



The impact of technological innovation on the labour market in Italy: effects on the social protection system

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1. The impact of technological innovation on the **labour market** in a context of population ageing

2. Effects on the **social protection system**:
 - ✓ Pension system
 - ✓ Health care and long-term care for the elderly



The impact of technological innovation on the labour market

The effect of technological innovation in the current demographic situation will speed structural adjustments in the labour market both

at the aggregate level: employment rate and wages;

and

at the individual level: tasks, work conditions, etc. – e.g. full-time open-ended jobs vs. temporary and/or part-time jobs.



✓ **Job polarisation**

The demand for routine jobs and tasks in the US, in the last decade, has considerably decreased, regardless of whether these jobs and tasks have a cognitive or a manual character. Therefore demand for middle-skilled workers has decreased, while demand for high-skilled and low-skilled (paid accordingly) ones has risen.

➔ **risk of inequality**

Risk of lower social security contributions for middle and low-skilled workers due to not continuous careers and/or low wages/remunerations

✓ **Replacement of workers**

who do not have the required skills (skill-biased technological change)

➔ **Risk of unemployment for:**

- elderly (early retirement or retraining? For the future: life-long learning and active ageing)
- young people (education to foster non-routine skills, ICT skills, STEM-quantitative and self-organisation skills)





The impact of technological innovation on the labour market

✓ **Risk of higher unemployment rate** if «old» jobs will not be replaced by new jobs

➔ **effects on dependency ratio** (number of pensioners/number of workers) with significant consequences for the old-age security system

In literature, however, the linkage between innovation, productivity and employment is not straightforward.

✓ **Will technological innovation lead to job destruction and higher unemployment or will the job-creating effect from new process technologies prevail?**

Empirical evidence on employment effects of process innovation is ambiguous.

- Productivity effect: vast potential for productivity increases and corresponding employment losses due to the application of ICT technologies on a wide range of routine activities in manufacturing and services. Still, from 1995 to 2004 in European countries productivity growth has slowed down (reflecting a mix of cyclical and structural factors), while the US experienced an acceleration in productivity growth (reflecting gains associated with the diffusion of ICT technologies).
- Demand effect: new products introduced to the market create new demand (product innovation effect). The degree product innovation can create new employment depends on the price elasticity of demand and the existence of substitutes or complementary products.



The impact of technological innovation on the labour market

✓ **Possible effects on labour markets at global level**

- The need for labour-intensive manufacturing products from emerging countries is likely to decrease
- Weakening of global supply chains of products
- Reshoring of activities in advanced countries

✓ **Risks and opportunities for emerging and low-income countries**

- pressure to migration
- development policies focused on the potential for labour-intensive services that can be provided via digital technologies
- strengthening of domestic markets and regional trade integration to support the growth



✓ **What will be a «good job» in the future?**

- Reduction of standard employees vs. new opportunities for self-employed
- Growing number of services delivered through internet platforms (GIG ECONOMY). Currently, around 15-20% of employment in advanced economies and 40-80% in developing countries is self-employed, but only 1% of employment is engaged in the platform economy (*source ILO*). It seems that this percentage will significantly rise in the next future
- «Good jobs» vs. «lousy jobs»
- Open question: will technological changes create good or lousy jobs?



✓ Lack of data

- Not easy to identify this type of work analyzing INPS administrative data base. In particular, *crowdworking* is not easily «traceble» by tax authorities, not only in Italy



- ✓ In Italy *gig workers* are often considered «**collaborators**» and enrolled in the «Pension Separate Fund» (Gestione Separata) under some conditions (i.e. the work must be not organized by the Client and the worker must be free to accept or refuse a request of collaboration). Otherwise the worker is considered an **employee** by law.
- ✓ The above mentioned Pension Separate Fund covers Invalidity, Old-age and Survivors pensions. From 1997 it has been also created a special fund for “collaborators” which covers maternity, hospital, family allowances and since 2007 sickness. Work accident insurance is mandatory. Recently unemployment allowances may also be covered. Concretely the access to those benefits is conditional on a minimum income earned.



✓ **Risk of deepening of economic divergences between metropolitan and rural areas**

Some literature features a risk of deepening of economic divergences between metropolitan and rural areas. Although digital work can be provided from everywhere, many metropolitan areas will likely develop relevant networks of services, infrastructure and opportunities of education and retraining, leaving the rural areas behind.

 further risk of inequality

Demographic trends in world population:

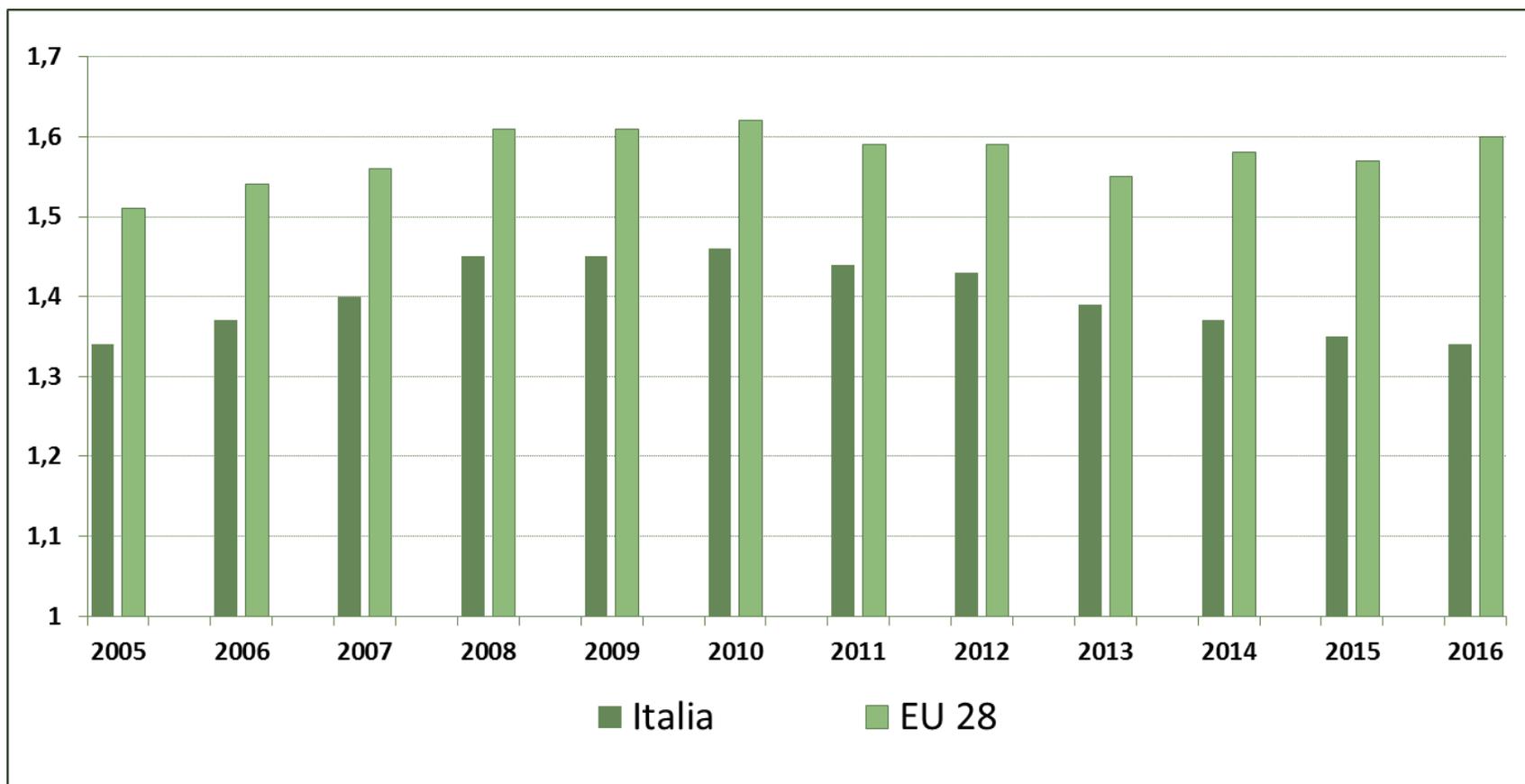
- advanced and some large emerging countries are experiencing population ageing (rising life expectancy and low fertility rate)

➔ problems of productivity growth and of social security sustainability

- some low-income countries continue to experience high fertility rates

➔ local labour markets cannot easily absorb this young workforce

Fertility rate in the EU 2005-2016





Factors relevant for the PAYG Pension Systems

- Demography: life expectancy, ageing of population, elderly/population
- Dependency ratio: pensioners/workers
- Active population/population
- Unemployment rate
- Productivity, wages
- Economic growth (GDP) and public debt

- Regulation: labour market policies, immigration policies, pension system reforms, investments in education and life-long learning (and, in the very long run, demography policies)



The current Italian pension system: an overview

Overview

- In Italy the public pension scheme is “pay-as-you-go”
- It provides old age pensions and early pensions, disability pensions and survivors pensions
- It is mandatory for all workers: public sector employees (expenditure 27%), private sector employees (58%) and self-employed (15%)
- Labour income is always subject to contribution (exception for occasional self-employed workers: the first remunerations up to 5.000,00 euro are exempted from contributions)
- The private funded pillar exists in Italy, but it is not mandatory and currently provides a very minor share of pensioners’ income



Main reforms

- In 1995 introduction of the **NDC (Notional Defined Contribution) scheme** – based on actuarial calculations:
 - Calculation formula: $p = aC$
(where: p = pension, C = total life-long contributions, a = transformation coefficient)
- **Alignment of the statutory retirement age for women and men** (completely effective from 2018);
- Automatic update of pensions entitlements according to the changes in **life expectancy** at birth (2009-2011):
 - retirement age in 2019 will be **67 years** (or 43 years and 3 months of contributions for early retirements; -1 year for women)



The current pension system and the possible labour market new scenario: risks

- ✓ **The NDC pension scheme reflects the labour market conditions:** disadvantaged workers (with low wages and not continuous working careers) will be disadvantaged pensioners

➡ risk of pension inadequacy and inequality

- ✓ The rising share of older workers, as a consequence of the increase in the retirement age and the ageing of population might dampen **productivity growth**.

On the other hand population ageing will increase the demand for care services, shifting resources into low-productivity activities.

➡ risk of lower economic growth



The current pension system and the possible labour market new scenario: risks

PAYG systems are based on an explicit intergenerational link:

$$C = aW = P$$

(where «C» indicates the contributions at a certain time and «P» the pensions paid at the same time)

We can also write:

$$awL = pN$$

$$a = p/w * N/L$$

(where «a» is the «contribution rate of equilibrium»; «w» the average retribution; «p» the average pension; «N» the number of pensioners; «L» the number of workers)

It is evident that the equilibrium of the PAYG pension systems depends on the ratio of pensioners to workers, which is related to pension, labour market and immigration policies (and demographic policies in the very long run).



The relevance of GDP growth. Income redistribution issues

- ✓ If the possible scenarios on labour-market and labour conditions of the future do not affect the total product, the sustainability of the pension systems and the economic equality will be a question of income distribution.
- ✓ Considering the trends of the labour market, for the future there may be a need for a shift in the tax systems from labour to capital and value added, if these factors become the main contributors to economic growth under the impact of technological innovation. Nevertheless this is hard, if not impossible, without international co-operation.
- ✓ As regards the pension systems, possible changes may be needed in the future, as the employment-tied social protection could not ensure pensions adequacy and economic equality.

- ✓ New technologies offer opportunities for the growing request of health care and long term care for the elderly in ageing societies
- ✓ Technologies for health application are developing very fast
- ✓ “E-health” is the healthcare practice supported by electronic processes and communication. It aims to improve the quality of services and reduce costs/prices
- ✓ Telemedicine is part of e-health: it allows store and transmission of medical data, remote monitoring of patient by a set of technological devices and real-time interaction between patient and physician and among physicians
- ✓ The increasing share of elderly with chronic diseases requires a structural shift of healthcare services from the hospital to home



- ✓ Social security systems will face important challenges from the changes in the working conditions due to new technologies. Investing in flexisecurity, education, R&D and infrastructure may be strategic for EU Countries.
- ✓ GDP growth is the fundamental variable for social security adequacy and sustainability (consequently public debt is a major problem).
- ✓ Policy can help ensure that the benefits of digitalisation on productivity emerge. This may require policies to enable re-allocation of resources and foster the diffusion of new technologies and business models notably in SMEs.
- ✓ Social security legislation is not prepared for the transformation of working conditions under the impact of technologic innovation (e.g. «platform work»). The «gig-economy» calls for new regulation, but on the other hand policy makers should avoid over-regulation.
- ✓ There is a lack of data on new forms of employment related to ICT, relevant for policy makers.



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