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On the Way to Welfare 4.0 – Digitalisation in Spain

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SPAIN

1. ABSTRACT

- The economic crisis hit Spain harder than most other EU member states. At the time of writing (September 2016) the fourth largest economy in Europe is also caught up in a political crisis: for months now Spain has been without an elected government. In 2016 no law has yet been passed and urgent reforms have been fallen by the wayside.
- Digitalisation began in Spain comparatively late and the country lags behind in particular in the development of digital competences.
- While at the start of the 2000s Spain's economic development seemed exemplary, it is also characterised by relatively weak innovativeness and a lack of investment especially by the public sector – in research and development. There is no systematic innovation policy in Spain. The R&D branch is decentralised; for example, the autonomous regions also have some role in determining innovation policy.
- In the areas of science and innovation Spain has well developed structures, whose stability and effectiveness have suffered due to government spending cuts and "austerity" measures. However, competitiveness in the high-tech sector is growing at above the EU average. Spain is developing positively again, albeit slowly.

2. A SHORT OVERVIEW OF THE POLITICAL AND ECONOMIC SYSTEM

Since adopting its Constitution in 1978, Spain has been a parliamentary-democratic constitutional monarchy (Article 1), which acknowledges the principles of both the welfare state and the rule of law. In Article 2, the Constitution also guarantees the unity of the Spanish nation and the autonomy of nationalities and regions. Accordingly, the legislature is divided into two chambers. The first chamber is directly elected by the people by proportional representation. At present there are ten political parties in the parliament, five of which have a pronounced regional character, such as the two Catalan parties ERC and CDC. In the second

chamber Spain's territorial units are represented. The so-called autonomous communities have far-reaching legislative and executive competences and are comparable in status to Germany's federal states. Spain is thus one of the most decentralised countries in Europe. Currently (as of October 2016) the country is mired in political crisis; attempts to form a government have failed repeatedly and, for example, in 2016 not a single law has yet been passed.

The interest representation rights of trade unions and employers' associations are anchored in the Spanish Constitution, which also guarantees freedom of organisation and the right to strike. The two major trade union confederations, UGT and CCOO, are politically close to the social democratic party PSOE and the communist party PCE, although at present the latter has no political role.

After being hard hit by the financial and economic crisis between 2009 and 2013 and having to cope with negative real GDP growth rates of between –3.6 per cent and –1.7 per cent, as well as rising unemployment and a massive increase in government debt (99 per cent of GDP in 2015) Spain's economy has been growing steadily since 2014. Unemployment is also falling slowly (see Table 1).

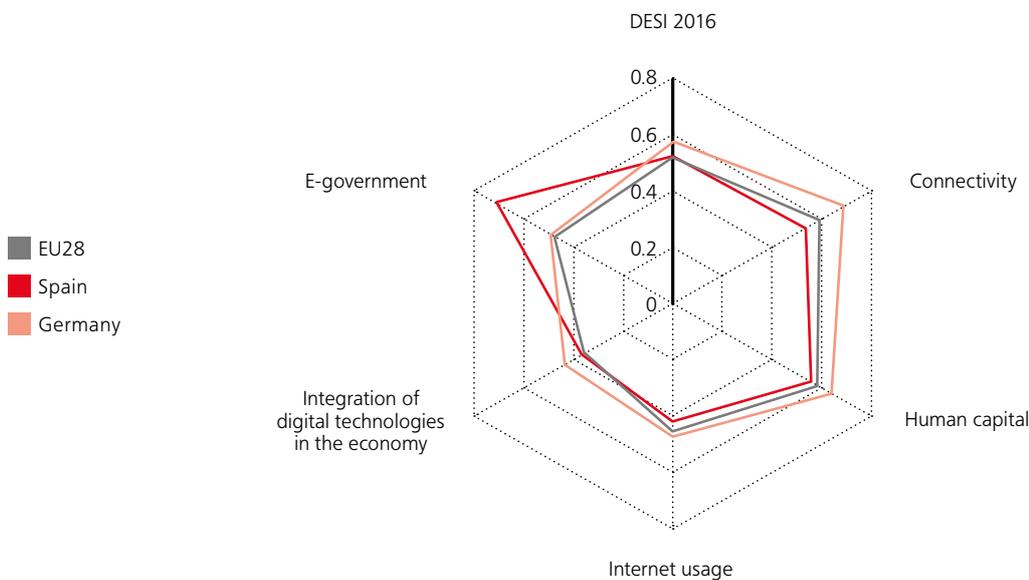
The Spanish welfare state is not categorised in Esping-Andersen's typology (1990), but is often classified as rudimentary or Mediterranean because of its lack of institutionalisation. Sometimes it is also classified as conservative because of the strong role of the family. The importance of interest representation associations and the weak basic provision beyond the contribution based social insurance system run by the Tesorería General de la Seguridad Social (TGSS) would tend to imply that Spain should be categorised under the conservative model. The economic and financial crisis has put the social security systems under particular pressure, so that new paths have to be sought.

Table 1
Overview of Spain¹

Indicator	Spain	EU28
Form of state	Constitutional monarchy	
State organisation	Federal	
Party system	Multi-party system	
Electoral system	Proportional representation	
EU member since	1 January 1986	
Inhabitants/km ²	92.5	116.7
Urbanisation (% of population)	80	74
Welfare state regime	Conservative / mediterranean	
Income inequality (distribution quintile)	6.9	5.2
Social expenditure (% of GDP)	25.7	28.6
GDP per capita (PPS, Index: EU=100)	92	100
Growth rate (real GDP in comparison with previous year)	3.2	2.2
Budget deficit/surplus (% of GDP)	-5.1	-2.4
Labour market productivity nominal per employee (Index: EU=100)	102.6	100
Harmonised unemployment rate	19.5	8.6
Trade union density (0–100)	16.88	
R&D total spending (% of GDP)	1.23	2.03
Proportion of people 20–24 years of age with at least upper secondary education (%)	68.5	82.7
Tertiary education in MINT subjects (per 1,000 graduates)	15.6	17.1
DESI (0–1; 1=digitalised society)	0.52	0.52
Proportion of regular internet users (16–74 years of age) in %	75	76
Internet penetration (% of households)	79	83
Proportion of households with broadband connection (%)	78	80
Proportion of companies with broadband connection (%)	98	95

¹ Data sources, if not otherwise specified: Eurostat, <http://www.ec.europa.eu/eurostat> (3.10.2016), data from 2016 or next available year; data on type of welfare state: <http://www.learneurope.eu/index.php?cID=300> (3.10.2016); data on level of urbanisation: data.worldbank.org (3.10.2016); data on trade union density: OECD, https://stats.oecd.org/Index.aspx?DataSetCode=UN_DEN (3.10.2016); data on digitalisation: Digital Economy and Society Index (DESI) 2016, <http://ec.europa.eu/digital-agenda/en/digital-agenda-scoreboard> (28.9.2016).

Figure 1
Development of a digital society in Spain by comparison with Germany and the EU28



Source: Digital Economy and Society Index 2016.

3. STATE OF DIGITALISATION

Spain ranks somewhere in the middle, according to the experts interviewed on the state of digitalisation by European comparison, and the relevant indicators confirm it: according to the European Innovation Scoreboard 2016 Spain is a “moderate innovator” (EC 2016: 1). With regard to development in the direction of a digital economy and society, measured in the so-called DESI,² the country is ranked 15 out of the 28 EU member states (cf. European Commission Digital Economy and Society Index [DESI] 2016; EC EDPR 2016). This puts Spain among the catch-up countries. After the slump that resulted from the financial and economic crisis recovery can be discerned in a number of places. With regard to the integration of digital technologies in public administration (e-governance and e-administration) Spain is above the EU average. Today, 77 per cent of households have access to fast broadband connections of at least 30 Mbps, although there are considerable differences between regions, as well as between urban and rural areas. According to the DESI index, however, a mere 54 per cent of the population between 16 and 74 years of age have at least basic digital skills. With regard to internet use Spain is below the EU average (EC EDPR 2016).

Consonant with the aims of the Digital Agenda for Europe Spain has developed an Agenda Digital para España, which was adopted in February 2013. This national strategy is aimed

at encouraging the provision of digital services, promoting digital skills, inclusion and employability and expanding the digital economy and administration and, last but not least, glass fibre networks. The Agenda serves as an umbrella for all government activities and lays down targets up to 2020. The Ministry for Industry, Energy and Tourism (Ministerio de Industria, Energía y Turismo – MINETUR) coordinates the implementation of measures together with the Ministry for Finance and Public Administration (Ministerio de Hacienda y Administraciones Públicas – MINHAP). An e-governance plan for 2015–2020 was also adopted (Plan de Transformación digital de la Administración General del Estado y sus Organismos Públicos). Within the framework of the Digital-by-default strategy, in future, central public services are to be used digitally. In relation to electronic billing systems in particular Spanish SMEs are performing well.

4. HEALTH CARE POLICY

The Spanish Constitution explicitly guarantees everyone health care provision. The Ley General de Sanidad (General law on health care) of 1986 lays down access to the public health care system as a civil right. The system is very decentralised: in 2002 key competences for the provision and organisation of health care services were transferred to the autonomous regions (the 17 Comunidades Autónomas and two autonomous cities Ceuta and Melilla). Since then each region has developed its own health care services. At the beginning of the twenty-first century Spain had one of the most modern health care systems in Europe. Since the financial and economic crisis, however, the system has been put under high pressure due to the government’s approach to high public debt. While the quality of health care services in general remains relatively high, experts have identified

² DESI is an index composed of five dimensions, which surveys the development of EU member states towards a digital society. Developed by the European Commission (DG CNECT) the index encompasses connectivity, human capital, internet usage, integration of digital technologies in the economy and digital public services (e-government). The Index varies between 1 and 0, with 1 representing the highest value, cf. <http://ec.europa.eu/digital-agenda/en/digital-agenda-scoreboard> (28.9.2016).

maintaining the cohesion of the regional systems as the major challenge. Among other things the engineers' association AMETIC has called for the creation of an authority with inter-territorial competences for the development of e-health.

With regard to digitalisation Spain's health care system is well advanced by European comparison, although it is no longer in the prominent position it occupied in the mid-2000s. Digitalisation is particularly well developed in two areas: (I) electronic prescriptions and dispensing of therapeutic measures (e-prescription and e-dispensation) and (II) electronic records of patients' medical histories (cf. EC EDPR 2016). Electronic prescriptions, according to experts' estimates, are currently available to about 70 per cent of the population with statutory medical insurance; the electronic medical card is also used for this purpose. In 2010 a law was passed laying down minimum standards for the (electronic) documentation of patient histories (Conjunto Mínimo de Datos de Informes Clínicos – CMDIC). The national strategy titled *Historia Clínica Digital del Sistema Nacional de Salud (HCDSNS)* is important for the electronic recording of patients' medical histories. The Ministry of Health (Ministerio de Sanidad, Servicios Sociales e Igualdad – MSSSI) is working with the public body red.es on the standardisation of electronic documentation and is striving to achieve the nationwide use of the so-called Systematized Nomenclature of Medicine – Clinical Terms (SNOMED CT). This gives a complete account of the substantive elements of medical statements and thus standardises and enables the exchangeability of information also across (national) borders. There is also a national strategy (Plan Avanza 2) aimed at expanding use of ICT in the health care sector. MINETUR, MSSSI and the regional health care services are cooperating on an online health care programme (cf. MSSSI 2010). To date, however, the national strategy on e-health has not (yet) been adopted (cf. EC EDPR 2016). According to the law every patient can be treated in every region, but in reality there are problems with system interoperability. Furthermore, the exchange of medical data between regions is handled very differently: the systems in Galicia and the Basque Country are particularly well developed, but Catalonia has a closed system that permits almost no exchange of information with other regions.

Spain is one of the countries in the European Union hardest hit by demographic change. At 82.5 it has one of the highest life expectancies. According to expert estimates, at present around 80 per cent of health care spending goes on the care of chronically sick people. There is thus particular emphasis on telemedicine. Another major issue is the use of big data for the development of individually tailored therapies and medicines. To date only pilot projects have been implemented; Galicia and the Basque Country lead the way. In the area of Bilbao (Basque Country) a telemonitoring service for chronically sick patients, TELBIL, was successfully established between 2009 and 2014 that monitored the state of people's health via smart phone (cf. Carretero/Kucsera 2015). Spanish experts consider the key challenge to be not so much the development of new systems and technologies but the implementation and consolidation of existing ones.

5. LABOUR MARKET POLICY

Currently Spain's statistical authorities attest to positive development: not only is the national economy growing, but in 2016 the proportion of those in employment also grew by 3.2 per cent. However, that is not much to write home about, given that Spain still has the second highest unemployment rate in Europe among those between 15 and 24 years of age. There is a large informal sector, which naturally enough can contribute little to innovation and boosting competitiveness. The Spanish labour market remains extremely fragmented and dualised: some people are virtually dismissal-proof, whereas others are stuck in very precarious employment, in particular many young people, even the highly qualified (cf. Bentalilla et al. 2012). Many young people thus feel compelled to seek work outside Spain.

The state employment service (SEPEE) is responsible for the implementation of employment policy and services related to unemployment, although they are largely provided for by basic insurance. The prime locus of solidarity is the family (Schmid 2010). In response to the massive deterioration of labour market performance in the wake of the crisis comprehensive reforms were set in motion: in February 2012 the reform programme *II Acuerdo para el Empleo y la Negociación Colectiva 2012–2014 (II AENC)* was enacted. The aim is to make the labour market more "flexible". To that end employment protection was diluted, what some regard as excessive severance pay in the event of dismissal was cut and short-time working was boosted. On the other hand, companies are supposed to create more permanent jobs, which according to the OECD has indeed taken place, at least to some extent. Implementation of this triggered demonstrations and general strikes and even experts take a critical view of the labour market measures. In 2014 an *Acuerdo sobre el Programa Extraordinario de Activación para el Empleo (PAEA)* (Agreement on a special activation programme) was adopted, with particular emphasis on labour market activation policies.

Digitalisation commenced in Spain relatively late and it still lags behind in important areas. The experts interviewed drew particular attention to the education and training deficit in the area of digital skills (cf. EC EDPR 2016). The proportion of ICT specialists in the Spanish workforce, at 3.1 per cent, is below the EU average of 3.7 per cent (EC EDPR 2016). The country thus faces a dual challenge: close the gap and, at the same time, prepare for the future. According to some estimates, around 55 per cent of jobs in Spain are under threat from digitalisation and automation (Degryse 2016: 24; data: EU-LFS). According to some, efforts should thus be made to familiarise young people while still at school with the options open to them in terms of company start-ups and in particular to encourage young women and girls to take up natural sciences and engineering. Furthermore, efforts must be made to improve the labour market situation for highly qualified workers and researchers. At the same time, supply and demand for skills should be better coordinated between educational institutions and companies: according to the engineers' association AMETIC there is, for example, a shortage of specialist programmers and developers. The experts we interviewed all complained that every change of government in Spain brought with it more changes in education policy.

6. INNOVATION POLICY

Overall, Spain is characterised by relatively low innovativeness and a lack of investment – especially in the public sector – in research and development (cf. EC EDPR 2016). Investment in the private sector is also relatively low and scarcely benefits from spillover effects of innovative ideas between firms and regions; the poor links between companies and educational institutions, as well as between autonomous regions is a barrier to innovation (cf. among others CCOO Industria 2016). At the same time, however, it appears that sectors with a high knowledge intensity grew more strongly in Spain than the European average between 2007 and 2012. The competitiveness of the high tech sector also appears to be increasing at a higher rate than the European average (CCOO Industria 2016). Spain is developing positively again, albeit slowly. The opening up of new funding sources, as well as the effective and efficient use of the money are among the main challenges. The experts interviewed also mentioned the atomised corporate structure as a key hindrance to innovation: 94.5 per cent of Spanish firms are micro-companies with fewer than 10 employees, primarily in services. The relative importance of SMEs (in Spanish, PYMEs) for the Spanish economy is thus far higher than the EU average: SMEs are responsible for around 90 per cent of Spanish GDP. While R&D at some major companies is in line with international norms the large number of SMEs is surely responsible for the low innovation rates in the economy as a whole.

There is no systematic innovation policy in Spain. The R&D system is decentralised; even the autonomous regions have a role in innovation policy. For example, they are responsible for university funding and have key competences with regard to the industrial sector. At national level the Ministry of the Economy MINECO (Ministerio de Economía y Competitividad) is the main actor. Besides that the Ministry for Industry, Energy and Tourism MINETUR systematically promotes the industrial sector. The Law on science, technology and innovation 2011 (Ley de la Ciencia, la Tecnología y la Innovación, 14/2011) regulates the promotion of R&D and provides for two new agencies to promote innovation and development as public-private entities. The Centro para el Desarrollo Tecnológico Industrial (CDTI), responsible for funding and supporting R&D, has been assigned to MINECO, while in future the research agency the Agencia de Investigación (AEI) will play a more substantial role and support prominent research projects. There is no central authority in Spain that promotes and coordinates innovation across ministries and areas of responsibility (cf. Leceta 2016; Mulet/Leceta 2016).

MINETUR has national strategies to help Spanish industry meet the challenges of the present and the future: the first funding line Agenda para el Fortalecimiento del Sector Industrial en España (Secretaría General de Industria y Pyme; MINETUR 2014a) is aimed at reindustrialisation and boosting the competitiveness of Spanish companies on internationalised markets. The second funding line, adopted in October 2015, is explicitly dedicated to digitalisation: Iniciativa Industria Conectada 4.0 (cf. EOI 2015) is aimed at driving the digital transformation of Spanish industry by means of a joint action plan of the public and private sector (cf. EOI 2015). This initiative has been welcomed by administrative and

company experts because the relevant stakeholders have been involved in the development of a future-oriented strategy for Spanish Industry 4.0 (companies, trade unions, universities and research institutes). Under this aegis competitiveness is to be boosted by investment and the deployment of new technologies, paying particular attention to SMEs and so-called micro-firms. In the autonomous regions in some instances major progress has been made with regard to Industry 4.0. Examples include the Programme Basque Industry 4.0, with its Fabricación Avanzada and the Agenda de la Competitividad Industrial Gallega in Galicia (cf. EOI 2015).

In the areas of science and innovation Spain has well developed structures, although their stability and effectiveness have suffered from spending cuts and “austerity” measures. On top of that there have been difficulties in the coordination of policy-making. The Global Competitiveness Report 2015 categorises Spain’s innovativeness as unsatisfactory as a result of its low spending on R&D and poor links between universities and companies. “Consolidating” state finances while maintaining high quality in relation to public spending is among the key challenges. In this context all the experts we interviewed referred to the central role of the education system: not only are more transdisciplinary projects to be supported in future, but curricula in schools and universities should and must be adapted to the requirements of digitalised markets. Another challenge, last but not least, is to support a culture that stimulates innovation (cf. Mulet/Leceta 2016).

7. SUMMARY

While in the early 2000s Spain appeared to be a model European pupil with regard to positive economic growth, today it seems to be characterised by inadequate innovativeness (cf. WEF 2015). Among the main barriers to development identified by the experts we interviewed – besides the “austerity” measures, the unstable political situation and the federal policy-making structures – there are also cultural aspects, as a result of which Spain tends to react rather than develop innovative strategies proactively. At the same time, effective instruments for the evaluation of policy measures have to be developed. Models, visions and an entrepreneurial spirit are lacking, not to mention development in the direction of Welfare State 4.0. Indeed, as far as the latter is concerned, according to the experts Spain is rather at the stage of Welfare State 1.0. Now Spain has to face the challenges of a fourth industrial revolution before it has even tackled the third. There is little public debate and social dialogue. Among the main challenges facing the country is to improve productivity and competitiveness, while consolidating public finances. One of the ways in which the government chose to respond to the economic crisis was to cut spending on research and development. At the same time, however, Spain has caught up in important areas, has got a Digital Agenda off the ground, has reregulated innovation policy and has implemented comprehensive labour market reforms. In the health care system there are areas in which the system is digitalised to a considerable extent and with regard to digital infrastructure – glass-fibre, 4G coverage, e-administration – Spain is certainly at the European forefront.

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Imprint:

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Friedrich-Ebert-Stiftung

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ISBN: 978-3-95861-719-3

Title image: © ANDIA/VISUM

Design: www.stetzer.net

