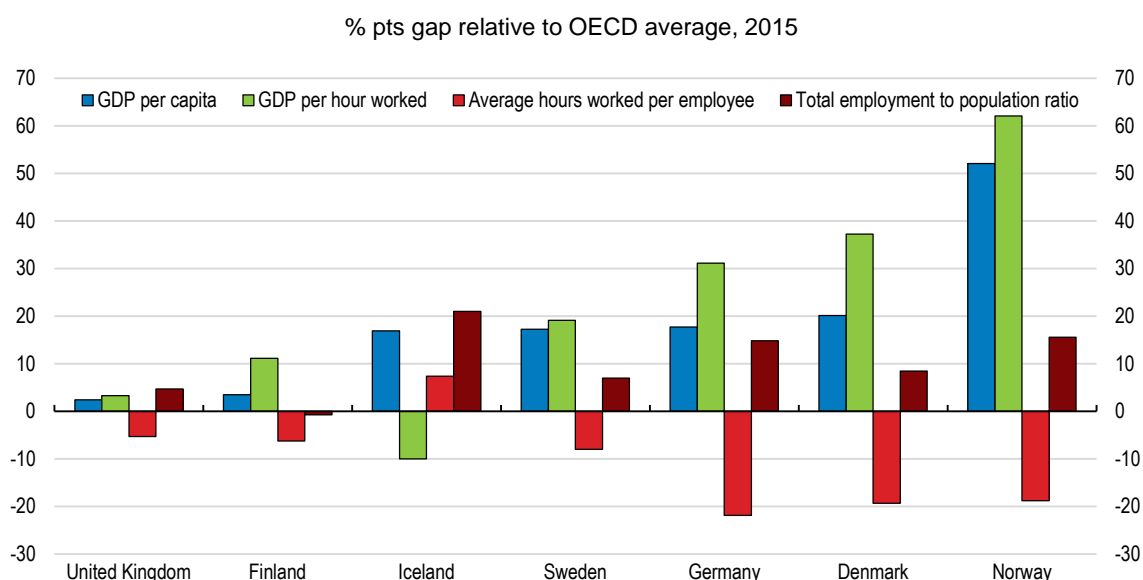
Source: OECD Analytical Database; and Labour Force Statistics.

### *Iceland is very highly unionised*

The organizational level of both unions and employers is high in Iceland. The unionisation density in Iceland is in fact the highest in the OECD (Figure 5, panel A.). This is even more striking given the general steady decline in unionisation in OECD countries since the 1970s (Figure 5, panel B). The push towards more collective bargaining at the enterprise level, the decline of manufacturing and shift towards services, the declining role of the public sector and the spread of flexible contracts have all been identified as the main causes behind this trend (OECD, 2004 and 2017; Hayter et al., 2015; Visser, 2016).

Despite the trend decline in unionisation, the Nordic countries maintained high levels of union membership and collective bargaining coverage (Figure 5, panel C). Institutional factors and regulation play an important role in this. For example, one crucial institutional determinant of union membership for example is the existence of the so-called Ghent system, where unemployment benefits and other welfare payments are administered by union-affiliated institutions, as is the case in Denmark, Finland, Sweden, and also in Iceland.

Figure 4. **GDP per capita is high due to work effort, while productivity is low**



Source: OECD Productivity database.

A large share of welfare payments is administered through funds under the custodianship of the social partners. These include a fully-funded mandatory occupational pension system (see Box 1), sickness funds, rehabilitation funds for long-term ill or injured workers, and funds for continuous education of lower skilled workers and life-long learning. The social partners have further ambitions to transfer the custodianship of the unemployment insurance fund and the labour market activation institutions from the public Directorate of Labour to the social partners (Ólafsdóttir and Ólafsson, 2014).

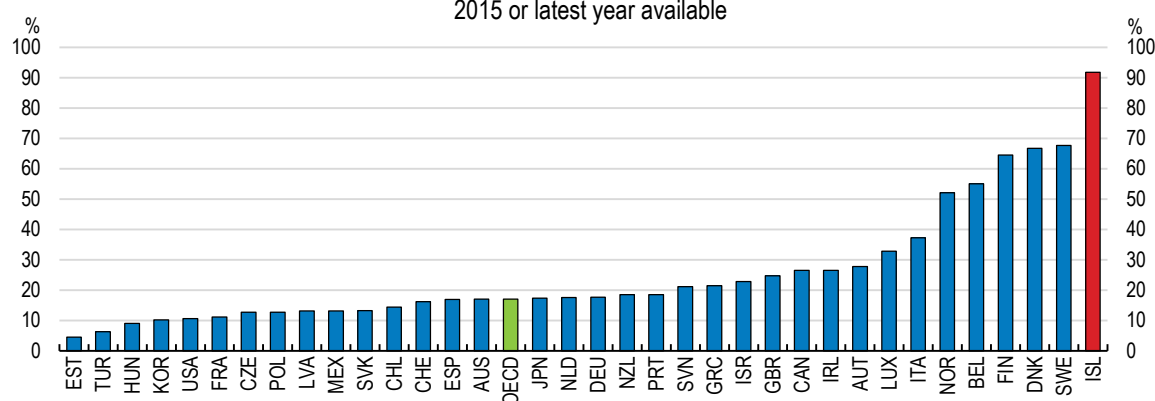
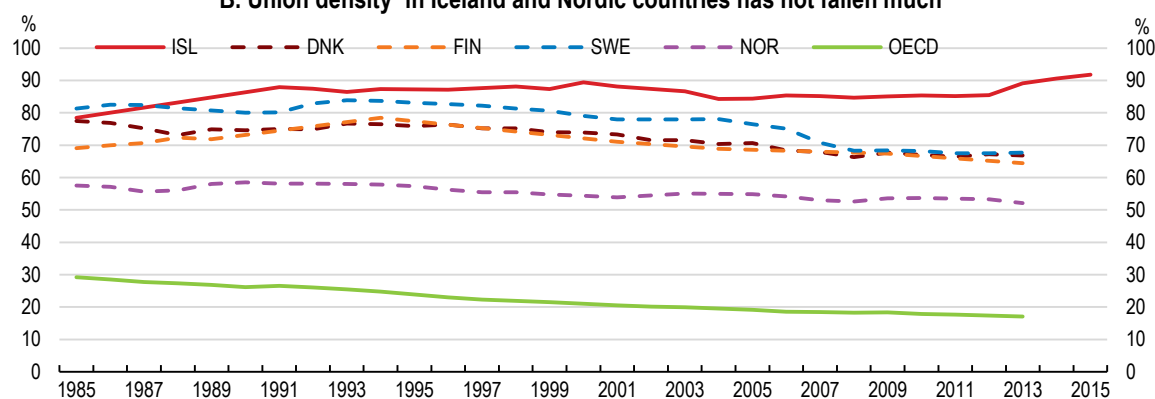
Another important determinant is the practice of administrative extension of collective agreements, that impacts bargaining coverage (OECD, 2004), or equivalent measures to that effect. In Iceland the law stipulates the automatic extension of the rights bargained for in the labour market into universal rights for everybody, and terms in collective contracts set the minimum. The Icelandic Confederation of Labour estimates that bargaining coverage in Iceland is close to 95%, even higher than indicated in Figure 2.5, panel C, with only the very top managerial positions in public and private sectors excluded (Ólafsdóttir and Ólafsson, 2014).

The Act on Working Terms and Pension Rights Insurance (55/1980) stipulates that "Wages, and other working terms agreed between the social partners shall be considered minimum terms, independent of sex, nationality or term of appointment, for all wage earners in the relevant occupation within the area covered by the collective agreement. Contracts made between individual wage earners and employers on poorer working terms than those specified in the general collective agreement shall be void." It is immaterial whether a worker is a member of one of the organisations involved in the relevant wage agreement or not; the rights of foreign labour are therefore the same as for locals (SALEK, 2016; Ólafsdóttir and Ólafsson, 2014).

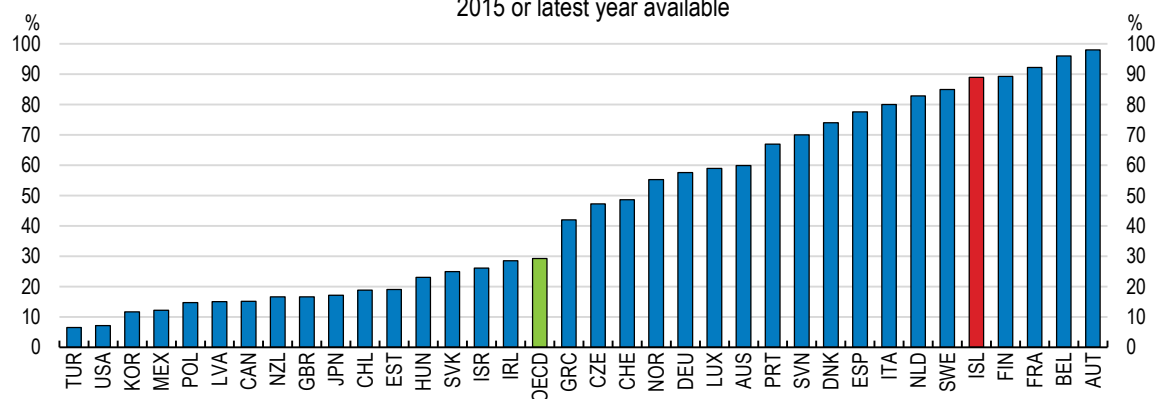
Figure 5. Union density in Iceland is the highest in the OECD

**A. Union density<sup>1</sup> in Iceland is high in international comparison**

2015 or latest year available

**B. Union density<sup>1</sup> in Iceland and Nordic countries has not fallen much****C. Bargaining coverage<sup>2</sup> in Iceland is also high**

2015 or latest year available



1. Union density rate: net union membership as a proportion of wage earners in employment.

2. Adjusted bargaining coverage rate: proportion of all wage earners with right to bargaining.

Source: J. Visser, ICTWSS Database version 5.1. Amsterdam: Amsterdam Institute for Advanced Labour Studies (AIAS), University of Amsterdam. September 2016 completed with the OECD Policy Questionnaires.

### Box 1. The Icelandic pension system

Iceland has a three-pillar pension system (Ólafsdóttir and Ólafsson, 2014; SALEK, 2016; Central bank of Iceland, 2016; OECD, 2015b):

First pillar: A public pay-as-you-go universal Social Security System secures a minimum pension for everyone. The legal basis dates from 1946. It is tax funded and based on a defined-benefit scheme. It uses flat rate benefits with a high degree of incomes-testing. It has a universal coverage, with rights based on period of residence in the country. The Social Security pension has three components: basic pension, pension supplement and household supplement.

Second pillar: A funded Occupational Pension System (OPS) with defined contributions, introduced as a result of collective bargaining between unions and employers' federations in 1969. Participation in the OPS is compulsory, becoming mandatory for employees in 1974, and for all employed persons (including the self-employed) from 1980. Nowadays the overall contribution is 12.5% of total earnings (4% from employees and the rest from employers in the private market, while the central government pays 11.5% and the municipalities 12%). The system promises 56% of average career earnings as a minimum, despite being a defined-contribution scheme. The yearly accrual rate is 1.4% for each year of service. The earnings base is average lifetime salary for each year of membership. After pensioners start receiving their pension, the amount they get is indexed to the cost of living from then on. Contributions are exempt from taxation when paid in, but fully taxed when taken out as earnings. The OPS funds are managed by the unions and employers' organisations and are supervised by the Financial Supervisory Authority.

Until recently, the public sector pension funds were different in that they were based on defined benefits and were partially funded with a state guarantee. The social partners agreed that the two systems - private and public - would be harmonised in order to make it easier to move freely between jobs. The private sector employer's contribution will rise from current 12.5% to 15.5% as of 01 July 2018, to be in line with the public sector. New legislation has been passed to switch a large part of the public pension system to defined benefit, with pension eligibility age increased from 65 to 67, as in the private sector. The state however guarantees unchanged rights of those who are already living on pension income and of pensioners and fund members who turned 60 years old before the effective date of the new agreement (1 June 2017). To cover gaps and to ensure that the system is funded, the government facilitated the change with a one-time injection worth 7% of GDP. A major part of the implicit state guarantee for pension liabilities has thus been removed.

Third pillar: Individual Pension Accounts, legislated in 1997, are voluntary accounts based on defined contributions. Individuals can pay contributions up to 4% exempt from income tax (when paid in) and have the right to 2% additional contribution from employers with the first 2%. Hence, altogether 6% are exempt from direct taxation when paid in. These are managed by occupational funds, banks or private investment funds and supervised by the Financial Supervisory Authority.

The system is redistributive to a degree and succeeds well in alleviating poverty amongst the elderly. Iceland has one of the lowest income poverty rates among older people in the OECD, 2.8% compared to the OECD average of 14.7% for people aged over 75 (OECD, 2015b). A great majority of old age pensioners receive some pension from Social Security, but only a small minority (less than 5%) have to rely solely on the minimum guarantee (Ólafsdóttir and Ólafsson, 2014).

The second pillar aims at replacing the income distribution in the labour market proportionally, without any upper limit, and has been gradually increasing in importance. The individual pension accounts (the third pillar) have an incomplete coverage, as they are voluntary. Nonetheless, about 60% of wage earners are contributing, which is high by international standards. The 40% who do not contribute are disproportionately low-income earners and single parents. The importance of the third pillar has declined in recent years, partly due to losses during the financial crash, and partly due to the fact that the government (as one of the crisis measures) opened up the pillar (for those under the age of 60) for early access to pension savings up to a prescribed sum.

The first two pillars are the main building blocks of the Icelandic pension system. Together, they result in the net pension replacement rate to range roughly between 75 and 90% of individual earnings, depending on income (OECD, 2015b). The Occupational Pension Funds (OPFs) pay out about 65% of all old age pensions and the Social Security System 35%. Since the Social Security pillar uses means testing to a high degree, the amounts paid to pensioners from Social Security will decrease as occupational pensions increase with growing maturity of

the occupational funds. When the occupational pensions system becomes fully mature in 2025-2030, the proportion paid by the occupational pension funds is estimated to approach 90%.

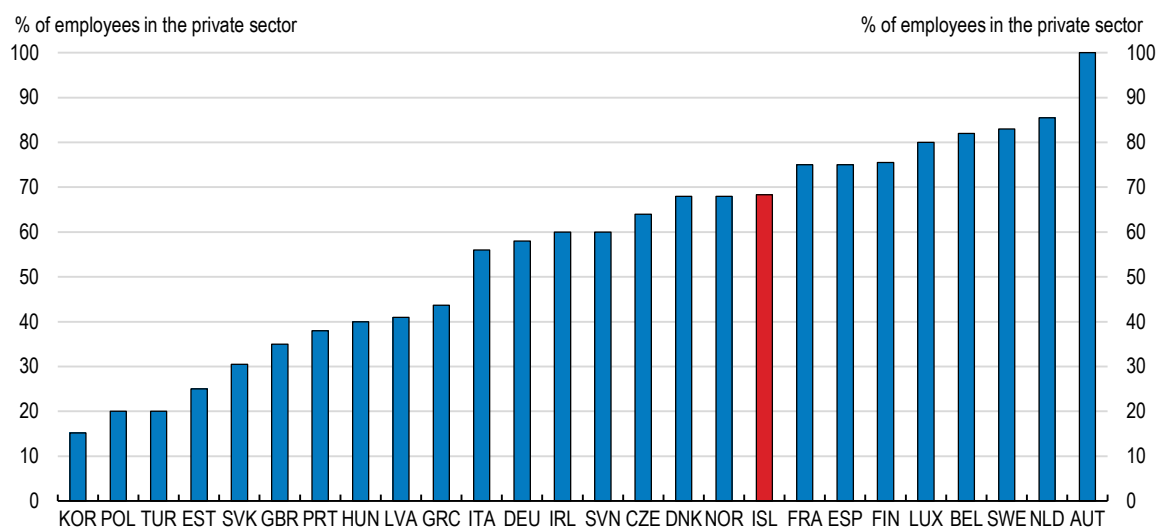
The OPFs are fully funded. If they show a deficit, they need to either increase contributions or cut pension payments. The benefits paid by the OPFs funds without an employer guarantee will ultimately depend on their net returns and will therefore vary from one fund to another. However, the investment risk is borne collectively by the members of each fund, and there are no individual accounts, as in pure defined-contribution plans (Central bank of Iceland, 2016).

On the whole, the Icelandic pension system is in a good position, making aging less of a problem than in many other OECD countries. Moreover, Iceland has a younger population compared to other European countries. It also has a very high labour force participation rate and a high average age of exit from the labour market. Both, ample job opportunities and absence of a special retirement scheme have contributed to the late take up of pensions. Together with the three-pillar structure of the system this has meant that public pension expenditures have been a relatively low burden on the public budget, 2.1% of GDP, compared to the OECD average of 7.9% (OECD, 2015b). The size of the assets of the OPFs is the second largest in the OECD, approaching 150% of GDP (Central bank of Iceland, 2016; OECD, 2015b).

The total employment in Iceland consists of about 180,000 workers. According to SALEK (2016) there are about 200 different unions, of which 111 belong to four large federations of unions: The Icelandic Federation of Labour (ASÍ), The Federation of State and Municipal Employees (BSRB), the Association of Academics (BHM) and the Icelandic Teacher's Union (KÍ). Each of these federations represents several trade unions. Approximately 5,000 employees belong to unions that are not members of any federation and 21,000 self-employed who are not members of any union. The trade union landscape is quite scattered and a relatively low number of employees are on average represented by each collective agreement.

ASÍ is the largest federation, representing approximately 93,000 workers in 51 different unions. It consists of mostly private sector unions and includes trade unions of general workers, office and retail workers, seamen, construction and industrial workers, electrical workers and various other professions. The other major federations, BSRB, BHM and KÍ represent 22,000, 11,000 and 10,000 members, respectively, with 25, 27 and 8 unions in each. BSRB covers unions of workers in the fields of customs, police, fire service, health care, pre-school care. Each member-union of the BHM represents workers of particular profession such as psychologists, lawyers, architects and musicians. The (KÍ) is a joint organisation for all teachers, head teachers, deputy head teachers, and student counsellors, in preschools, primary schools, secondary schools, upper secondary schools and music schools.

The employers' organisation density is also relatively high (Figure 6). On the employer side there is SA-Business Iceland, a service organisation for Icelandic businesses that negotiates collective agreements with unions on wages and working conditions on behalf of its members. SA with its 6 member associations represents about 2,000 businesses in Iceland, accounting for 70% of all salaried employees. Important negotiators on the employer side are also the Icelandic Federation of Trade, the state, represented by the Minister of Finance and Economic Affairs, the municipalities and the city of Reykjavik.

Figure 6. **Employers' organisation density**

Source: J. Visser, ICTWSS Data base, version 5.1. Amsterdam: Amsterdam Institute for Advanced Labour Studies (AIAS), University of Amsterdam. September 2016 except figures for the Czech Republic, Finland, the Netherlands, Norway and Sweden which have been provided by National Authorities and OECD estimates based on the European Company Survey for Iceland.

The bargaining rights reside in individual unions. The unions from the private sector can give the mandate to negotiate to their respective federations or share it with other unions, but these can be withdrawn at any time before the signing of a collective agreement. Employers in the private sector, on the other hand, transfer their mandate to negotiate to their federation of employers upon becoming a member. Duration of collective agreements is either agreed by the parties, or - according to law - for one year, and, if not renegotiated after a year, automatically extended for one more year.

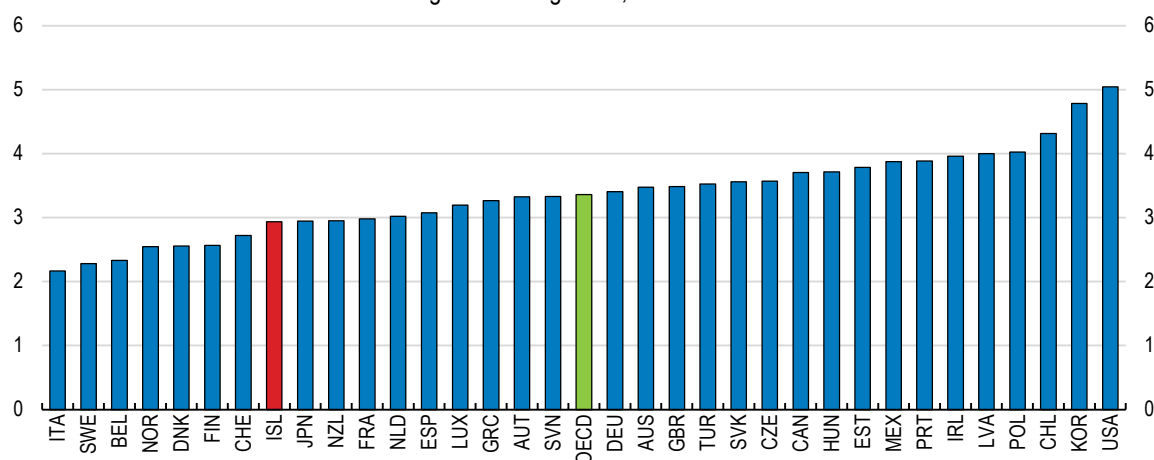
Collective agreements are negotiated at various levels - national, regional, cross-sectoral, firm level, plant level, or profession/occupation, reflecting the scattered nature of unions and differing scope of different unions, and also reflecting the fact that some unions give mandates for part of negotiations to federations. Employees in a firm can be covered by various agreements at the same time. However, generally there is no strict hierarchy among the various levels of collective agreements. Labour law does not stipulate that terms of higher-level agreements should necessarily prevail over the lower-level agreements. This depends on negotiating parties. In practice, the favourability principle is usually upheld and the terms in lower-level agreements can only be better for workers than in higher-level agreements, but there can be deviations when negotiating parties agree (OECD, 2017; SALEK, 2016).

### ***Inequality and poverty are low***

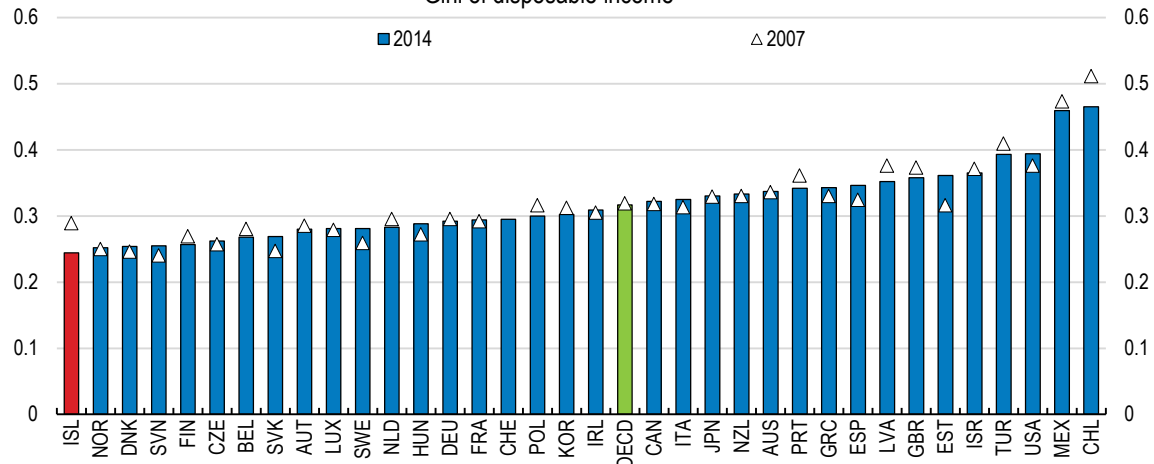
The wage formation system and trade unions have played an important role in promoting income equality, reducing poverty and increasing inclusiveness on the labour market (Box 2). Wage distribution is already compressed, but tax and benefits have a further equalising effect, resulting in Iceland currently being the OECD country with the lowest inequality in disposable income (Figure 7, panels A and B). Moreover, inequality in Iceland has been significantly reduced since 2007. This can be mostly attributed to a contraction of financial earnings during the crisis, but the policy of redistribution of tax and benefits has also had an important impact (Figure 2.7, panel C). The government raised the marginal income tax rate on higher incomes and on net wealth at the same time that benefit levels to the lower income groups were raised (Ólafsdóttir and Ólafsson, 2014). Among the OECD countries, Iceland also has the lowest share of people in relative poverty (with income below 1/2 of the median disposable income).

Figure 7. **Inequality is the lowest in Iceland and has decreased since 2007****A. Wages are compressed**

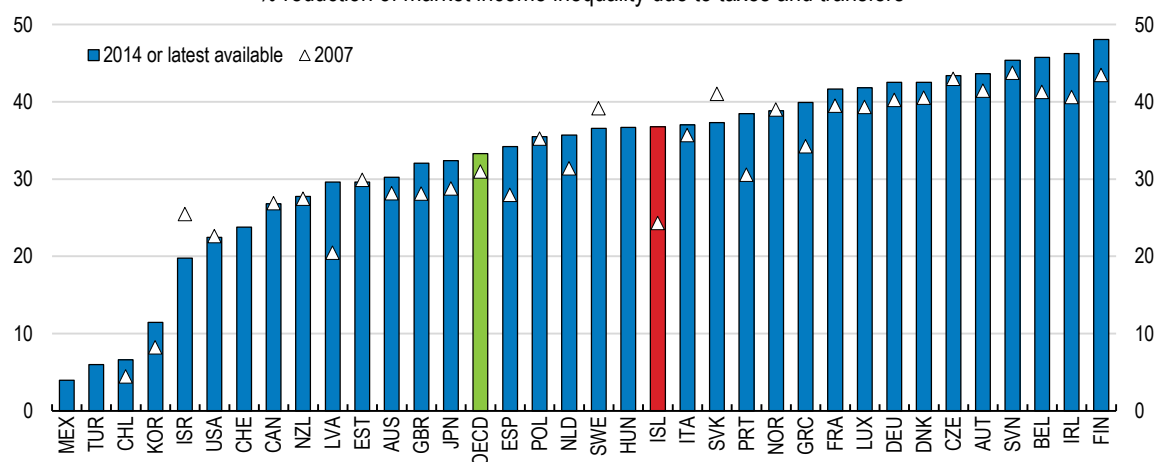
Decile 9/Decile 1 gross earnings ratio, 2015 or latest available

**B. Inequality is the lowest in Iceland and has decreased since 2007**

Gini of disposable income

**C. Taxes and transfers play a larger role in reducing inequality than prior to the crisis**

% reduction of market income inequality due to taxes and transfers



Source: OECD Income Distribution Database; and OECD Employment and Labour Market Statistics.



Iceland has very high job security. The OECD Job Quality database includes the indicator of job security that measures how likely a worker is to lose her job, how long she is likely to remain unemployed and how much financial assistance she can expect from government (OECD 2016a and 2015c). Workers facing a high risk of job loss are more vulnerable, especially in countries with smaller social safety nets. In Iceland, workers face an expected 0.7% loss of earnings if they become unemployed, much lower than the OECD average of 6.3% and the lowest in the OECD.

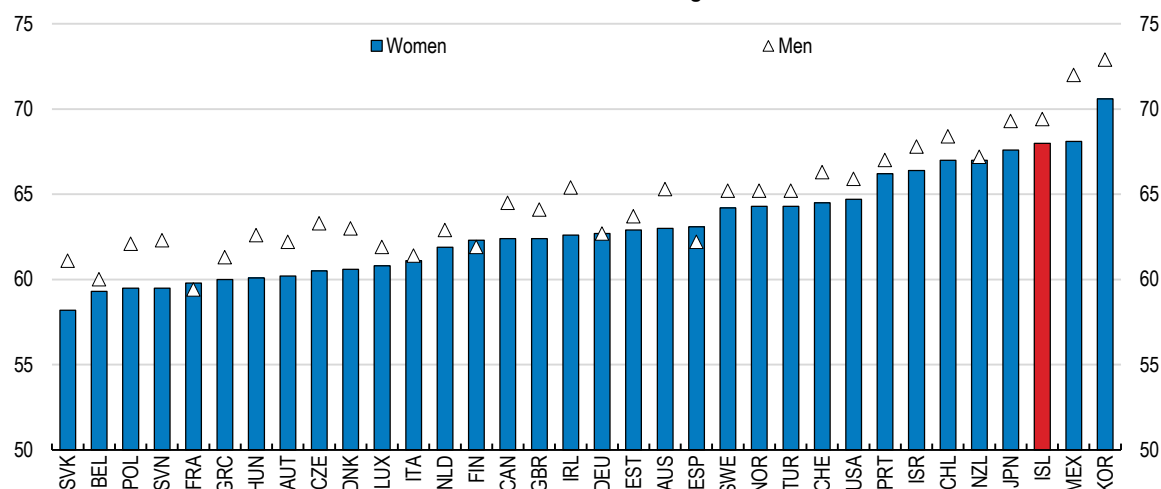
### **Box 2. Reducing gender gaps in the labour market**

Participation of women in the labour market is the highest among the OECD countries (Figure 2.3, panel B), and women exit the labour market very late (Figure 2.8, panel A). Union density for women in Iceland is greater than that for men. On the Global Gender Gap Index, Iceland takes the top spot (Figure 2.8, panel B; World Economic Forum, 2016). It is the top performer on political empowerment and educational attainment and in the top ten for economic participation and opportunity, due to high number of women among legislators, senior officials and managers. Based on the wage equality survey (from the World Economic Forum, Executive Opinion Survey) that asks, "In your country, for similar work, to what extent are wages for women equal to those of men," Iceland ranks third among the OECD countries. Snævarr 2015 finds that the "unexplained" gender wage gap (after controlling for other covariates) was about 5.1% in the 2011-2013 period and has been decreasing over time. The unexplained wage gap is higher than in Sweden, but lower than in Denmark and Norway.

Equal status and equal rights of men and women were legally established already in 1975, Iceland being the first Nordic country to do so. By law, for publicly-owned companies and public limited companies with at least 50 employees, boards of more than three members must have a membership of at least 40% of each gender. Moreover, companies with 25 or more employees are required to disclose the number of men and women employed as well as the number of men and women in management positions.

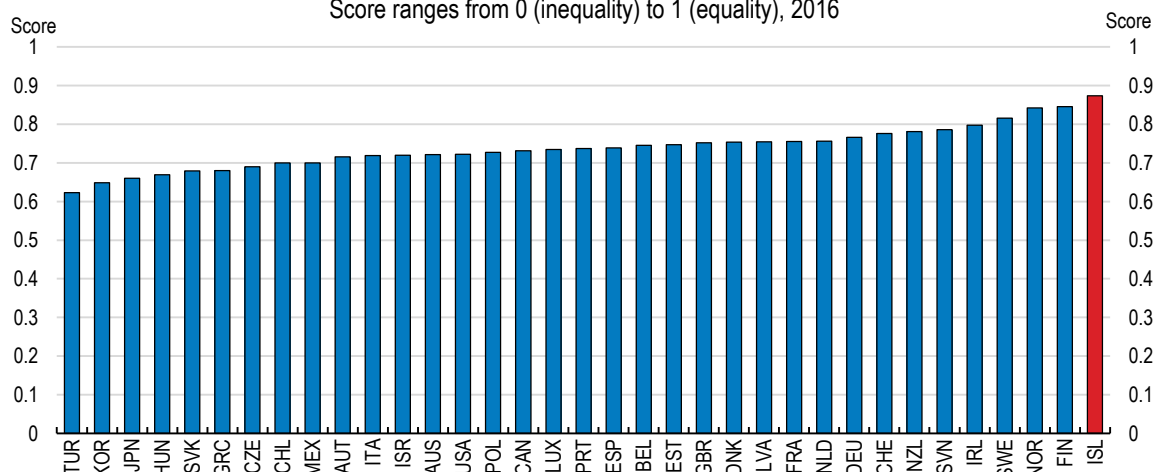
Despite a low gender gap the authorities are determined to reduce it further. The government has proposed a law whereby it will be compulsory for all companies with 25 employees or more to develop a certification scheme for gender pay equality, with the aim that all jobs of equal value are paid the same. The obligation nevertheless imposes implementation costs for the enterprises, such as auditing requirements. In this light, rolling out the scheme gradually, first for bigger firms and then for smaller ones, as proposed by the government, and monitoring the impact will allow the policy to be modified to avoid excessive burdens.

Figure 8. **Effective retirement age of women and the gender wage gap**  
**A. Effective retirement age**



**B. Global Gender Gap Index**

Score ranges from 0 (inequality) to 1 (equality), 2016

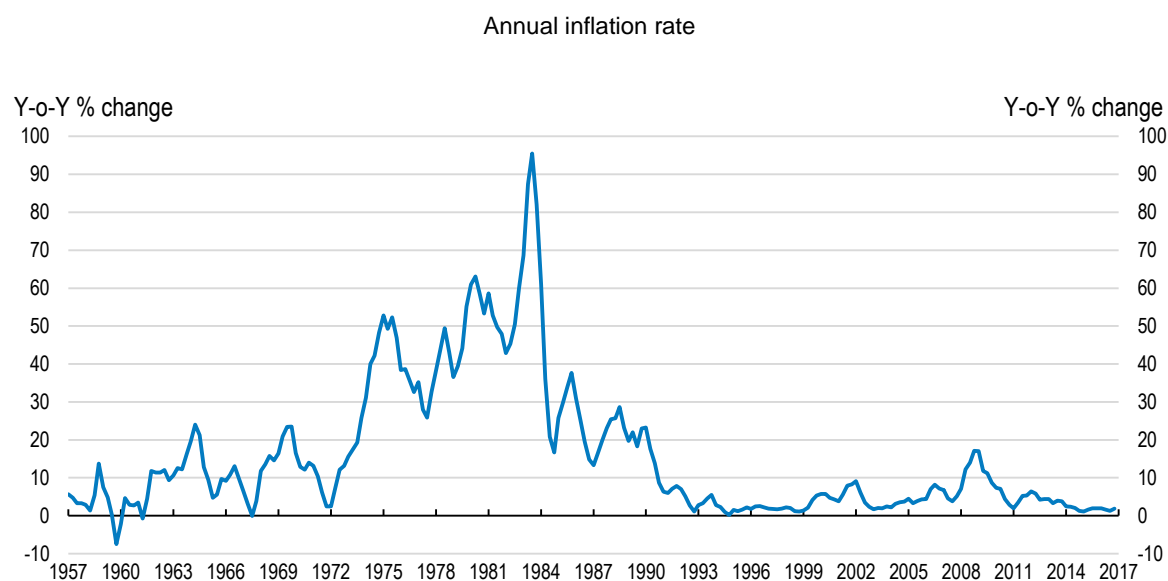


Source: OECD Pension at glance 2015; and The Global Gender Gap Report 2016 Dataset © 2016 World Economic Forum.

***Large wage awards from recent disruptive negotiations have eroded competitiveness***

At times, collective bargaining in Iceland can be disruptive and negotiations do not always take a wider economic picture into account, but this has not always been the case. A social pact against inflation was implemented in 1990, between unions, employers and the government. The social partners recognised that the previous policy of devaluations of the exchange rate was destabilizing, resulting in high inflation, erratic economic growth and volatile real household income. The social partners therefore agreed to lower nominal wage increases, while the government committed to lowering the inflation rate (Ólafsdóttir and Ólafsson, 2014). As can be seen in Figure 9, the early 1990s represent a turning point for inflation in Iceland, ten years before floating the exchange rate and the introduction of inflation targeting in 2001. There was a small rise in unemployment, however. Similarly, during the latest financial crisis, employers, unions and the government agreed on the Stability Pact of 2009, which successfully curbed wage increases. Negotiation focused more on policy measures to combat the crisis and to protect the income of the most vulnerable (Ólafsdóttir and Ólafsson, 2014).

Figure 9. A pact between social partners helped fight inflation in the early 1990s



Source: OECD Analytical Database.

In contrast, there have been periods when Iceland faced recurrent bursts of social tensions and labour unrest, particularly during periods of high economic growth, as has been the case recently. Often, the size of wage demands is not based on an evaluation of what is consistent with macroeconomic stability, but on wages of other groups. If settlements for some workers have already been made, those awards tend to set a floor for subsequent wage demands. In the private sector, the centralised contracts typically negotiate a minimum increase for everyone's wages. On top of this increase, sector and firm-level negotiations take into account specific local conditions offering top-ups. Finally, employees are entitled to meet once a year with their supervisor and negotiate possible changes in employment terms, often resulting in additional wage awards, contributing to wage drift over the settlement period. In the public sector, negotiations usually follow the private sector, with the award typically based on the negotiated wage increase. Top-ups to the base are less common in the public sector and there is little wage drift. However, when relative wages vis-à-vis the private sector get out of line, parity in public sector wages is often restored through the threat of industrial action.

In the 2015 bargaining round, doctors and teachers obtained three-year wage awards of around 25-30%, which led to demands by other unions for 50% pay increases. Employers, on the other hand, were offering annual increases of 3% (OECD, 2015a). A bitter wage bargaining dispute erupted resulting in nominal wage awards of more than 20% on average for the whole economy over three years. Wages are rising steeply (Figure 2.10). A favourable external environment has effectively helped inflation to remain low, but there is significant underlying pressure and a wage price spiral could easily develop. As seen in Figure 2.10, the large awards partly reflected the need for wages to catch up with past gains in productivity, but real wages have risen over and above the catch-up levels, especially as productivity growth has slowed recently. This has hurt external competitiveness of Iceland. Unit labour costs (ULC) are on the rise (Figure 11, panel A); in the last 5 years the growth of the Icelandic ULCs has been on average about 3 percentage point faster than on average in the other Nordic economies. The real effective exchange rate has also appreciated very steeply (Figure 11, panel B).

Figure 10. Wage awards have exceeded productivity growth

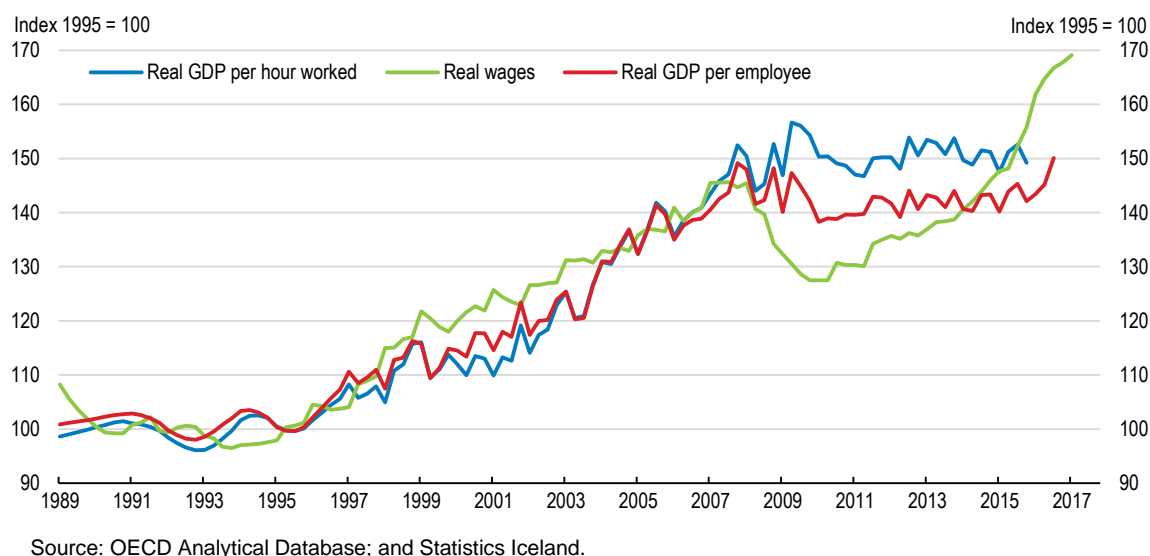
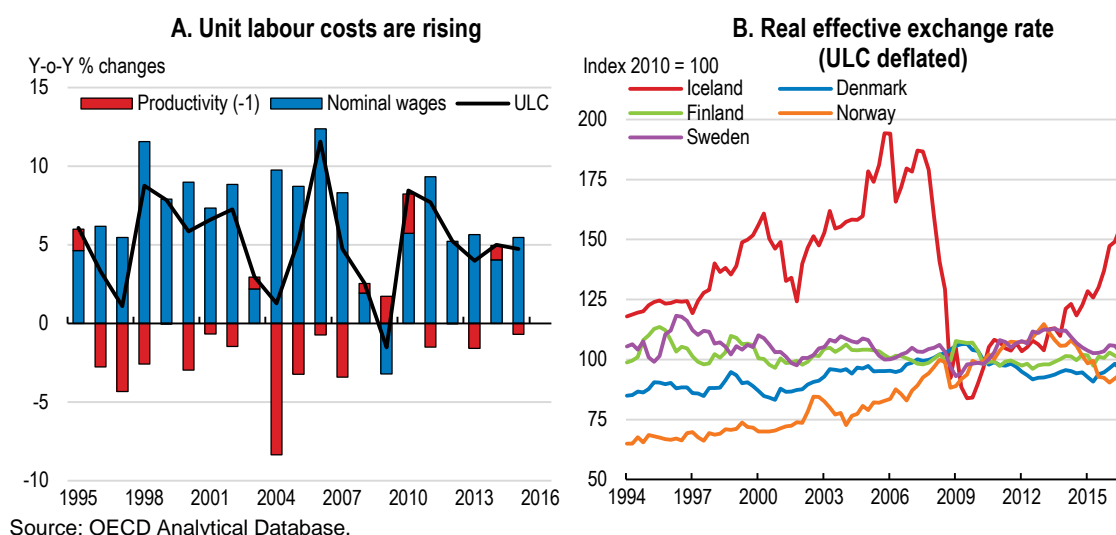


Figure 2.11 Competitiveness has been eroded



### Towards effective and inclusive labour relations

The major challenges of the Icelandic collective wage bargaining are as follows. Trust among the players has been undermined. Wage coordination is low. Social partners often have difficulties agreeing even on facts, such as the state of the economy, or wage growth. There is a large number of unions, many of them very small, and wage demands are often not consistent with macroeconomic stability. Wage tensions often develop in the public sector that does not benefit from wage drift. The state mediator should have greater powers in order to improve wage coordination. In the following sections we discuss the challenges in more detail and propose some solutions.

#### *The SALEK agreement*

The social partners have made efforts at improving the collective wage bargaining system. The government, municipalities and major confederations of employers and workers entered the so-called

SALEK agreement to improve wage formation and coordination in the Icelandic labour market, based on Nordic examples. On the side of employees the following federations took part: ASÍ (Icelandic Federation of Labour), BHM (Association of Academics), BSRB (Federation of state and municipal employees), KÍ (Teachers Union), together covering about 70% of the Icelandic labour market. On the side of employers: SA (Business Iceland), Icelandic Association of Local Authorities and the Ministry of finance and economic affairs (representing the state/public sector in negotiations). Notable federations and unions left outside include The Icelandic Nurses Association, Federation of Icelandic Medical Doctors, Seamen's Union and the Confederation of Icelandic Bank and Finance Employees (SALEK, 2016). The SALEK group commissioned Professor Steinar Holden to write a report and propose workable solutions for the collective bargaining system in Iceland. The report (Holden, 2016) has also provided valuable information and many great ideas for this paper.

The SALEK agreement includes the formulation of a common wage policy with a purpose to end the leapfrogging of wage demands. It was agreed that the scope for wage increases would take into account external competitiveness. Companies and sectors that either export or compete with imports would thereby set the frame for wage increases. According to the agreement, a macroeconomic council for the labour market would be created and would, together with the social partners, include representatives from the Central Bank and the Government. Alignment of pension rights in the private and public sectors was also part of the SALEK agreement. Finally, it was agreed that public employees would be guaranteed a share of the wage drift in the private sector.

However, due to recent tensions and disagreements all this has been put on hold and the SALEK group has postponed its cooperation for an undefined period of time. Dissatisfaction of public sector unions with the harmonisation of pensions in the public and private sectors made them unwilling to cooperate. Taking advantage of one-off fiscal revenues, the government injected funds of 7% of GDP into the part of public pension funds to facilitate the change. Despite this, some public sector unions are unhappy and the teachers' union threatened to sue the government. Furthermore, while the macroeconomic council has formally been established, no representative from the employee organisations took part, citing a lack of emphasis on matters regarding social stability and welfare as a reason for this. Currently there is not much optimism among the involved parties that the implementation of the SALEK agreement could move forward any time soon.

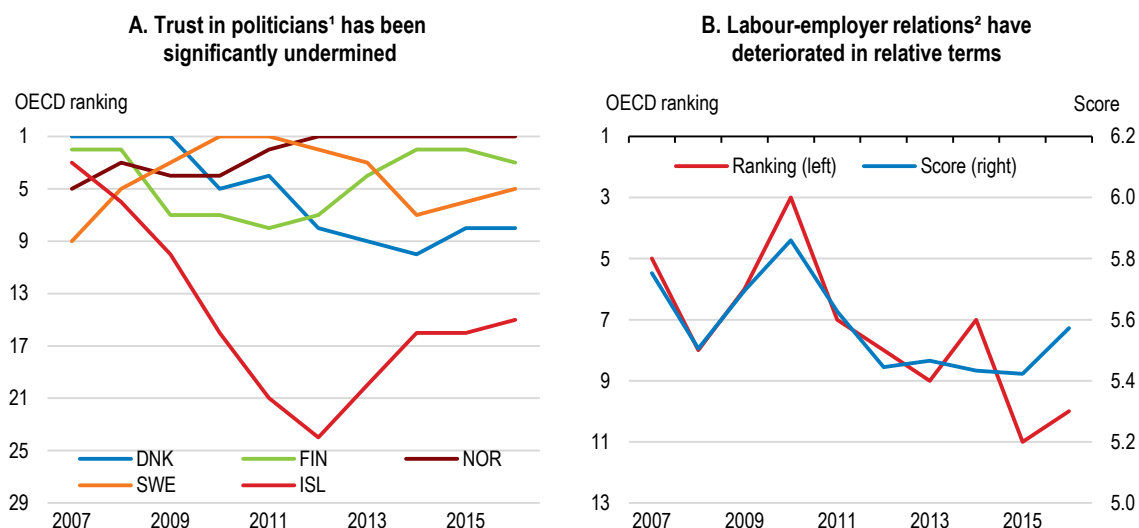
### ***Fostering trust and encouraging informed negotiations***

Iceland has had a challenging decade during which trust has been undermined. Based on a survey from the Global Competitiveness Report on trust in politicians, Iceland dropped from a top performing OECD country in 2007 to the bottom third in 2012 (Figure 12). Trust has partly recovered since, but Iceland is now ranked far below its previous standing and below other Nordic countries. There has also been a falling trend in Iceland's ranking in the quality of labour-employer relations (Figure 2.12), although it is still among the top 1/3 of the OECD. Iceland ranked better in the years right after the crisis than in recent years, consistent with the past tendency for labour relations to sour particularly in times of economic boom. Nevertheless, while interesting, such data should be interpreted with caution, as they are based on limited surveys of business executives, and hence they cover only one side of labour relations.

2.1 Recent tensions and tense labour relations also suggest weakened levels of trust. Negotiations often break down because parties differ in their understanding of what exactly has been agreed in the past, and actions by the counterparty are perceived as unilateral and hostile. Leapfrogging of wage demands also arguably stems from generally low trust, as wage gains (or other benefits) of one group are automatically perceived by other groups as unfair and excessive, and rarely as justified catch-up gains due to lower growth in wages from preceding periods. Moreover, the social

partners spend a lot of time during negotiation rounds debating and disagreeing on the factual state of the economy.

Figure 12. Trust has been undermined



1. Business executives responding to the question: 'in your country, how do you rate the ethical standards of politicians? [1 = extremely low; 7 = extremely high]

2. Business executives responding to the question: 'in your country, how do you characterize labour-employer relations? [1 = generally confrontational; 7 = generally cooperative]

Source: World Economic Forum. The Global Competitiveness Index dataset 2007-2016.

One of the principles of ILO on the right to collective bargaining states that collective bargaining must be free and voluntary, so that collective agreements are generated by the parties themselves – not imposed on them (ILO, 2015). To achieve this, however, negotiations must be conducted in good faith, and a certain level of trust among negotiating parties is required. However, when effective, collective bargaining can itself help build trust and mutual respect between employers, workers and their organizations, and contribute to stable and productive labour relations. Weak and ineffective collective bargaining institutions, on the other hand, may lead to a rise in labour disputes, with economic and social costs (ILO, 2015). Some of the features of collective bargaining systems themselves can help promote more cooperative relations. Fragmented social partners are likely to increase the level of strife. Promoting cooperation between social partners can have a positive effect on the quality of labour relations (OECD, 2017).

It is therefore important to strengthen common institutions on the labour market and encourage constructive, meaningful and informed negotiations. As discussed above, Iceland does have a history of successful cooperation and common institutions on the labour market, from the successful tripartite pacts to fight inflation and to endure the crisis, to the joint administering of the many welfare payments by the social partners. Recent cooperation through the SALEK agreement and the setting up of the macroeconomic council also demonstrate the willingness to further raise and nurture trust. But these recent attempts have failed.

In many countries, collective bargaining is part of a broader institutional framework that offers many opportunities for social dialogue between representative organisations. These include national tripartite institutions on economic and social policy, tripartite minimum wage setting institutions, the collective bargaining process itself, and workplace committees that enhance workplace cooperation (ILO, 2015). Regular and active contact among the social partners and exchange of views build trust

and develop mutual respect. In a highly unionised country, such as Iceland, with a long history of highly organised employers and unions, it is misplaced to talk about the non-active role of social partners or the lack of their mutual engagement. Yet, a regular tripartite platform that gives opportunity for constructive debate and consultations among the social partners - on issues of collective bargaining as well as more broadly on issues of welfare policy and social reform - would be beneficial. The setting up of the macroeconomic council in this light was a step in the right direction.

It is furthermore important that different parties acquire a common understanding of the economic situation, on which to base their demands and eventually reach agreement. The Norwegian system of bargaining and incomes policies includes an informal tripartite committee (Contact Committee) headed by the prime minister, where the government and the social partners discuss the economic basis for the wage formation prior to the actual wage setting. The trade union and employer confederations, several ministries, together with Statistics Norway, further participate in the "Technical calculation committee for wage settlements" (TBU). The committee publishes detailed wage figures, including wage drift for the main bargaining areas, as well as developments in labour costs among Norway's most important trading partners. It submits two main reports every year, before and after the wage negotiations, ensuring that the wage setters agree on facts concerning wage levels and wage growth, as well as international competitiveness and the factor shares. The calculation committee also agrees on economic outlook and a forecast for consumer price inflation (Holden, 2016; Andersen et al., 2015).

The Japan Productivity Centre (JPC) is a tripartite non-profit organization with a board made up of members of organised labour, private enterprises and academic experts. One key part of the work of the JPC is to provide labour productivity statistics. These are trusted by trade unions and employers as providing an accurate reflection of sectoral trends and are used as a reference point by trade unions and management in negotiations (ILO, 2015). In Uruguay, before each bargaining round the Ministry of the Economy presents information on economic and labour market performance to the Tripartite High-Level Council (ILO, 2015). This includes information on the international context, select economic indicators in neighbouring countries, and general economic and sectoral developments. It also proposes wage guidelines. The Tripartite High-Level Council then discusses general economic trends, the (voluntary) wage guidelines and adjustments to the national minimum wage (subsequently determined by government).

In addition to the macroeconomic council, Iceland should therefore establish a "technical committee". The committee could comprise of representatives from Statistics Iceland, and other relevant experts and institutions, as well as the social partners. This technical committee would be responsible for regularly providing reliable and relevant statistical information related to the labour market and collective bargaining, in particular before major negotiating rounds. Moreover, the committee could identify gaps in available data and request improvements. The committee could further take a stance on economic projections and perform analysis on impacts of wage demands on economic sectors and the economy. To be effective, the committee would hopefully enjoy high trust by the negotiating parties and be seen as impartial. This is to ensure that the bargaining parties agree on important numbers and facts, so that they can conduct negotiations in an informed way.

Labour market and wage data in Iceland also need improvement. Statistics Iceland bases wage data on a survey of a limited number of firms, and for certain sectors there are long lags before up-to-date data is available. More resources could be put into collecting and managing labour market data. In addition, as in many other countries, improvement in coverage and quality could be attained by linking it to income tax data.

### ***More wage coordination***

Labour unions in Iceland are small and scattered. A very large number of agreements need to be reached so there is a high potential for co-ordination failure. A total number of collective agreements in Iceland stands at 192 (SALEK, 2016). Given the number of employees, this amounts to 1,000 employees on average being covered by one agreement, compared to 2,000 in Denmark, 5,000 in Norway or 7,000 in Sweden. Unions are often organised along occupational lines, which strengthens their position in the wage negotiations, because labour demand is usually less elastic for workers within one occupation (Holden, 2016). The small size of the unions takes away incentives to take into account wider economic consequences of their demands. Wage demands are often based either on the wish to correct allegedly unfairly low wages from the past, or on recent wage gains of other groups. While confederations are generally in favour of greater coordination and moderation in wage demands, they do not have effective control over their member unions.

A more coordinated structure of the wage setting is needed. The degree of co-ordination in many other countries, notably other Nordic countries, is higher. In Denmark and Sweden the coordination across sectors is based on the pattern-setting agreements negotiated in the manufacturing export industries. The peak associations ensure coordination but are not directly involved in the bargaining processes. In both countries, mediating institutions are strong and have an important role. In Norway, the peak associations often bargain directly with one another. The manufacturing export industry sets the pattern, and the mediating institutions play an important role in providing largely uniform outcomes. In Finland, on the other hand, where tripartite incomes policy has persisted, the peak associations and the government set guidelines for wage increases to be followed by the bargaining parties at the branch level. Here again, the basis is the manufacturing export industry (Andersen et al., 2015; Andersen et al., 2014a and 2014b).

Pattern-setting wage coordination has also been present in Germany (Visser, 2016). A high degree of employer organisation and strong unions, especially in manufacturing, combined with pattern bargaining allowed Germany in the 1970s and 1980s to have a high degree of wage bargaining coordination. The union IG Metall leads and other industries in practice settle wage increases within 1 percent of the engineering agreement. IG Metall is very powerful and acts as trend-setter also in other domains outside wage increases, such as having negotiated for the "shorter working hours" schedule and a car wrecking subsidy scheme during the crisis. In the Netherlands, the main union confederations have since 1993 issued an annual recommendation on maximum wage increases, depending on past developments in inflation and productivity, and in any given year actual wage increases have stayed below this maximum (Visser, 2016).

Another way of setting wages is by state guided coordination, via indexation, wage freezes or wage floors or ceilings. In Belgium, the state plays a major role in collective bargaining. Wages are indexed to increases in costs of living, but capped by a "wage norm" that takes into account forecasts of wage trends in Belgium's neighbours - Germany, France and the Netherlands - in order to maintain competitiveness. The national-level negotiations take place in the context of an official technical report which sets out the forecast of wage trends in these countries and the government has the power to intervene if negotiating parties cannot agree on a figure within these limits (OECD, 2017; Fulton, 2015).

In the examples above a lot of coordination often takes place informally within employer and worker confederations which ensures that wage developments do not go out of hand. When there is trust in the system, coordination can work better. In Iceland, too, higher coordination within (and also between) main labour confederations could help ensure that unions are on the same page about desirable wage demands. Likewise, higher coordination and discipline among employers could



guarantee that there is not too much uncoordinated wage drift between rounds that can result in large shifts in relative wages.

Icelandic social partners within the framework of the SALEK agreement have been inclined to follow the Nordic example, in particular that of Norway, of wage coordination based on pattern-setting sectors. There are many advantages of this system. First, the rest of the economy follows the wage norm negotiated in an exporting sector, most often manufacturing, that is exposed to foreign competition. Competitiveness concerns are hence taken into account. Second, the wage norm is an outcome of negotiations rather than a unilateral rule, so the norm is more likely to receive a wider buy-in from the social partners. Lastly, Iceland and other Nordic countries share many cultural and institutional similarities, so the Nordic systems are a natural choice of benchmark.

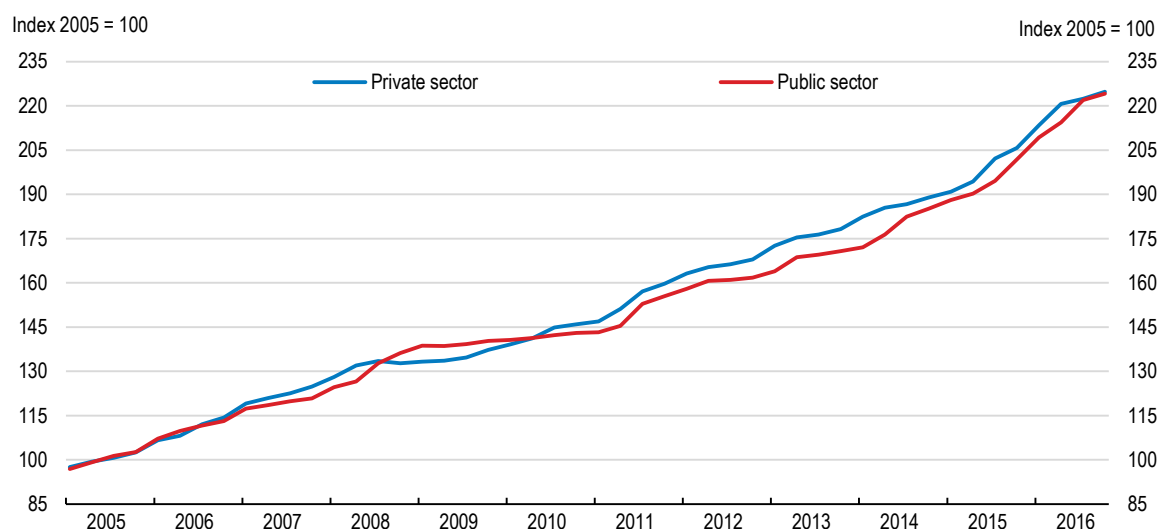
However, finding an appropriate pattern-setting sector for Iceland is a challenge. Based on the Norwegian model, Holden (2016) and SALEK (2016) discuss criteria that such a sector would need to fulfil. The sector should be a) competitive, reflecting the general competitive position of the country; b) stable, where product prices and production should not fluctuate too much; c) it should not be based on natural resources and thus exposed to volatile commodity prices; d) it should have reasonably powerful negotiating organisations with some influence in the rest of the economy; and e) should have credibility for the general economic context of Iceland. Five candidate sectors of importance for the Icelandic economy are discussed: fisheries, fish processing, power-intensive industries, tourism and other manufacturing (excluding food processing and power intensives). But considering the above criteria, only "other manufacturing" emerges as a tentatively acceptable option. The volatile nature of the Icelandic economy reduces the attractiveness of the system whereby wage norms are based on developments in one particular sector. Moreover, trade unions are organised along occupational lines rather than sectors, further reducing the relevance of such a model.

A more realistic solution for Iceland could be that at the beginning of a negotiation round union and employers' peak organisations issued "wage guidelines" for the negotiating round. The wage guidelines should ideally enjoy broad buy-in from labour market participants. They could come from the SALEK group, or another tripartite forum, or just involving SA-Business Iceland and ASÍ. The advantage of the proposed approach is that the wage norm still comes from the social partners, but it takes on board wider economic context, as it is agreed between major confederations that include members from many parts of the economy. The wage guidelines should also be based on the information received from the technical committee, taking into account external competitiveness, labour productivity, cost of living, economic prospects etc. The social partners can put more weight on developments in sectors exposed to foreign competition.

Wage setting and wage coordination could also be strengthened by introducing a rule for linking public sector wages to the private sector developments. There is a lot of social tension in the public sector, and it partly derives from the fact that public sector wages generally lag behind the private sector (Figure 13). Employees are entitled to negotiate with their supervisors once a year, which, in the private sector, often results in additional wage drift, but not in the public sector. It is more difficult for a public sector employee to benefit from the general rise in wages in the economy. Over time, much tension develops, and by means of disorderly wage negotiations and strikes, public sector workers eventually manage to obtain large catch-up wage awards. Adalsteinsson (2017) estimates that while public sector workers represent about 20% of employment, they have accounted for 48% of workdays lost due to strikes over the last 37 years. While such strikes can be very disruptive, the large wage adjustments often trigger large wage demands also in other parts of the economy, adding fuel to the fire.

In Denmark, on the other hand, partial indexation of public sector wages to the private sector limits how far relative wages get out of line. Regulation stipulates that if public sector wage increases differ from those in the private sector, 80 per cent of that difference will be adjusted positively or 100 per cent of the difference will be adjusted negatively, depending on the case. This ensures that wage developments in the two sectors are parallel (Andersen et al., 2015). Setting up a rule for linking public sector wages to private ones in Iceland has been agreed also in the SALEK agreement. As the public sector is a big source of industrial disputes in Iceland, this would be a beneficial device for Iceland.

Figure 13. **Wages in the public sector often lag behind the private sector**



Note: From 2016 and onwards the quarterly wage index for the private sector is based on NACE Rev. 2.0. Earlier results are based on NACE Rev. 1.1. and fewer economic activities.

Source: Statistics Iceland.

### ***More powers to the state mediator***

The lack of wage coordination in Iceland and the fragmented structure of trade unions call for a stronger state mediation institution. As wage guidelines will be a result of an agreement between major union and employer confederations, compliance will be partly ensured by coordination within confederations. When this breaks down, however, the state mediator should be seen as a promotor and protector of the wage guidelines and when issuing conciliation proposals, they should be in line with the wage guidelines. State mediators in other Nordic countries with their powers and mandates successfully facilitate wage moderation. In fact, it was precisely due to fragmented trade union structure in Denmark and Norway that over years prompted the two countries to enhance the powers of state mediators (Elvander, 2002). Importantly, sticking to the agreed wage guidelines must be upheld also by the industrial arbitration bodies. In this way, negotiating parties will know from the start - prior to and during negotiations - that they can turn to the mediator office, where they will eventually be presented with a proposal close to the wage guidelines. This knowledge in itself can deter some unions from making unreasonable demands.

Compared to other countries with pattern-setting systems, the Icelandic State Conciliation and Mediation Officer (SCMO) is relatively weak. Its role is defined by the Act on Trade Unions and Industrial disputes, No. 80/1938. According to the act, ten weeks before a valid collective agreement comes up for review, the parties have to jointly draw up a schedule of negotiations and send it to the SCMO. If they fail to do so, SCMO issues a negotiation schedule. However, in practice, these

schedules are not respected (SALEK, 2016). The parties may request mediation from the SCMO, request assistance or refer the dispute to the SCMO. In the latter case, the Officer takes over and directs the negotiations. The SCMO is obliged to take over negotiations if a strike or a lockout has been notified.

If attempts at conciliation prove fruitless, the SCMO may submit a compromise proposal to resolve the industrial dispute. The SCMO is required to consult the involved negotiating committees before submitting a compromise proposal, but is not bound by their opinion. In practice, however, a compromise proposal is not formally put for voting without prior consent of the parties to the dispute (SALEK, 2016). A compromise proposal is rejected in a ballot if more than half the votes cast are against it and if the votes against it amount to more than one quarter of the votes according to the voting roll or members' register. Generally, once a collective agreement has been signed the parties waive their right to strike and lockout (peace clause), and cases concerning violations of a collective agreement or disagreements relating to the interpretation of a collective agreement should be resolved by referring the case to the Labour Court, and not by strike.

The Swedish National Mediation Office is explicitly tasked by law to 'ensure sound wage developments', by bringing wages in line with the pattern-setting manufacturing agreements (Ibsen, 2013). The mediator in essence never presents a settlement proposal that exceeds the manufacturing pattern. The National Mediator in Norway follows the main framework given by the trend-setting industries agreement in its proposals. Furthermore, when industrial action is ended by compulsory arbitration, the National Wage Board is also normally guided by the trend-setting industries agreement, to discourage breakaways (Andersen et al., 2015). The mediation institutions in both countries have powers to postpone industrial action, unlike in Iceland (Holden, 2016).

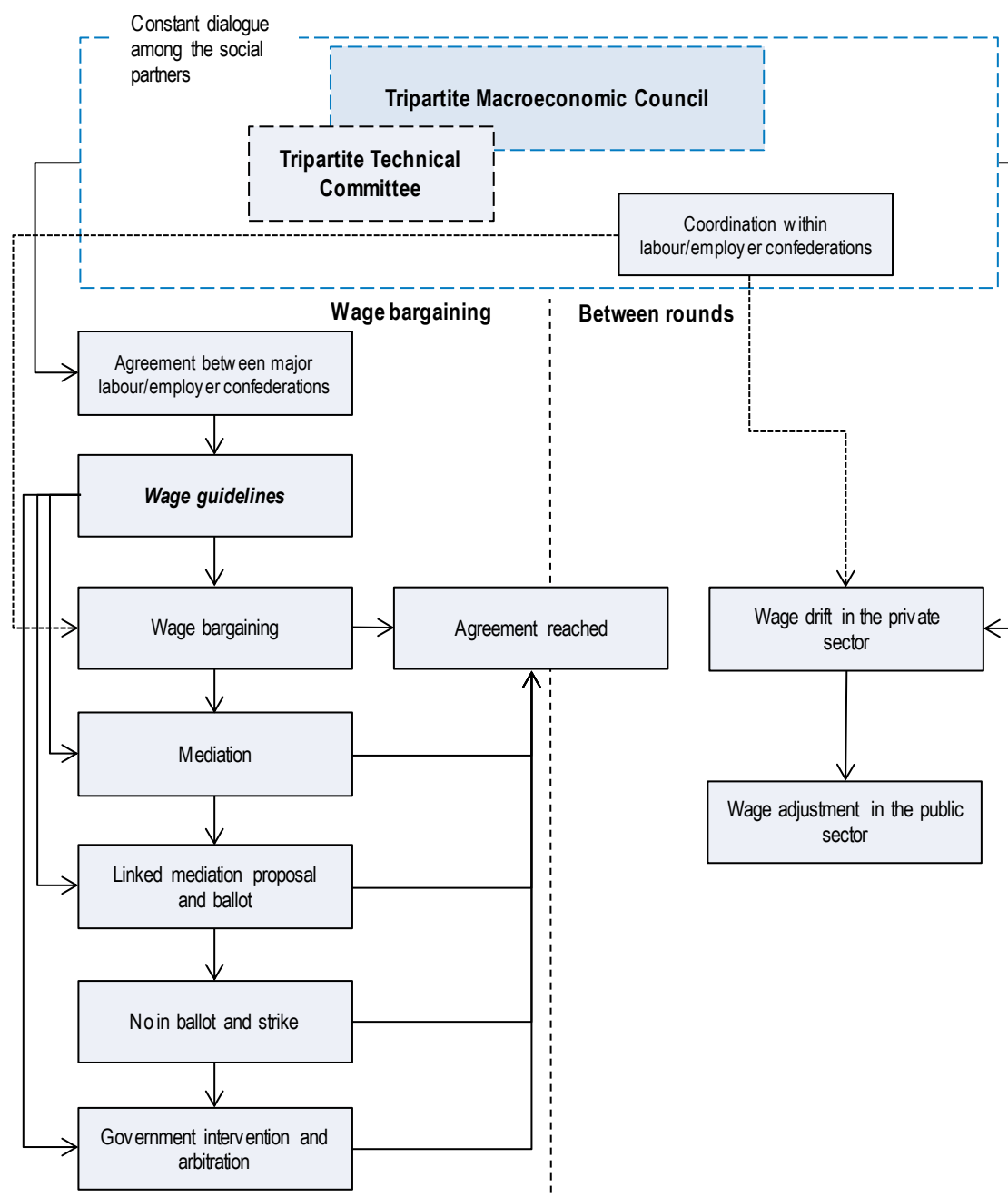
The Danish mediation institution has quite strong powers. It can postpone a notified industrial action two times for up to 14 days. In Denmark all agreements expire at the same time. The major employer (DA) and worker (LO) confederations then negotiate the wage norm, to be followed by bargaining areas. In case of mediation, mediators propose settlements conforming to the wage norm of manufacturing. If the mediation fails, the bargaining area is transferred to a concatenation - procedure of linking all bargaining areas into one (concatenated) decision that joins areas with agreements to those without agreements. In this way, one deciding vote centralises decision-making according to majority rule, potentially overturning rejections in specific areas. Unions hold a nation-wide ballot. Rejection of a proposal requires a majority, but if less than 40 percent of eligible voters participate, then at least 25 per cent of eligible voters are required to vote 'no' in order to reject the proposal. In practice, the mediation proposal is based on the final negotiations between LO and DA in which the mediator is involved and the proposal will only be submitted if none of the parties objects. The proposal is normally in line with what manufacturing has received (Ibsen, 2013 and 2015; Andersen et al., 2015).

The Icelandic state mediator should be given powers to postpone industrial action for a limited period, in agreement with the social partners. Sometimes, the date for industrial action is already set, but discussions among the two sides and the mediator are ongoing. If state mediator judges that the discussions are going in the right direction, he/she could propose to postpone industrial action for a limited period to ensure that negotiations are not unnecessarily derailed by it. Postponing industrial action can also help by "cooling down" the parties, and by delaying industrial action in one sector, another sector could reach an agreement first, potentially affecting the outcome in the sector where industrial action is postponed (Holden, 2016).

Due to a large number of small unions and to reduce possibilities for defection, Iceland could also benefit from a procedure akin to the linking procedure in Denmark. When mediation fails, unions that

have not reached agreements can be joined with unions in relevant branch or areas that have reached agreements and be treated as one entity in the ballot. Qualified majority should then be required to reject the mediator's proposal. Figure 14 gives an overview of the proposed framework for wage bargaining in Iceland.

Figure 14. **Proposed institutional framework of wage bargaining in Iceland**



Source: OECD analysis; partly based on Figure 1 in Ibsen (2013).

*Collective bargaining and the future of work*

Demographic shifts, globalisation and new technologies are changing the nature of work and careers, globally. Digitalisation is seen as a key influence on the future of work over the next decades. It is reducing demand for routine and manual tasks while increasing demand for low- and high-skilled tasks, resulting in the so-called job polarisation. Estimates show that on average across countries, 9% of jobs are at high risk of being almost fully automated, while for another 25% of jobs, mostly low-skilled, at least 50% of the tasks will change significantly because of automation (Arntz et al., 2016; OECD, 2016b).

Digitalisation has opened the ground for new forms of work organisation. The technological trend has led to the flourishing of the “gig-”, “on-demand-”, “sharing-” or, more generally, the “platform economy” (AirBnB, Uber, Lyft, Blabla Car, Nubelo, Amazon Mechanical Turk, Task Rabbit, YoupiJob, Frizbiz, etc.). The emergence of job polarisation is closely matched by developments in non-standard employment, and independent work in particular. The decline in middle-skill employment goes hand in hand with a decrease of standard work contracts; and workers taking on low and high-skill jobs are increasingly likely to be self-employed, part-timers or temporary workers.

New technologies may bring efficiency in matching workers to jobs and tasks, but they also raise questions about wages, labour rights and access to social protection for the workers involved. Workers in the “platform economy” are more likely to have multiple jobs and income sources, therefore the role and meaning of traditional labour market institutions are being challenged. Regulation and policy measures such as statutory working hours, minimum wages, unemployment insurance, taxes and benefits are still modelled on the notion of a traditional and unique employer-employee relationship. In addition, as independent work becomes more common, an increasing number of workers may not be covered by collective agreements. Relative to standard wage and salary employment, workers in non-standard jobs tend to have fewer rights to social protection, receive less training, often have weaker career progression, and face greater insecurity (OECD, 2016b and 2015d).

In Iceland, by law, the rights bargained for in the labour market are automatically extended to everybody - to all wage earners, including temporary contracts, temporary work agency workers and interns. The only group excluded are the self-employed, but by law they are still covered by the unemployment insurance and are included in the occupational pension system (SALEK, 2016)

The share of non-standard employment in Iceland - temporary, part-time workers and self-employed - in total employment is about 30%, close to the OECD average (OECD, 2015d). In the last two decades, the incidence of non-standard employment in Iceland has actually decreased, but mostly on the account of reduced part-time work. Furthermore, in Iceland, a larger share of temporary workers gets a full-time permanent job over time than in other OECD countries. Non-standard work can therefore be a “stepping stone” to more stable employment (OECD, 2015d). But as part-time work is largely done by women, and linked to family and childcare decisions, it is difficult to interpret how much of the change in non-standard employment is driven by technological change. Labour force participation of women in Iceland is high. Moreover, labour force is flexible in Iceland, and part-time/full-time transitions are heavily influenced by the economic cycle (Central Bank of Iceland, 2016).

The labour market in Iceland has so far effectively protected the workers from many of the negative consequences of job polarisation and changes in work organisation. Amid other pressures on the labour market over the last decades - increased international competition, opening of labour markets to foreigners, higher threat of reallocation of production abroad - Iceland and other Nordic countries have managed to preserve the major features of their collective bargaining systems, without

jeopardising employment growth or welfare. Unionisation rates and collective bargaining coverage remain high, there is a high job security and inequality is low. Industrial relations systems have been robust and flexible enough to face up to the growing challenges.

Nevertheless, the social partners should keep in mind that the world of work is changing and they should be ready to start adjusting now in order to sustain the benefits of the system for the future. Apart from discussions on teleworking, labour market negotiations in Iceland do not seem to systematically touch on other aspects of the digitalisation challenge. Thinking is geared largely towards the traditional (9-5) worker in a recognised sector, rather than non-standard worker in the "platform economy". There are also no new forms of trade unions emerging, such as freelance associations.

In several European countries and in the United States platform-based workers are organising in unions, and trying to engage in collective bargaining (OECD, 2017). To list some examples, in the United States, for instance, the Freelancers Union promotes the interests of independent workers, including platform-based workers, and currently has more than 250 000 members - although it cannot engage in collective bargaining. There are also cases where traditional unions try to improve coverage of non-standard workers. In Germany, the largest metalworkers' union (IG Metall) has been behind the creation of FairCrowdWork Watch, a platform dedicated to improving digital workers' working conditions. Similarly, ver.di, the United Services Union, is providing legal and support services for crowd-workers. In Italy, the Confederazione Generale Italiana del Lavoro has since 1998 established a specific branch to represent non-standard workers.

Finally, recent technological change has shifted skill demand predominantly towards high-level skills. However, information and communication technologies (ICT) skills will not be enough alone in the future. Other complementary skills, such as problem-solving, literacy and numeracy skills, interpersonal skills and ability to work flexibly will also be very much needed. Workers need to be prepared to evolve constantly their skills and to change jobs over their working life (OECD, 2016c). The social partners should be actively thinking about these issues. The education system should equip workers with adequate ICT and other problem-solving skills. At the same time, through the existing education funds managed jointly by the unions and employers, the social partners should ensure that life-long learning teaches relevant skills to those who most need them, and in particular to the low-skilled. Training could also be better incentivised by offering time-off for training during working time.

### **Box 3. Recommendations on collective bargaining**

#### **Key recommendations**

- Establish a tripartite technical committee to provide reliable and impartial information to wage negotiators.
- Wage negotiations should begin with an agreement on "wage guidelines" for the negotiation round. State mediator (and arbitration bodies) should also base their proposals on these guidelines.
- Increase powers of the state mediator, including the power to delay industrial action for a limited period, in an effort to achieve a negotiated agreement.

#### **Further recommendations**

- Establish a tripartite macroeconomic council for regular contact and discussion among the social partners on the issues of collective bargaining, and economic and social policy.

- Raise coordination within confederations - both employer and labour - to increase adherence to the wage guidelines and to reduce uncoordinated wage drift.
- Prevent the public sector from developing large pay gaps to the private sector. Introduce partial indexation of public sector wages to the private sector.
- Introduce a linking procedure, whereby unions without agreements can be joined with unions in the same branch with agreements and be treated as one entity in the ballot. Qualified majority should be required to reject the proposal.

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## **ANNEX: DO WAGES CAUSE INFLATION? VECTOR ERROR CORRECTION MODEL OF WAGES AND PRICES FOR ICELAND**

### **Introduction**

Iceland is a very small open economy with a flexible labour market and strong labour unions. This constellation has implications for the relationship between wages and prices. Iceland experiences recurrent bursts of social tensions that often result in large wage awards that can put pressure on inflation. On the other hand, in times of high inflation trade unions sooner or later demand that price rises are translated into higher wages to preserve living standards. On the surface, prices and wages arguably determine each other.

It is interesting from a policy perspective to identify whether the causal link between wages and prices exists, in which direction it goes and how strong it is. If wages are shown to importantly determine prices, this is one more argument for wage negotiators to have wider economic environment in mind when they negotiate over wage increases. Similarly, if wages cause prices, this raises the risk of a wage-price spiral developing. The central bank should therefore pay close attention to the labour market developments when deciding on its next policy move. As the central bank of Iceland is committed to keeping inflation under control, a strong increase in wages would trigger a monetary policy tightening and potentially causing slowing down of the economy.

Identifying the causal link between wages and prices is a matter of empirical testing. In this paper, we use data spanning from 1989 to 2016 to determine whether wages Granger-cause prices in Iceland. Various specifications and measures are used to check the robustness of the result. We conclude that wages indeed cause prices in Iceland. This is in contrast with most of the empirical literature, briefly reviewed below. Based on data from other countries, mostly the US, they typically report that prices and wages are related in the long run, and that prices cause wages, but they do not find evidence of wages causing prices.

The rest of the paper is structured as follows. First, we briefly review the literature. Then we present the theoretical framework for thinking about the relationship between wages and prices, and the econometric methodology. The next section describes the data used. In the sections that follow we present results from running various specifications of the error correction model of wages and prices. The last section concludes.

### **Brief review of the literature**

Empirical studies normally estimate models of wages and prices allowing for cointegration (that is, there exists a linear combination of nonstationary variables that is stationary) via the error correction representation, and examine Granger causality. Studies differ in the sample length, the variables included, the number of lags and the particular measures of prices and wages used. Studies based on aggregate measures of prices, wages, productivity etc., mostly report no evidence of wages causing prices, while they find evidence for the reverse (Hess and Schweitzer, 2000; Mills and Wood, 2002; Hu and Toussaint-Comeau, 2010). Mehra (1993, 2000) reports some mixed results, but concludes that there is much stronger evidence that prices Granger-cause wages. Only Ghali (1999) reports Granger-causality test results that indicate that wage growth predicts inflation. Rissman (1995) studies relationship between wages and prices in different economic industries and finds that the direction of causality generally runs from prices to wages rather than wages to prices. Only in manufacturing and retail trade is productivity-adjusted wage growth found to help forecast inflation.

Given that most researchers find no strong evidence that wages cause prices, albeit mostly on the US data, it is interesting to study the relationship in Iceland, with its highly unionised labour market and highly flexible labour supply. Evidence to the contrary - that wages cause inflation in Iceland - would be a strong argument for wage negotiators to be modest in wage awards, if inflation is to be kept low without overly restrictive monetary policy. Pétursson (2002) develops an open economy version of a wage-price model with imperfect competition in goods and labour markets to analyse wage and consumer price inflation in Iceland for the period 1973 to 1999. In the model, prices and wages are determined simultaneously and price formation is modelled as a mark-up over marginal costs, including labour costs. While Pétursson (2002) finds evidence of the long-run relationship between wages and prices, determining whether wages Granger-cause prices or vice versa is beyond the purpose of his paper.

### Theoretical framework and econometric methodology

Empirical analysis of the relationship between wages and prices has been conceptualised within the expectations-augmented Phillips curve model that assumes that prices are set as a mark-up over productivity-adjusted labour costs. Labour costs and wages are in turn determined by the expected inflation rate and the degree of demand pressure. It is further assumed that expected inflation depends on past inflation. Following Gordon (1982, 1985) and Stockton and Glassman (1987) (and Mehra (1993, 2000) and Ghali (1999) more recently), the expectations-augmented Phillips curve model contains the following system of equations:

$$\Delta p_t = h_0 + h_1 \Delta(w_t - q_t) + h_2 D_t + h_3 S p_t; \quad (1)$$

$$\Delta(w_t - q_t) = k_0 + k_1 \Delta p_t^e + k_2 D_t + k_3 S w_t; \quad (2)$$

$$\Delta p_t^e = \sum \lambda_j \Delta p_{t-j}, \quad (3)$$

where all the variables are expressed in natural logarithms,  $p_t$  is the price level,  $w_t$  the nominal wage rate,  $q_t$  is labour productivity,  $D_t$  is a demand pressure variable and  $S p_t$  and  $S w_t$  are supply shocks affecting the price and wage variables, respectively. Equation (1) describes the markup behaviour; prices are marked up over productivity-adjusted labour costs. Changes in prices are thus induced by changes in productivity-adjusted wages and by supply and demand pressures. Equation (2) describes the changes in productivity-adjusted wages as a function of expected inflation and supply and demand shocks. Expected inflation is modelled as a function of past changes in prices, as in equation (3).

The theory described above implies that some or all of the variables may be related in the long run. In particular, long-run movements in wages and prices must be related. Furthermore, if one allows for short-run dynamics, past changes in wages and prices should contain useful information for predicting future changes in those same variables. The model implies that wages and prices may be causally related with feedbacks going in both directions. The long-run relationships can be exploited in order to model the dynamics of the variables and test for the direction of causality between wages and prices. For this, researchers have used tests for cointegration and Granger-causality.

Consider the vector autoregressive (VAR) model where all variables are allowed to be endogenous:

$$X_t = \Phi_1 X_{t-1} + \Phi_2 X_{t-2} + \dots + \Phi_k X_{t-k} + \mu + \eta_t, \quad (4)$$

The idea that some or all variables may have common stochastic trends can be tested and exploited within an error-correction model, which is useful for investigating the direction of temporal

causality between wages and prices. Under the condition that the series in  $X_t$  are stationary in first differences, the VAR in (4) can be rewritten in the error-correction model (ECM) form:

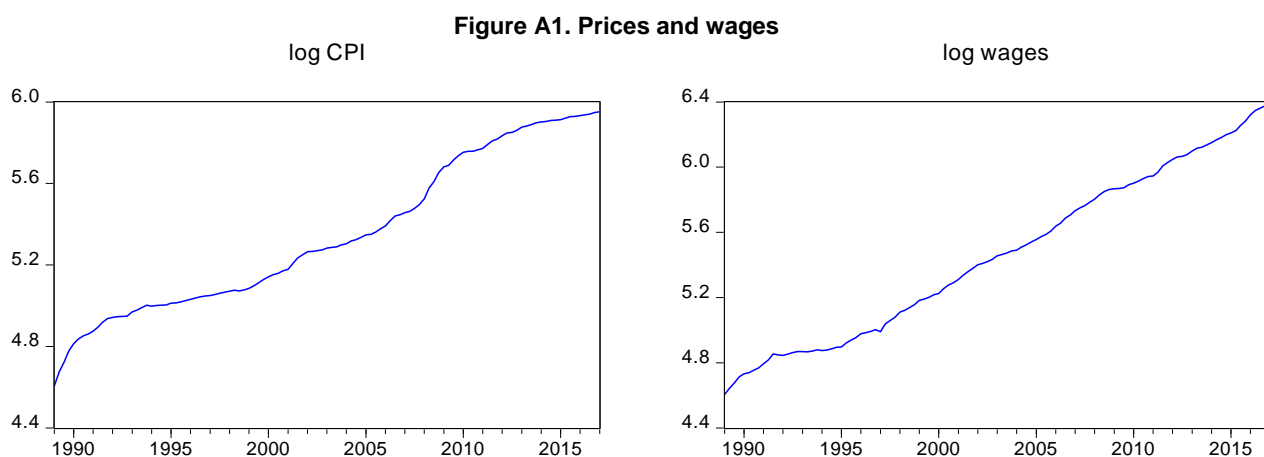
$$X_t = \Gamma_1 \Delta X_{t-1} + \Gamma_2 \Delta X_{t-2} + \dots + \Gamma_{k-1} \Delta X_{t-k+1} + \Pi X_{t-1} + \mu + \eta_t. \quad (5)$$

$\Pi$  is the long-run parameter matrix, and can be decomposed as  $\Pi = \alpha\beta'$ , with  $\beta$  parameters in the cointegrating relationships and  $\alpha$  the adjustment coefficients that measure the strength of the cointegrating vectors in the model. The rank of the  $\Pi$  matrix determines the number of cointegrating relationships between the (endogenous) variables in the model.

The fact that a system includes a cointegrated relationship warrants a particular interpretation of Granger causality (Enders, 2015). In a cointegrated system,  $\{y_t\}$  does not Granger cause  $\{z_t\}$  if lagged values  $\Delta y_{t-i}$  do not enter the  $\Delta z_t$  equation (coefficients are not statistically different from zero) *and* if  $z_t$  does not respond to the deviation from long-run equilibrium. Intuitively,  $\alpha$  coefficients tell us how quickly each variable reacts to the system being out of equilibrium - if the  $\alpha$  coefficient of a variable is equal to zero, this means that error correction is done only by the other variables, hence the variable in question is called "weakly exogenous". Hence, for  $\{y_t\}$  not to Granger cause  $\{z_t\}$ , one of the conditions is that  $\{z_t\}$  must be weakly exogenous (Enders, 2015).

## Data

We work with quarterly data, spanning from 1989Q1 to 2016Q4. We use the nominal wage index from the Statistics Iceland. The monthly wage index is converted in quarterly data. Prices are measured by the CPI. We use real GDP per hour worked as the measure of productivity available from the Central Bank of Iceland, Quarterly Macroeconomic Model database. As this is only available from 1991 onwards, we use also productivity measured in per total employment terms, from the National Accounts. Other variables used are the nominal effective exchange rate of the króna, unit labour cost and the unemployment rate. All variables are seasonally adjusted, converted into indices and used in logs. Figure A1 shows prices and wages over time for the last 25 years.



Source: OECD Analytical Database and Statistics Iceland.

## Estimating the VECM of wages and prices for Iceland

### *The system with wages and prices only*

#### *Nonstationarity and the order of lags*

We first perform empirical analysis on the model of the simplest form - only including wages and prices. Finding a cointegrating relationship between wages and prices and further evidence that wages Granger cause prices would provide reasonable support for policy makers to consider wage awards when assessing inflation prospects. Furthermore, Ghali (1999) using US data found cointegrating relationship only in the system with output gap and import prices included, while in the bivariate system with wages and prices only no stationary long-term relationship was found. He thus argues that in his sample wages and prices are not adjusting to an equilibrium defined by wages and prices alone but to a long-run equilibrium in which other variables play a significant role in keeping stable.

To estimate (5) and to be able to identify a cointegrating relationship the variables of interest need to be integrated of order one ( $I(1)$ ), i.e. nonstationary in levels and stationary in first differences. For each series - wages and prices - we therefore perform tests whether they contain a unit root. The Augmented Dickey-Fuller procedure (Dickey and Fuller, 1979) tests the null hypothesis of a unit root. However, as these tests can have low power, we also use the Kwiatkowski, Phillips, Schmidt, and Shin (KPSS) (1992) procedure. The KPSS test assumes stationarity under the null hypothesis and can be used to test for mean stationarity and trend stationarity. The results are reported in Table A2. For both series we find evidence that there is unit root in levels and that the series are not (trend) stationary at 5% confidence level, by both procedures mentioned above. The same tests on differenced series show that in this case the series are stationary.

**Table A1: Test results for unit roots**

Test:	ADF			
The null:	The series has a unit root			
Included:	intercept		trend and intercept	
Test statistic\ series	cpi	wage	cpi	wage
in levels	0.2599	0.9398	-2.1980	-1.1055
differenced	-3.9769***	-7.8164***		
Test:	KPSS			
The null:	The series is stationary			
Included:	intercept		trend and intercept	
Test statistic\ series	cpi	wage	cpi	wage
in levels	1.2177***	1.2411***	0.2033**	0.1847**
differenced	0.1550	0.1357		

Note: ADF - Augmented Dickey-Fuller procedure, KPSS - Kwiatkowski, Phillips, Schmidt, and Shin procedure. \*\*\*, \*\*, \* - statistically significant at 1%, 5%, 10% confidence level, respectively. ADF - statistics indicating the rejection of the null is evidence that the series is stationary. KPSS - statistics indicating the rejection of the null is evidence that the series is nonstationary.

Furthermore, the assumption on the number of lags to be used in the estimated vector autoregression (VAR) or VECM is not innocuous. To decide on the number of lags, we estimated unrestricted VAR with wages and prices and computed lag order selection criteria. Comparing models with zero to up to four lags, the likelihood ratio statistic, the final prediction error and the Akaike information criterion point to the use of two lags in levels (tests not reported). This number of lags is

used throughout the analysis, and when the model is specified in differenced form as in the VECM, number of lags is set to one accordingly.

### *Cointegration, VECM and Granger causality*

Based on the results above, we now test for the existence and the number of cointegrating vectors. As in Mehra (1993), the unit root tests reported above indicate that the price and wage series have stochastic, not deterministic, trends. For the test of cointegration and later in estimating the error correction model we thus assume that there is no deterministic trend in the data and the constant is therefore included only in the cointegrating relationship. This is important as Johansen (1991, 1994) shows that the asymptotic distributions of the test statistics and estimators in the error-correction model are not invariant to the assumption made about the constant term. Using Johansen cointegration test, both the trace statistics and the maximum eigenvalue statistics suggest that there is one cointegrating vector (Table A2).

**Table A2: Cointegration rank tests**

The number of cointegrating relations (under the null hypothesis)	Trace statistic	Max. eigenvalue statistic
None	41.6253***	38.5598***
At most 1	3.06545	3.0655

Note: \*\*\*, \*\*, \* - statistically significant at 1%, 5%, 10% confidence level, respectively. Included variables: wages and cpi, 1 lag included (in first differences), trend assumption: no deterministic trend (restricted constant).

Next we estimate the VECM. We estimate the model with wages and prices, under the assumption of one cointegrating vector, no deterministic trends (the intercept only in the cointegrating relationship) and one lag (in differences). The results are reported in Table A3. It is clear from the results, that there is a long-run relationship between wages and prices, i.e. they are cointegrated, and moreover, both variables move to bring the system back to the equilibrium. Wages feature prominently in the cointegrating vector; the  $\beta$  coefficient of -.78 indicates that wages and prices move close together in the long run. The error correction coefficients on the cointegrating equation ( $\alpha$ ) indicate how much a variable reacts to bringing the system back to equilibrium. Here, both prices and wages seem to react to bring the system back to equilibrium. While the coefficient on wages is higher, both variables move, and none of them therefore seems to be weakly exogenous.

Looking at the coefficients on short-term dynamics terms, neither lagged prices nor wages enter significantly each other's equation. This is perhaps not surprising as Iceland is a volatile economy, and it can easily happen that short term jumps carry a lot of noise and therefore signal to noise ratio can be low. Furthermore, in Iceland short term dynamics in wages are restrained by the timing of negotiation rounds; occasionally large jumps in value can occur without necessarily reflecting economic developments of other variables in that period.

To conclude, both variables Granger-cause each other, as can be seen from the cointegrating equation and error correction coefficients. Wages and prices are therefore closely related in the long run, and causality run in both directions. In Iceland, economic policy concerned with inflation should pay close attention to developments in wages.

**Table A3: Vector Error Correction Estimates**

Cointegrating Equation:		
log cpi (-1)	1.000000	
log wage (-1)	-0.776532	
	(0.04624)***	
constant	-1.410864	
	(0.25386)***	
<hr/>		
Error Correction:	D(log cpi)	D(log wage)
Cointegrating equation	-0.014434	-0.038541
	(0.00470)***	(0.00595)***
<hr/>		
D(log cpi (-1))	0.636654	0.068514
	(0.06168)***	(0.07814)
D(log wage (-1))	-0.027831	0.189138*
	(0.07938)	(0.10057)
<hr/>		
Adj. R-squared	0.535368	0.115730
Log likelihood	387.0077	360.7459
<hr/>		
Sample (adjusted): 1989Q3 to 2017Q1, no. of observations:		
111 (after adjustments). Standard errors in parentheses; ***,		
**, * denote statistically significant at 1%,5%,10% level,		
respectively.		

In the analysis above I use nominal wage rate as a measure for wages. A measure of nominal wages is used in the analysis of the relationship between wages and prices in Iceland also in Pétursson (2012). But according to the model in (1)-(3) productivity-adjusted wages should be used. Other researchers have predominantly used unit labour costs (Ghali, 1999; Mehra 1993, 2000; Hess and Schweitzer, 2000; Mills and Wood, 2002; Hu and Toussaint-Comeau, 2010; Holz and Mehrotra, 2013) that represent nominal wages divided by real labour productivity. However, according to the statistics tests for a unit root in our data, unit labour cost is a stationary variable. However, as productivity is no doubt an important determinant of the relationship between wages and prices, among others, we include it in the model in further analysis.

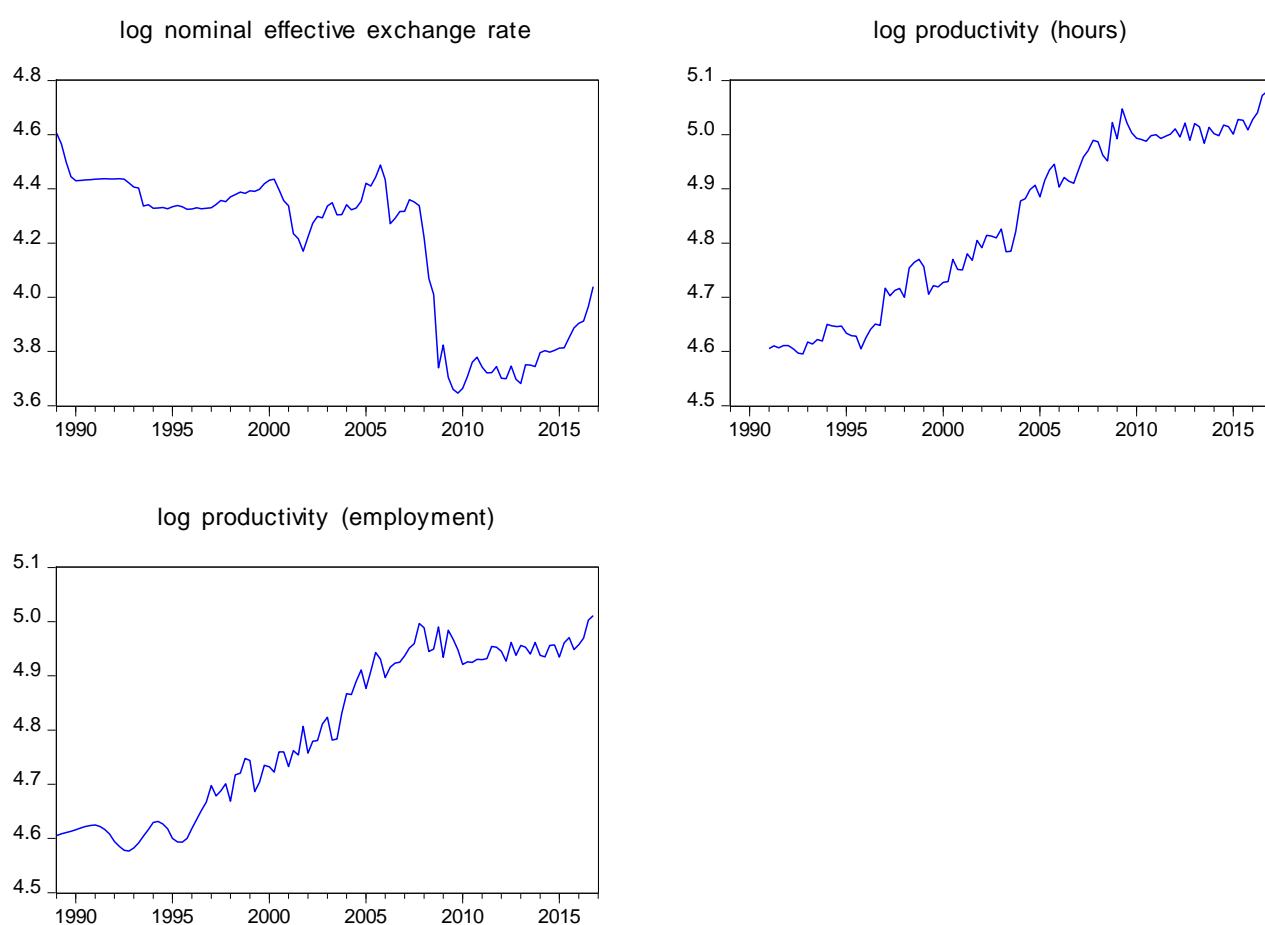
### ***The system with wages, prices, exchange rate and productivity***

Above, the relationship between wages and prices is explored with no other variables included. However, other variables are important for the relationship between wages and prices. For example, growth in wages would not necessarily exert upward pressure on prices if this growth stems from higher productivity. It is worth a mention, that while the model (1)-(3) assumes a one-on-one relationship between productivity and wages, we find it more appropriate to include it separately and let the data determine the link. Especially in Iceland, with strong labour unions, the wages-productivity-prices dynamics can be strongly impacted by the schedule of wage negotiations, hence the assumption of a one-on-one relationship between wages and productivity seems inappropriate.

Similarly, as Iceland is a small open economy, movements in the exchange rate have significant bearing on the economy and inflation in particular. As discussed in Central Bank of Iceland (2010) and OECD (2015) Iceland has a very strong degree of exchange-rate pass-through to inflation. In the next step, I therefore include in the model also a measure of productivity and nominal effective exchange rate. All variables enter the model as endogenous variables. As mentioned above, we use two different measures of productivity - in per hour terms and per worker terms (Figure A2).

Before estimating the VECM we run an array of tests as above on the existence of unit roots, the number of lags and the number of cointegrating vectors (results not shown). At the 5% confidence level, the newly introduced series are all  $I(1)$  and none has a deterministic trend. Tests for the number of lags indicate that three lags should be used in levels and the cointegration tests point towards one cointegrating equation. Table A4 and Table A5 report the results for the model with productivity per hour and per worker, respectively.

**Figure A2. Exchange rate and productivity**



Source: OECD Analytical Database and Statistics Iceland.



**Table A4: Vector Error Correction Estimates - with productivity per hour**

Cointegrating Equation:				
log cpi (-1)	1.000000			
log wage (-1)	-0.605731			
	(0.10839)***			
log effect. exchange rate (-1)	0.136843			
	(0.06299)**			
log productivity (hours) (-1)	-0.426492			
	(0.30346)			
constant	-0.768232			
	(0.97363)			
<hr/>				
Error Correction:	D(log cpi)	D(log wage)	D(log effect. exchange rate)	D(log productivity (hours))
Cointegrating equation	-0.034388	-0.071699	-0.021257	-0.029023
	(0.00919)***	(0.01295)***	(0.06222)	(0.03026)
D(log cpi (-1))	0.179761	0.023581	1.133162	-0.770575
	(0.12880)	(0.18139)	(0.87175)	(0.42393)*
D(log cpi (-2))	0.203434	-0.298520	-2.370356	0.314201
	(0.09515)**	(0.13400)**	(0.64400)***	(0.31318)
D(log wage (-1))	-0.049214	0.105954	0.357151	0.100085
	(0.07335)	(0.10330)	(0.49644)	(0.24142)
D(log wage (-2))	-0.026863	0.043430	-0.137849	0.147140
	(0.07326)	(0.10317)	(0.49584)	(0.24113)
D(log effect. exch. Rate (-1))	-0.089410	-0.008426	0.265458	0.002425
	(0.01899)***	(0.02674)	(0.12852)**	(0.06250)
D(log effect. exch. Rate (-2))	0.019691	-0.008573	0.019315	-0.116092
	(0.01977)	(0.02784)	(0.13381)	(0.06507)*
D(log prod. (hours) (-1))	-0.049714	-0.008605	0.669432	-0.272975
	(0.03285)	(0.04626)	(0.22233)***	(0.10812)**
D(log prod. (hours) (-2))	4.11E-05	-0.030523	-0.288139	-0.053783
	(0.03433)	(0.04835)	(0.23237)	(0.11300)
<hr/>				
Adj. R-squared	0.529051	0.139696	0.219296	0.080333
Log likelihood	370.7184	336.1339	177.5802	250.3934
<hr/>				
Sample (adjusted): 1991Q4 to 2016Q4, no. of observations: 101 (after adjustments). Standard errors in parentheses; ***, **, * denote statistically significant at 1%,5%,10% level, respectively.				
<hr/>				

The results indicate that there is tentative evidence that the exchange rate enters the cointegrating vector significantly, while productivity does not. Furthermore, the exchange rate seems to be weakly exogenous (it does not contribute to closing the gap when the system is out of equilibrium). This can be explained by the fact that exchange rate is driven strongly by the factors outside of the economy. Weak results with respect to productivity and the exchange rate are nevertheless somewhat puzzling. Turning to the relationship of interest - between wages and prices - the results from above are confirmed in the new specification. Wages feature prominently in the cointegrating equation, and both variables react to the system being out of equilibrium. Causality therefore runs both ways.

**Table A5: Vector Error Correction Estimates - with productivity per worker**

Cointegrating Equation:				
log cpi (-1)	1.000000			
log wage (-1)	-0.748311			
	(0.11690)***			
log effect. exchange rate (-1)	0.113703			
	(0.07984)			
log productivity (employment) (-1)	0.184196			
	(0.31553)			
constant	-2.766478			
	(0.87616)***			
Error Correction:	D(log cpi)	D(log wage)	D(log effect. exchange rate)	D(log productivity (employment))
Cointegrating equation	-0.028718	-0.073334	0.049583	-0.095825
	(0.01161)**	(0.01676)***	(0.07525)	(0.03545)***
D(log cpi (-1))	0.293936	0.201134	1.494645	-0.387470
	(0.12206)**	(0.17622)	(0.79098)*	(0.37260)
D(log cpi (-2))	0.285980	-0.099274	-1.667520	-0.038807
	(0.08457)***	(0.12209)	(0.54805)***	(0.25817)
D(log wage (-1))	0.017445	0.155845	0.195162	-0.053377
	(0.07514)	(0.10847)	(0.48688)	(0.22936)
D(log wage (-2))	-0.016474	0.066247	0.139906	-0.125535
	(0.07564)	(0.10920)	(0.49016)	(0.23090)
D(log effect. exch. rate(-1))	-0.081331	0.000275	0.267370	0.069464
	(0.01908)***	(0.02755)	(0.12364)**	(0.05824)
D(log effect. exch. rate(-2))	0.039114	0.033549	0.146696	-0.107829
	(0.01826)**	(0.02636)	(0.11832)	(0.05574)*
D(log prod. (employment) (-1))	-0.005214	0.015511	0.628779	-0.300455
	(0.03159)	(0.04561)	(0.20473)***	(0.09644)***
D(log prod. (employment) (-2))	0.028035	0.024866	-0.008857	-0.297427
	(0.03327)	(0.04803)	(0.21561)	(0.10157)***
Adj. R-squared	0.589906	0.063092	0.167750	0.143291
Log likelihood	395.0523	355.0303	191.3601	273.4099
Sample (adjusted): 1989Q4 to 2016Q4, no. of observations: 109 (after adjustments). Standard errors in parentheses; ***, **, * denote statistically significant at 1%,5%,10% level, respectively.				

***The system with wages, prices, exchange rate, productivity and the unemployment rate***

Finally, it would also be good to control for the business cycle. As the output gap for economy like Iceland is very volatile and changes significantly with every vintage of estimation (OECD, 2015), we use unemployment rate instead. Unemployment rate is a trend stationary variable. We include it in the VECM as an exogenous variable, therefore in levels with three lags. Below we report the results only for the coefficients of the cointegrating vector and error correction coefficients.

**Table A6: VECM Estimates - with the unemployment rate and productivity per hour**

Cointegrating Equation:				
log cpi (-1)	1.000000			
log wage (-1)	-0.512255			
	(0.15877)***			
log effect. exchange rate (-1)	0.192256			
	(0.15306)			
log productivity (hours) (-1)	-0.695377			
	(0.38362)*			
constant	-0.298813			
	(1.15174)			
<hr/>				
Error Correction:	D(log cpi)	D(log wage)	D(log effect. exchange rate)	D(log productivity (hours))
Cointegrating equation	-0.036718	-0.057424	0.031440	-0.035193
	(0.00916)***	(0.01250)***	(0.06231)	(0.03069)

Sample (adjusted): 1991Q4 to 2016Q4, no. of observations: 101 (after adjustments). Standard errors in parentheses; \*\*\*, \*\*, \* denote statistically significant at 1%,5%,10% level, respectively.

**Table A7: VECM Estimates - with the unemployment rate and productivity per worker**

Cointegrating Equation:				
log cpi (-1)	1.000000			
log wage (-1)	-0.809178			
	(0.10056)***			
log effect. exchange rate (-1)	0.002969			
	(0.10950)			
log productivity (employment) (-1)	0.288893			
	(0.24447)			
constant	-2.391189			
	(0.74305)***			
<hr/>				
Error Correction:	D(log cpi)	D(log wage)	D(log effect. exchange rate)	D(log productivity (employment))
Cointegrating equation	-0.043594	-0.073333	0.163065	-0.173441
	(0.01584)***	(0.02215)***	(0.10231)	(0.04726)***

Sample (adjusted): 1989Q4 to 2016Q4, no. of observations: 109 (after adjustments). Standard errors in parentheses; \*\*\*, \*\*, \* denote statistically significant at 1%,5%,10% level, respectively.

The results are similar to the ones in the previous section, hence the existence of a long-term relationship and mutual causality between wages and prices is again confirmed.

## Conclusion

Iceland is a very small open economy with a flexible labour market, and strong labour unions. This can have implications for the relationship between wages and prices. Many analysts and policy makers argue that trade unions should be more moderate in their wage demands as these demands result in rising inflation and can have negative impact on the economy. Furthermore due to the effect on inflation, central bank is pressed to raise interest rates and thus slowing the economy. Nevertheless, based on data from other countries, mostly the US, empirically there is no clear evidence that wages cause inflation in such a manner. If anything, most researchers find the opposite - that rising prices

cause rising wages (Hess and Schweitzer, 2000; Mills and Wood, 2002; Hu Toussaint-Comeau, 2010; Mehra 1993, 2000).

In this paper, data spanning from 1989 to 2016 is used in the error correction framework to determine whether wages Granger-cause prices in Iceland. Various specifications and measures are used to check the robustness of the result. I find a long-term relationship between wages and prices and further evidence that causality between wages and prices run both ways. I conclude that wages do cause prices in Iceland.

One of the caveats of the analysis presented above is that there have been major structural changes in the Icelandic economy in the period under analysis, including the Icelandic banking crisis. Moreover, the nature of the monetary policy has changed too. In 2001 inflation targeting was formally established, while a decade before that the fixed exchange rate was abandoned in favour of a managed float. Central Bank of Iceland (2017) in Box 3 reports evidence that monetary policy has successfully tamed inflation expectations and that they are in line with the inflation target and more firmly anchored than in the past. The test for the structural break in the Phillips curve finds that from 2012 the inflation bias has grown smaller.

Given the change in the monetary policy framework, the analysis could thus be performed by splitting a sample and testing whether there has been a structural break in the relationship between prices and wages. Arguably, successful inflation targeting and well anchored inflation expectations would diminish the impact of wages on prices. However, with the time span of data further shortened by splitting the sample, power of the tests performed in this paper would be further reduced. We leave this for future research.

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