Bonatti, Luigi; Lorenzetti, Lorenza Alexandra; Traverso, Silvio

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Bridging the wage gap: A discussion of wage subsidies to low-paid workers and their costs in Italy

Luigi Bonatti[a], Lorenza Alexandra Lorenzetti[a], and Silvio Traverso[b,c]

[a] *Università di Trento (Italy)*
[b] *Università del Piemonte Orientale (Italy)*
[c] *Global Labor Organization*

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Abstract

This paper discusses the potential introduction of permanent public subsidies to supplement the wages of low-paid workers in Italy, taking inspiration from Edmund Phelps' ideas on supporting the working poor. We consider how a negative taxation scheme for low-wage earners might address structural labor market challenges such as low participation rates, labor market segmentation, and widespread in-work poverty. Using a stylized theoretical model, we illustrate how such subsidies could affect wages, employment, and labor supply–demand dynamics, with a particular focus on potential cost implications under different elasticity assumptions. We also consider how design features – such as targeting full-time workers or integrating the subsidy with broader social and economic reforms – could maximize the measure's impact while mitigating risks related to fraud or uneven coverage. Finally, a scenario analysis based on Italian Labor Force Survey data provides an indication of the policy's likely scale and distributional effects. The paper concludes by reflecting on both opportunities and challenges for implementing wage subsidies in Italy's segmented labor market.

Keywords: Low-skilled workers, Working poor, Wage subsidies, Negative taxation.

JEL codes: D04, H20, J20, J38.

1 Introduction

The Italian labor market is structurally characterized by low participation rates, pronounced income inequality, and a significant prevalence of low-wage employment. Wage stagnation and labor market segmentation remain pervasive, particularly among low-skilled workers, women, and youth in economically disadvantaged areas. These challenges, further compounded by structural factors such as technological advancements, the prevalence of temporary and irregular employment, low-skilled immigration, and persistent regional economic disparities, contribute to exposing many households to the risk of poverty.

Given these persistent structural challenges, this paper investigates the potential of wage subsidies as a policy instrument to address low pay, promote formal employment, and reduce income inequality. Inspired by Edmund Phelps (1997; 2021)'s concept of progressive negative taxation, we propose the introduction of permanent, generalized public wage subsidies targeting low-wage employees. By increasing take-home pay for low-wage workers and making their hiring

more attractive to employers, this measure aims to incentivize both labor supply and demand in market segments characterized by wage stagnation and employment insecurity. While such policies may not be equally effective for all categories of workers vulnerable to exclusion (Huttunen et al., 2013), evidence suggests that well-designed schemes can simultaneously alleviate in-work poverty and increase labor market participation among groups with weak attachment to employment, such as women and, in particular, single mothers (Sjögren and Vikström, 2015; Blundell et al., 2016; Bastian, 2020).

To frame the discussion, we develop a stylized theoretical model tailored to Italy's segmented labor market. The model outlines how wages and employment are determined, enabling a clear assessment of the subsidy's overall labor market effect. In addition, we analyze the potential quantitative impact of this policy across different categories of workers under various elasticity scenarios. This includes examining its effectiveness in increasing income for low-wage workers, boosting employment rates in sectors with a high share of working poor, and promoting social inclusion for economically marginalized populations. We also discuss the fiscal implications of the policy – particularly its effects on public finances – and evaluate associated welfare gains. In doing so, we aim to offer a framework that can help policymakers address structural labor market imbalances while advancing social equity.

The implementation of permanent subsidies to supplement the wages of low-paid workers is part of a broader conversation about the effectiveness of in-work benefit schemes (IWBs) in advanced economies. A longstanding debate surrounds their effectiveness and potential drawbacks. At its core is the question of how to meet the two main goals of IWBs – namely, "alleviating in-work poverty and increasing work incentives for low-income workers" (OECD, 2011, p. 67). In this vein, Almeida et al. (2014) review international experiences with wage subsidies, emphasizing their potential to increase employability through learning by doing and through the training opportunities associated with having a job, while Shin (2022) examines how different types of benefits have influenced work incentives in welfare states. Although administrative arrangements differ – especially regarding whether subsidies are paid to employers or directly to workers – their effects on marginal workers ultimately hinge on how much they reduce labor costs versus how much they increase workers' take-home pay. Elasticities of labor supply and demand are crucial in this regard. For example, in Bassanini et al. (1999), simulations of an earned-income tax credit in four OECD countries proved sensitive to the chosen labor supply elasticity in each country. Consistent with this approach, our paper's estimates of the effects of wage subsidies in Italy are based on plausible assumptions about the possible ranges of wage elasticity in both labor supply and demand.

In political terms, IWBs can often enjoy bipartisan support: the right supports them for incentivizing work, while the left highlights their potential to alleviate in-work poverty. However, from the perspectives of critical political economy and sociology, IWBs – and, more broadly, "make work pay" policies – have sparked debates about their broader implications. Critics argue that these policies may facilitate the expansion of low-wage, labor-intensive service sectors and incentivize employers to depend on cheap labor, effectively shifting costs onto the state (e.g., see Rubery et al., 2018; Sloman, 2019; Clasen, 2020; Abbas and Robertson, 2023; Halmetoja et al., 2025). Accordingly, IWBs are sometimes viewed both as a response to the growth of low-wage employment and as a mechanism that – regardless of their proponents' intentions – perpetuates this trend.

While these critiques raise important points, they sometimes overlook the structural factors driving labor demand in labor-intensive, low-productivity sectors. This trend is more closely linked to labor market polarization caused by ongoing technological progress than to specific labor policies. Consequently, governments are called upon to mitigate the impact on the most vulnerable groups by addressing "inactivity traps" and reducing dependence on welfare and

irregular work. International evidence on permanent IWBs for disadvantaged populations suggests that such policies can effectively boost labor market participation and redistribute income toward lower-income households (e.g., see Van der Linden, 2021). Ideally, IWBs should be integrated into a broader suite of measures, including affordable childcare and eldercare services and a tax-transfer system that avoids penalizing households with more than one earner. This perspective aligns with the findings of the Italian government's Working Group on in-work poverty (Garnero et al., 2021), which highlighted the absence of a policy capable of both supplementing the income of the working poor and incentivizing regular employment. The group further emphasized that IWBs should be individually tailored to avoid discouraging second earners.

The remainder of the paper is organized as follows. Section 2 provides an overview of key characteristics and challenges in the Italian labor market. Section 3 discusses the proposed subsidy design. Section 4 introduces a formal model to analyze the subsidy's effects on wages and employment. Section 5 evaluates various labor market scenarios that could arise from the subsidy's implementation. Section 6 addresses practical considerations and broader implications of implementing the subsidy. Section 7 concludes.

2 An overview of the Italian labor market

Many of the imbalances in the Italian labor market can be traced along a few, distinct divides, each contributing to significant differences in labor market outcomes such as wages, employment, and unemployment rates. These divides include regional disparities (North vs. South), gender differences (men vs. women), ethnic distinctions (natives vs. immigrants), age groups (young vs. old), and variations in employment protection (standard contracts vs. atypical contracts). These divides often intersect, amplifying their impact on specific groups within the labor market.

The regional divide between the more industrialized North and the less developed South is a longstanding feature of the Italian economy. The South consistently lags behind the North in terms of economic performance, employment rates, and productivity levels (Accetturo et al., 2024; Camussi and Aimone Gigio, 2024). Income per capita in southern Italy remains at approximately half of that in the rest of the country – a disparity that has persisted since the early 1970s. This gap is driven in part by the insufficient number of people in regular employment in the South. Estimates suggest that roughly half of this income gap is due to the lower employment rate, with the remainder attributable to lower productivity levels (Banca d'Italia, 2018; 2024). If the South achieved employment rates comparable to the rest of the country, the GDP per capita differential would halve, underscoring the crucial role of employment in promoting regional economic convergence.

The gender divide is a significant determinant of labor market outcomes in Italy (Barigozzi et al., 2023), which has one of the lowest female labor force participation rates among advanced economies – a phenomenon particularly pronounced in the southern regions. The low female employment rate exacerbates economic vulnerability, particularly in households dependent on a single income earner. In 2015, about 38% of Italian households had only one member earning income from work or pension, compared to 27% in the rest of Europe (Raitano et al., 2019). Introducing a second income, even if temporary, part-time, or low-wage, provides better protection against economic exclusion than relying solely on a single full-time earner (Barbieri et al., 2018). Therefore, policies aimed at increasing female participation in the labor market are essential for mitigating working poverty and enhancing economic resilience.

The ethnic divide between native Italians and immigrants introduces further complexity into the Italian labor market (D'Ambrosio et al., 2022). Over the past three decades, despite structurally low employment rates – approximately 10 percentage points below the EU average and roughly 20 points below those in Northern Europe – Italy has attracted a significant

number of migrants, primarily engaged in low-value-added sectors. This situation challenges the "postulate of complementarity", which posits that immigrants fill essential but undesirable low-paid jobs that natives no longer wish to perform (Zanfrini, 2019a;b). Instead, Italy presents a problematic scenario where immigration remains substantial even in regions marked by high unemployment and low labor force participation among natives, with many working-age Italians either underemployed or marginally attached to the labor market.

The three aforementioned divides intersect with age-related disparities, further compounding labor market challenges. Youth unemployment and inactivity remain significant issues in Italy, with young people experiencing higher unemployment rates and more precarious employment conditions than older workers. Italy consistently reports one of the highest percentages of NEETs (Not in Education, Employment, or Training) in Europe. In 2023, the NEET rate among individuals aged 18–29 was approximately 18% for young people with Italian citizenship, around 25% for young immigrants from other EU countries, and over 31% for non-EU youth (Istat, 2023). Similarly, the employment rate for those aged 15–29 is strikingly low, at just under 35%, compared to 50% in the Euro Area (Eurostat, 2024). These figures underscore the heightened risk of labor market marginalization faced by young people in Italy, particularly those from immigrant backgrounds.

Another relevant divide in the Italian labor market pertains to employment protection, differentiating between individuals employed under standard contracts and those engaged in atypical or precarious employment arrangements (Giangregorio and Fana, 2024). The labor market operates under a dual system, where one segment of the workforce benefits from stable employment and robust legal protections, while another segment remains confined to insecure, low-wage jobs with limited rights and benefits. The proliferation of atypical employment contracts, which are often involuntary, exacerbates income instability and significantly hinders opportunities for career advancement.

The challenges posed by routine-biased technical change further complicate labor market dynamics. Routine-biased technical change drives the automation of routine tasks, disproportionately impacting middle-skilled workers (Goos and Manning, 2007). Although this mechanism may not be the primary driver of labor market polarization in Italy and other European economies (Fernández-Macías and Hurley, 2016), it has nonetheless intensified polarization, weakening the middle segment of the labor market and exacerbating wage disparities. These effects are further compounded by structural issues such as low educational attainment and an aging workforce, which limit opportunities for upskilling. Consequently, many displaced workers face greater job insecurity and increased pressure to accept precarious or lower-paying roles, fueling stress for both individuals and the broader labor market.

These dynamics contribute to rising poverty and inequality in Italy. In 2022, the incidence of absolute poverty among households with at least one foreign-born adult was 29%, compared to 6% among households composed solely of natives. The risk of poverty is particularly acute for immigrant women, whose unemployment rate in 2023 was approximately 14%, six percentage points higher than that of Italian women. Unemployment rates are notably high among women from Egypt (42%), Tunisia (25%), Peru (24%), Morocco (23%), Nigeria (22%), and Pakistan (22%). Inactivity rates among immigrant women are also alarmingly high, particularly for those originating from predominantly Muslim countries: 90% of women from Egypt, 83% from Pakistan and Bangladesh, 75% from Tunisia, and 70% from Algeria and Morocco were classified as inactive (Istat, 2023). Increasing women's participation in the formal labor market – regardless of their nationality – would not only significantly enhance empowerment and social integration but also make a substantial contribution to the overall growth of the Italian economy.

The difficulties young people face in finding adequately paid and stable employment contributes to a declining birth rate, and Italy exhibits one of the highest fertility gap in Western

countries (Beaujouan and Berghammer, 2019). Regions with the lowest employment rates tend to be those where fertility rates have declined most rapidly over the last 20 years, all located in the South. In 2016, 45% of Italian women between 18 and 49 had not yet had children, although less than 5% stated that having children was not part of their life plan. Economic insecurity acts as a major disincentive for young people to form new families, leading them to postpone or abandon plans to have children (Lebano and Jamieson, 2020).

In conclusion, the Italian labor market is marked by multiple intersecting divides that contribute to significant disparities in labor market outcomes. Regional, gender, ethnic, age, and employment protection divides, compounded by the effects of technological change, all play a role in shaping the experiences of workers and the overall performance of the labor market. Facilitating access to adequately paid and stable employment – especially for women, young people, and immigrants – and addressing the challenges posed by technological change could lay the foundation for improving economic conditions, reducing poverty and inequality, and promoting social cohesion in Italy. As argued throughout the paper, subsidizing low-wage workers could be an effective policy to improve labor market outcomes without introducing significant distortions.

3 A subsidy for low-wage workers

The wage subsidy discussed in this paper aims to address imbalances in the Italian labor market by supporting low-paid workers, promoting formal employment, and reducing income inequality. Inspired by Phelps (1997; 2021), it relies on progressive negative taxation as a financial bridge for full-time workers earning below a predetermined threshold. Under this scheme, eligible workers receive a monthly subsidy to supplement their wage. The subsidy is a percentage of the difference between their net wage and the threshold, ensuring proportional support. It is also exempt from taxation and social security contributions, preserving employment incentives. From the employer's perspective, the subsidy reduces the cost of hiring low-wage workers, making employment more attractive and viable, especially in labor-intensive sectors. By lowering wage expenditures, it encourages formal employment contracts, fostering a stable labor market.

The dual incentive structure of the wage subsidy – enhancing labor supply through increased take-home pay for workers and boosting labor demand by reducing costs for employers – creates a mutually reinforcing dynamic. This synergy is expected to mitigate wage stagnation by elevating the earnings of low-wage workers, thereby improving their standard of living and reducing the incidence of poverty. Concurrently, the increased demand for labor in targeted sectors can lead to higher employment rates, greater job security, and a reduction in underemployment and marginalization.

Related to the previous point, it is important to note that the economic incidence of the subsidy depends on the relative elasticity of labor demand and labor supply. Specifically, if the labor supply is more rigid than the labor demand, the workers will reap a larger share of the subsidy. Conversely, if labor supply is more elastic, firms will benefit more by lowering wages. If policy-makers are willing to limit the incidence on the firm, the subsidy can be accompanied by the introduction of a minimum wage.

Moreover, by incentivising the formalization of employment relationships, the wage subsidy plays a critical role in combating the pervasive issue of unregistered work in Italy. The financial attractiveness of formal employment, enhanced by the subsidy, discourages employers from resorting to informal hiring practices and encourages workers to seek legitimate, regulated jobs. This transition not only ensures better protection and benefits for workers but also contributes to increased tax revenues and a more transparent and efficient labor market.

The design of the subsidy should include robust measures to prevent fraud and ensure that

the benefits reach the intended recipients. For this purpose, it is necessary to carefully evaluate whether it is preferable to pay the subsidy to the employer or directly to the employee. If it were paid directly to workers, it would be important to do so via secure bank transfers, with verification of their employment status and wage level. While this approach may reduce the scope for collusion between employers and employees, recent evidence suggests that an indirect subsidy – where the employer receives the subsidy – may enhance worker productivity, as employees tend to reciprocate higher wages with increased effort (Blumkin et al., 2020). For this reason, in Section 4, we model an indirect subsidy, while the Appendix explores a direct subsidy alternative.

While the subsidy could be calibrated to include part-time employees, there are compelling reasons to focus the benefit exclusively on full-time workers. A significant share of part-time workers in Italy would prefer full-time positions but are constrained by limited opportunities. Policies that prioritize the expansion of full-time employment are therefore better suited to addressing this structural issue. Additionally, the subsidy aims to promote employment that ensures full economic inclusion, a goal more effectively achieved through full-time work. Furthermore, empirical evidence suggests that part-time workers tend to exhibit lower productivity per hour compared to their full-time counterparts, reinforcing the rationale for targeting the subsidy to full-time positions as a means of fostering productivity growth. Finally, due to the low bargaining power of subsidized workers, firms may exploit fictitious part-time arrangements to excessively reduce the incidence of the subsidy on employees. These considerations highlight the importance of aligning the subsidy with broader labor market objectives to maximize its impact.

4 The model

In this section, we present a formal model to analyze the impact of the subsidy. The model captures in a stylized way the functioning of the labor market, and it provides a framework for understanding how the introduction of the subsidy affects labor dynamics, focusing on employment patterns, wage setting, and outcomes for low-income workers.

The model assumes a segmented labor market, based on worker skill levels and firm productivity. Specifically, in segments where the low-wage workers are concentrated – mainly low-value-added, labor-intensive service sectors with small firms and weak or no unions – the model assumes a competitive wage-setting process driven by market conditions. This reflects the limited bargaining power of workers and the absence of collective negotiation in these sectors. By showing how the effects of wage subsidies vary across different sectors and groups of workers, the model provides insights that can help policymakers to design subsidy programs that are targeted and effective.

4.1 No subsidy

To begin with, we model the labor market without the subsidy. Let us assume that workers differ with respect to some observable characteristic, for example their years of education, which determines their skill level. Hence, we distinguish workers on the basis of their skill level i, $i = 1, 2, \ldots, n$, where $i + 1$ denotes a higher skill level than i.

In their turn, firms differ with respect to their technologies, which are parametrized by x_j: more productive technologies are characterized by larger x_j and need workers with more sophisticated skills. For simplicity, we assume that x_j is uniformly distributed on the closed interval $[0, b_n]$, $b_n > 0$. Segmenting this interval into n subintervals, we have that a technology characterized by $x_{ji} \in [b_{i-1}, b_i]$, with $b_0 = 0$, must be operated by workers whose skill level is

not lower than i (the "i-workers"). Therefore, the typical firm j endowed with a technology characterized by x_{ji} produces the output Y_{ji} (the numeraire of the system) according to the following production function:

$$Y_{ji} = x_{ji} L_{ji}^{\alpha}, \quad 0 < \alpha < 1, \quad x_{ji} \in [b_{i-1}, b_i], \tag{1}$$

where L_{ji} is the number of i-workers employed by firm j.

The typical firm j operating the technology parametrized by x_{ji} decides how many i-workers to employ in order to maximize its profits $\pi_{ji} = Y_{ji} - W_i L_{ji}$, where W_i is the wage paid to the i-workers, which is taken as given by each single firm and worker since the market for i-workers is assumed to be perfectly competitive. Hence, the typical firm j equates the marginal productivity of labor to W_i, thus obtaining its demand function for i-workers:

$$L_{ji}^{d} = \left(\frac{\alpha x_{ji}}{W_i} \right)^{\frac{1}{1-\alpha}}. \tag{2}$$

Considering (2) and normalizing to one the large number of j firms, the total demand for i-workers is

$$L_i^d = \int_{b_{i-1}}^{b_i} \left(\frac{\alpha x_{ji}}{W_i} \right)^{\frac{1}{1-\alpha}} dx_{ji} = \frac{1-\alpha}{2-\alpha} B_i \left(\frac{\alpha}{W_i} \right)^{\frac{1}{1-\alpha}}, \quad B_i \equiv b_i^{\frac{2-\alpha}{1-\alpha}} - b_{i-1}^{\frac{2-\alpha}{1-\alpha}}. \tag{3}$$

The supply of i-workers is given by

$$L_i^s = \begin{cases} \Psi_i W_i^{\gamma_i} & \text{if } W_i \geq R_i, \quad \Psi_i > 0, \gamma_i > 0 \\ 0 & \text{otherwise,} \end{cases} \tag{4}$$

where γ_i is a parameter giving us the wage elasticity of the i-workers' labor supply, and R_i is the lowest wage at which the i-workers are willing to accept a job (their "reservation wage"). One can argue that R_i is influenced by the value of i-workers' non-labor wealth, the value of non-market activities that they can undertake, public policies in favor of those who are out of a job (monetary subsidies and access to public services), the legal minimum wage, and similar factors. It is reasonable to assume that $0 < R_1 < \cdots < R_n$.

By equalizing (3) to (4), we can obtain both the equilibrium wage of the i-workers and the number of them that are employed:

$$W_i^* = \left[\frac{(1-\alpha)}{(2-\alpha)} \alpha^{\frac{1}{1-\alpha}} B_i \Psi_i^{-1} \right]^{\frac{1-\alpha}{1+\gamma_i(1-\alpha)}}, \tag{5}$$

$$L_i^* = \left[\frac{(1-\alpha)}{(2-\alpha)} \alpha^{\frac{1}{1-\alpha}} B_i \Psi_i^{\frac{1}{\gamma_i(1-\alpha)}} \right]^{\frac{\gamma_i(1-\alpha)}{1+\gamma_i(1-\alpha)}}, \tag{6}$$

where "*" denotes the equilibrium value of a variable. Moreover, the parameter values are such that in equilibrium $W_n^* > R_n > W_{n-1}^* > R_{n-1} > \cdots > W_1^* > R_1$.

Given (6), the total number of employed workers is

$$L^* = \sum_{i=1}^{n} L_i^* = \sum_{i=1}^{n} \left[\frac{(1-\alpha)}{(2-\alpha)} \alpha^{\frac{1}{1-\alpha}} B_i \Psi_i^{\frac{1}{\gamma_i(1-\alpha)}} \right]^{\frac{\gamma_i(1-\alpha)}{1+\gamma_i(1-\alpha)}}, \tag{7}$$

while total labor income is

$$L^*W^* = \sum_{i=1}^{n} L_i^* W_i^* = \sum_{i=1}^{n} \left[\frac{(1-\alpha)}{(2-\alpha)} \alpha^{\frac{1}{1-\alpha}} B_i \Psi_i^{\frac{\alpha}{(1+\gamma_i)(1-\alpha)}} \right]^{\frac{(1+\gamma_i)(1-\alpha)}{1+\gamma_i(1-\alpha)}}. \tag{8}$$

Finally, total income is given by

$$Y^* = \sum_{i=1}^{n} Y_i^* = \sum_{i=1}^{n} \left[\frac{(1-\alpha)}{(2-\alpha)} \alpha^{\frac{\alpha\gamma_i}{(1+\gamma_i)(1-\alpha)}} B_i \Psi_i^{\frac{\alpha}{(1+\gamma_i)(1-\alpha)}} \right]^{\frac{(1+\gamma_i)(1-\alpha)}{1+\gamma_i(1-\alpha)}}. \tag{9}$$

4.2 With subsidy

Now suppose that the government pays subsidies to firms employing low-skilled (and thus low-wage) workers (for the case in which the subsidies are levied on the workers, see the Appendix). For each such employed worker, firms j receive a subsidy $S_i = (1 - p_i)W_i$, where

$$p_i = \begin{cases} 1 & \text{if } W_i \geq W_{\max} \\ \left(\dfrac{W_i}{W_{\max}} \right)^{\mu} & \text{otherwise,} \quad 0 < \mu < 1. \end{cases} \tag{10}$$

In (10), the government sets $W_{\max}$, that is the wage level above which the subsidy goes to zero, and μ, that is the parameter determining the level of the subsidy for any wage level below $W_{\max}$. This subsidy determination mechanism mimics the one we propose for Italy (see the next section), where the subsidy is proportional to the distance between the threshold decided by the government and what the employer pays to the worker. It is easy to verify that – other things remaining equal – a higher $W_{\max}$ raises the wage level below which the government provides subsidies and the amount of subsidy it pays for each low-wage worker employed.

We assume that the government finances wage subsidies by taxing firms' profits.[1] Thus, the typical firm j maximizes $(1 - \tau)\pi_{ji}$, where τ is the rate at which the government taxes the firms' profits and

$$\pi_{ji} = Y_{ji} - L_{ji}(W_i - S_i). \tag{11}$$

The budget constraint of the government is

$$\sum_{i=1}^{n} S_i L_i \leq \tau \sum_{i=1}^{n} \pi_i, \tag{12}$$

where $\pi_i = \int_{b_{i-1}}^{b_i} \pi_{ji}\, dx_{ji}$.

Considering the subsidy, the actual cost of an employed worker for firm j becomes $p_i W_i$. Thus, the typical firm j's demand for i-workers is now given by

$$L_{ji}^d = \begin{cases} \left(\dfrac{\alpha x_{ji}}{W_i} \right)^{\frac{1}{1-\alpha}} & \text{if } W_i \geq W_{\max} \\ \left(\dfrac{\alpha x_{ji} W_{\max}^{\mu}}{W_i^{1+\mu}} \right)^{\frac{1}{1-\alpha}} & \text{otherwise.} \end{cases} \tag{13}$$

[1] This differs from Bassanini et al. (1999), who simulate the effects of an earned-income tax credit in favor of targeted groups of workers by assuming that other workers finance the scheme. In this framework, the positive labor supply response of the targeted groups is partially compensated by falls in labor supply on the part of those financing the scheme.

Considering (13), the total demand for i-workers becomes

$$L_i^d = \begin{cases} \displaystyle\int_{b_{i-1}}^{b_i} \left(\frac{\alpha x_{ji}}{W_i}\right)^{\frac{1}{1-\alpha}} dx_{ji} = \frac{1-\alpha}{2-\alpha} B_i \left(\frac{\alpha}{W_i}\right)^{\frac{1}{1-\alpha}} & \text{if } W_i \geq W_{\max} \\ \displaystyle\int_{b_{i-1}}^{b_i} \left(\frac{\alpha x_{ji} W_{\max}^{\mu}}{W_i^{1+\mu}}\right)^{\frac{1}{1-\alpha}} dx_{ji} = \frac{1-\alpha}{2-\alpha} B_i \left(\frac{\alpha W_{\max}^{\mu}}{W_i^{1+\mu}}\right)^{\frac{1}{1-\alpha}} & \text{otherwise,} \end{cases} \tag{14}$$

while the supply of i-workers is still given by (4).

In the presence of subsidies, the equilibrium wage of the i-workers and the number of them that are employed are given by:

$$W_i^{\circ} = \begin{cases} \left[\frac{(1-\alpha)}{(2-\alpha)} \alpha^{\frac{1}{1-\alpha}} B_i \Psi_i^{-1}\right]^{\frac{1-\alpha}{1+\gamma_i(1-\alpha)}} & \text{if } \left[\frac{(1-\alpha)}{(2-\alpha)} \alpha^{\frac{1}{1-\alpha}} B_i \Psi_i^{-1}\right]^{\frac{1-\alpha}{1+\gamma_i(1-\alpha)}} \geq W_{\max} \\ \left[\frac{(1-\alpha)}{(2-\alpha)} (\alpha W_{\max}^{\mu})^{\frac{1}{1-\alpha}} B_i \Psi_i^{-1}\right]^{\frac{1-\alpha}{1+\mu+\gamma_i(1-\alpha)}} & \text{otherwise,} \end{cases} \tag{15}$$

$$L_i^{\circ} = \begin{cases} \left[\frac{(1-\alpha)}{(2-\alpha)} \alpha^{\frac{1}{1-\alpha}} B_i \Psi_i^{\frac{1}{\gamma_i(1-\alpha)}}\right]^{\frac{\gamma_i(1-\alpha)}{1+\gamma_i(1-\alpha)}} & \text{if } \left[\frac{(1-\alpha)}{(2-\alpha)} \alpha^{\frac{1}{1-\alpha}} B_i \Psi_i^{-1}\right]^{\frac{1-\alpha}{1+\gamma_i(1-\alpha)}} \geq W_{\max} \\ \left[\frac{(1-\alpha)}{(2-\alpha)} (\alpha W_{\max}^{\mu})^{\frac{1}{1-\alpha}} B_i \Psi_i^{\frac{1+\mu}{\gamma_i(1-\alpha)}}\right]^{\frac{\gamma_i(1-\alpha)}{1+\mu+\gamma_i(1-\alpha)}} & \text{otherwise,} \end{cases} \tag{16}$$

where "$\circ$" denotes the equilibrium value of a variable in the presence of subsidies. Moreover, the parameter values are such that in equilibrium $W_n^{\circ} > R_n > ... > W_{i^{\#}}^{\circ} >$
$> R_{i^{\#}} > W_{i^{\#}-1}^{\circ} > R_{i^{\#}-1} > ... > W_1^{\circ} > R_1$, where

$$\begin{aligned} W_{i^{\#}-1}^{\circ} = \left[\frac{(1-\alpha)}{(2-\alpha)} (\alpha W_{\max}^{\mu})^{\frac{1}{1-\alpha}} B_{i^{\#}-1} \Psi_{i^{\#}-1}^{-1}\right]^{\frac{1-\alpha}{1+\mu+\gamma_{i^{\#}-1}(1-\alpha)}} < \\ < W_{\max} \leq W_{i^{\#}}^{\circ} = \left[\frac{(1-\alpha)}{(2-\alpha)} \alpha^{\frac{1}{1-\alpha}} B_{i^{\#}} \Psi_{i^{\#}}^{-1}\right]^{\frac{1-\alpha}{1+\gamma_{i^{\#}}(1-\alpha)}}. \end{aligned} \tag{17}$$

It is worth noting that firms employing workers whose skill level i is strictly below $i^{\#}$ ($i^{\#} \geq 3$) do receive subsidies (see Figure 1), since in the absence of subsidies they would pay an equilibrium wage that is strictly below the threshold $W_{\max}$. Thanks to the introduction of these subsidies, the wage of the workers employed by these firms gets closer to $W_{\max}$ ($W_{\max} > W_i^{\circ} > W_i^*$, for

all $i < i^{\#}$) and a larger number of them are employed ($L_i^{\circ} > L_i^*$, for all $i < i^{\#}$).[2] In contrast, firms employing workers whose skill level is above $i^{\#}$ ($i^{\#} \geq 3$) do not receive subsidies, since in the absence of subsidies they pay an equilibrium wage that is above the threshold $W_{\max}$ (see Figure 2). Hence, both the wage and the employment level of the workers whose skill level is above $i^{\#}$ are not affected by the introduction of the subsidies ($W_i^{\circ} = W_i^*$ and $L_i^{\circ} = L_i^*$, for all $i \geq i^{\#}$).

Summarizing, we can state the following:

Proposition 1.
(a) Both the equilibrium wage and the employment level of the workers whose skill level is strictly below $i^{\#}$ increase with the subsidy paid by the government;
(b) this subsidy is strictly increasing in W_{max};
(c) the threshold $i^{\#}$ is increasing in W_{max}: a larger W_{max} may raise the skill level of the workers whose employers are entitled to receive subsidies.

Thus, a larger $W_{\max}$ raises total employment, which – in the presence of subsidies – is given by (consider (16) and (17)):

$$L^{\circ} = \sum_{i=1}^{n} L_i^{\circ} = \sum_{i=1}^{i^{\#}-1} \left[\frac{(1-\alpha)}{(2-\alpha)} (\alpha W_{\max}^{\mu})^{\frac{1}{1-\alpha}} B_i \, \Psi_i^{\frac{1+\mu}{\gamma_i(1-\alpha)}} \right]^{\frac{\gamma_i(1-\alpha)}{1+\mu+\gamma_i(1-\alpha)}} + \\ + \sum_{i=i^{\#}}^{n} \left[\frac{(1-\alpha)}{(2-\alpha)} \alpha^{\frac{1}{1-\alpha}} B_i \, \Psi_i^{\frac{1}{\gamma_i(1-\alpha)}} \right]^{\frac{\gamma_i(1-\alpha)}{1+\gamma_i(1-\alpha)}} . \tag{18}$$

In the presence of subsidies, total labor income is

$$L^{\circ}W^{\circ} = \sum_{i=1}^{n} L_i^{\circ} W_i^{\circ} = \sum_{i=1}^{i^{\#}-1} \left[\frac{(1-\alpha)}{(2-\alpha)} (\alpha W_{\max}^{\mu})^{\frac{1}{1-\alpha}} B_i \, \Psi_i^{\frac{\alpha+\mu}{(1+\gamma_i)(1-\alpha)}} \right]^{\frac{(1+\gamma_i)(1-\alpha)}{1+\mu+\gamma_i(1-\alpha)}} + \\ + \sum_{i=i^{\#}}^{n} \left[\frac{(1-\alpha)}{(2-\alpha)} \alpha^{\frac{1}{1-\alpha}} B_i \, \Psi_i^{\frac{\alpha}{(1+\gamma_i)(1-\alpha)}} \right]^{\frac{(1+\gamma_i)(1-\alpha)}{1+\gamma_i(1-\alpha)}} , \tag{19}$$

and total income is

[2] This can be seen by considering that for all $i < i^{\#}$ one has:

a) $L_i^{\circ} = \left[\frac{(1-\alpha)}{(2-\alpha)} (\alpha W_{\max}^{\mu})^{\frac{1}{1-\alpha}} B_i \Psi_i^{\frac{(1+\mu)}{\gamma_i(1-\alpha)}} \right]^{\frac{\gamma_i(1-\alpha)}{1+\mu+\gamma_i(1-\alpha)}}$, where

$W_{\max} > \left[\frac{(1-\alpha)}{(2-\alpha)} \alpha^{\frac{1}{1-\alpha}} B_i \Psi_i^{-1} \right]^{\frac{1-\alpha}{1+\gamma_i(1-\alpha)}}$ (see (16)),

b) $\left[\frac{(1-\alpha)}{(2-\alpha)} (\alpha W_{\max}^{\mu})^{\frac{1}{1-\alpha}} B_i \Psi_i^{\frac{(1+\mu)}{\gamma_i(1-\alpha)}} \right]^{\frac{\gamma_i(1-\alpha)}{1+\mu+\gamma_i(1-\alpha)}}$ is continuous and increasing in $W_{\max}$,

c) $\left[\frac{(1-\alpha)}{(2-\alpha)} (\alpha W_{\max}^{\mu})^{\frac{1}{1-\alpha}} B_i \Psi_i^{\frac{(1+\mu)}{\gamma_i(1-\alpha)}} \right]^{\frac{\gamma_i(1-\alpha)}{1+\mu+\gamma_i(1-\alpha)}} = L_i^* =$

$= \left[\frac{(1-\alpha)}{(2-\alpha)} \alpha^{\frac{1}{1-\alpha}} B_i \Psi_i^{\frac{1}{\gamma_i(1-\alpha)}} \right]^{\frac{\gamma_i(1-\alpha)}{1+\gamma_i(1-\alpha)}}$ if $W_{\max} = \left[\frac{(1-\alpha)}{(2-\alpha)} \alpha^{\frac{1}{1-\alpha}} B_i \Psi_i^{-1} \right]^{\frac{1-\alpha}{1+\gamma_i(1-\alpha)}}$.

$$Y^{\circ} = \sum_{i=1}^{n} Y_i^{\circ} = \sum_{i=1}^{i^{\#}-1} \left\{ \left[\frac{(1-\alpha)B_i}{(2-\alpha)} \right]^{(1-\alpha)(1+\gamma_i+\mu)} \alpha^{\alpha\gamma_i} W_{\max}^{\alpha\mu\gamma_i} \Psi_i^{\alpha(1+\mu)} \right\}^{\frac{1}{1+\mu+\gamma_i(1-\alpha)}} + \\ + \sum_{i=i^{\#}}^{n} \left[\frac{(1-\alpha)}{(2-\alpha)} \alpha^{\frac{\alpha\gamma_i}{(1+\gamma_i)(1-\alpha)}} B_i \, \Psi_i^{\frac{\alpha}{(1+\gamma_i)(1-\alpha)}} \right]^{\frac{(1+\gamma_i)(1-\alpha)}{1+\gamma_i(1-\alpha)}}. \tag{20}$$

Finally, if the wage elasticity of labor supply is higher (larger γ_i), the introduction of the subsidies tends to increase – *ceteris paribus* – relatively more the employment level of the low-skilled workers and relatively less their equilibrium wage.

4.3 Welfare analysis

The welfare impact of the employment subsidies can be evaluated by utilizing the framework proposed by Hendren (2016), which introduced the "marginal value of public funds" (MVPF) as a unifying metric for measuring the welfare effect of a government policy when the envelope theorem holds and individual utilities are not affected by the small behavioral responses triggered by the policy. The MVPF provides a reliable estimate of the amount of welfare that can be delivered to the beneficiaries of a public policy per unit of output spent by the government, where the policy's net cost may be more or less than its budgetary cost, depending on the fiscal externalities (FE) induced by it – that is, the impact on the government budget per unit of public expenditure due to the economic agents' behavioral response to the policy. In particular, the MVPF_i for subsidies paid to firms employing i-workers ($i < i^{\#}$) is

$$\text{MVPF}_i = \frac{1}{1+\text{FE}_i} > 1, \quad i < i^{\#}, \tag{21}$$

where the numerator, 1, is the average marginal benefit of providing subsidies to firms that employ i-workers, and the denominator, $1+\text{FE}_i$, is the average marginal cost of providing these subsidies, which incorporates the fiscal externalities that they trigger. Indeed, thanks to these subsidies, firms can increase their profits ($\pi_i^* - \pi_i^{\circ} < 0$, $i < i^{\#}$), thus raising government's tax revenues. Hence, the net cost for the government to pay one unit of output to firms employing low-skilled workers is less than one, since

$$\text{FE}_i = \frac{\tau(\pi_i^* - \pi_i^{\circ})}{L_i^{\circ} S_i^{\circ}} < 0, \quad i < i^{\#}. \tag{22}$$

In contrast, cutting taxes on firms' profits has no fiscal externality. Thus, the MVPF_j for tax reductions on firms j's profits is

$$\text{MVPF}_j = 1, \tag{23}$$

since $\text{FE}_j = 0$.

Following again Hendren (2016) and Hendren and Sprung-Keyser (2020), we can now state the following:

Proposition 2.
A marginal increase in the subsidy paid to firms employing low-skilled workers financed by increasing taxation on firms' profits is socially desirable if and only if the welfare gains from increasing spending on subsidies exceed the welfare loss from increasing taxation on firms' profits; that is, if and only if

$$\eta_i \, MVPF_i > \eta_j \, MVPF_j, \tag{24}$$

where η_i is the social marginal utility of income of a typical i-worker ($i < i^{\#}$) and η_j is the social marginal utility of income of the typical owner of a j-firm.

Notice that $\text{MVPF}_i > \text{MVPF}_j$ (see (21) and (23)) implies that (24) is satisfied even if $\eta_i = \eta_j$, i.e., even if society is not willing to lose resources in order to redistribute income from the firms' owners to the low-skilled workers.

5 The impact of the subsidy on the Italian labor market: A scenario analysis

In this section, we discuss the effect of the subsidy on employment and wages in the Italian labor market under different assumptions regarding labor supply and labor demand elasticities.

The subsidy creates a wedge between the wage received by the eligible workers, which increases, and the labor costs incurred by firms, which decrease. As mentioned, the incidence of the subsidy on workers' wages depends on the relative elasticity of labor demand and labor supply. In our case, at equilibrium the wage elasticity of demand for i-workers, ε_{di}, can be approximated by

$$\varepsilon_{di}^{\circ} \approx \frac{(L_i^{\circ} - L_i^*)/L_i^*}{(p_i^{\circ} W_i^{\circ} - W_i^*)/W_i^*}, \tag{25}$$

where $p_i^{\circ} W_i^{\circ}$ is the net labor cost that firms incur to employ an i-worker after the introduction of the subsidies.

Similarly, at equilibrium the wage elasticity of supply of the i-workers, ε_{si}, can be approximated by

$$\varepsilon_{si}^{\circ} \approx \frac{(L_i^{\circ} - L_i^*)/L_i^*}{(W_i^{\circ} - W_i^*)/W_i^*}, \tag{26}$$

where W_i° is the take-home wage that the i-workers earn after the introduction of the subsidy.

Considering that $L_i^{\circ} - L_i^* > 0$ and $p_i^{\circ} W_i^{\circ} - W_i^* < 0$, it follows that $\varepsilon_{di}^{\circ} < 0$. On the other hand, since $W_i^{\circ} - W_i^* > 0$, then $\varepsilon_{si}^{\circ} > 0$. This reflects standard economic assumptions, as firms are expected to demand more labor when it becomes cheaper, while more working-age individuals are expected to be willing to work if wages increase.

Since $S_i^{\circ} = W_i^{\circ} - p_i^{\circ} W_i^{\circ}$, the incidence of the subsidy on firms employing i-workers, D_{di}°, i.e. the share of the subsidy that reduces firms' labor costs, can be computed as

$$D_{di}^{\circ} = \frac{\varepsilon_{si}^{\circ}}{\varepsilon_{si}^{\circ} - \varepsilon_{di}^{\circ}} \approx \frac{p_i^{\circ} W_i^{\circ} - W_i^*}{p_i^{\circ} W_i^{\circ} - W_i^{\circ}}. \tag{27}$$

Similarly, the share of the subsidy that raises the i-workers wage, D_{si}°, is

$$D_{si}^{\circ} = -\frac{\varepsilon_{di}^{\circ}}{\varepsilon_{si}^{\circ} - \varepsilon_{di}^{\circ}} \approx \frac{W_i^* - W_i^{\circ}}{p_i^{\circ} W_i^{\circ} - W_i^{\circ}}, \tag{28}$$

where $D_{di}^{\circ} + D_{si}^{\circ} = 1$. Consequently, the impact of the subsidy on the i-workers' wage is simply $\Delta W_i = D_{si}^{\circ} S_i^{\circ}$.

The impact of the subsidy on employment is also a function of labor demand and labor supply elasticities. Specifically, the percentage increase in employment of i-workers due to the subsidy can be expressed as

$$\frac{L_i^{\circ} - L_i^*}{L_i^*} = g_i^{\circ} f_i^{\circ}, \tag{29}$$

where the subsidy relative magnitude is given by the subsidy rate $g_i^\circ \equiv \dfrac{S_i^\circ}{W_i^*}$, and the subsidy impact factor is given by $f_i^\circ \equiv -\dfrac{\varepsilon_{di}^\circ \, \varepsilon_{si}^\circ}{\varepsilon_{si}^\circ - \varepsilon_{di}^\circ}$.

Finally, the total cost of the subsidies levied on the firms employing i-workers, C_i°, is given by

$$C_i^\circ = S_i^\circ L_i^\circ = g_i^\circ W_i^* L_i^* \left(1 + g_i^\circ f_i^\circ\right), \tag{30}$$

from which it follows that this cost increases with g_i°, W_i^*, L_i^*, and the elasticities $-\varepsilon_{di}^\circ$ and ε_{si}°.

To analyze the effects of the subsidy on the Italian labor market, we present various scenarios based on different assumptions regarding labor market elasticities. Our analysis focuses on the segment of low-wage workers. Specifically, we further divide this segment along two primary labor market dimensions: regional (North vs. South) and gender (men vs. women). Accordingly, we assume distinct labor market elasticities for each of these groups, namely low-wage men and women across the North and South of Italy. Drawing on relevant literature (e.g., Adam and Moutos, 2014; Bargain et al., 2014), we identify three elasticity levels (low, medium, and high) for both labor demand and labor supply in each segment.

Table 1: Elasticity under different scenarios

	Labor demand elasticity ($-\varepsilon_{di}$)			Labor supply elasticity (ε_{si})		
	Low	Medium	High	Low	Medium	High
Men, North	0.20	0.35	0.50	0.10	0.20	0.30
Men, South	0.15	0.30	0.45	0.15	0.275	0.40
Women, North	0.30	0.45	0.60	0.20	0.325	0.45
Women, South	0.25	0.40	0.55	0.20	0.375	0.55

Notes. The table presents values of labor demand (in absolute terms) and labor supply elasticity across different regions and demographic groups for the Italian labor market. These values are utilized to calculate the impact of the subsidy under various scenarios. The South category includes Abruzzo, Molise, Campania, Puglia, Basilicata, Calabria, Sicily, and Sardinia, while all other regions are classified as North.

The elasticities used in the analysis are reported in Table 1. Labor demand elasticity ranges between 0.15 and 0.6 (in absolute values), while labor supply elasticity ranges between 0.1 and 0.55. These values capture regional and gender-based variations in the Italian labor market, illustrating how economic, social, and cultural factors influence responsiveness to wage changes.

Labor demand elasticity for low-wage workers varies by region and gender. In general, we expect that the elasticity of labor demand is higher in Northern Italy than in the South because of the greater concentration in the former of manufacturing and export-oriented firms that are sensitive to wage fluctuations due to competitive pressures in international markets. Additionally, firms in the North are more technologically advanced, with a greater capacity to substitute labor with capital, which enhances labor demand elasticity, whereas the South faces lower industrialization, and reliance on agriculture and low-tech services, which offer limited opportunities for capital-labor substitution. Furthermore, the public sector plays a relatively more significant role in the South, and this also contributes to depress the overall elasticity in the region. However, the stronger weight of small, family-owned, private firms and of informal economy in the South reduces the average cost for Southern employers of adjusting employment in response to shocks even in the short term, thus increasing the elasticity of labor demand in aggregate. This effect is probably more relevant precisely in those service sectors where many low-wage workers are concentrated, and may - at least partly or even entirely - offset the other

factors that make labor demand more responsive to wage changes in the North. Consistently, we also assume higher labor demand elasticity for low-wage women, who are more likely to work in sectors such as personal services, retail, and hospitality – industries that are more sensitive to economic cycles and wage changes, with lower entry and exit barriers. This structure allows employers to adjust labor demand more readily, resulting in higher elasticity values for women.

Labor supply elasticity also varies by region and gender. In the South, high unemployment and underemployment make workers more responsive to wage changes as they seek employment opportunities, leading us to assume higher labor supply elasticity compared to the North. On the other hand, we assume that women exhibit higher labor supply elasticity than men, as they are often secondary earners whose labor supply is more influenced by wage changes and household needs. As wages rise, we expect more women to enter the labor force or increase their working hours, while they may reduce their work if wages fall. Moreover, many women are primary caregivers for children or elderly family members, making them more sensitive to wage incentives, as higher wages can justify the opportunity cost of time away from caregiving.

The intersection of regional and gender factors adds layers of complexity. For instance, compared to women in the North, women in the South may be somewhat less responsive to wage changes due to more traditional social norms and lower availability of childcare services. However, equilibrium wages and female labor force participation are lower in the South, which may contribute to higher responsiveness to wage increases. For these reasons, we assume similar labor supply elasticity for women in the North and South at the lower end of the spectrum but a higher elasticity for women in the South at the upper end.

After establishing the elasticity parameters, the next step is to identify the eligible workers and determine the subsidy amount. For this purpose, we use data from the 2019 Italian Labor Force Survey by Istat, the most recent year for which net labor income is reported. Although the data predates the COVID-19 crisis and may not capture the most recent labor market fluctuations, the overall structure of the Italian labor market has remained relatively stable. Therefore, these data remain useful for providing an approximate magnitude of the subsidy's effects and costs. Setting the eligibility criteria as full-time workers earning less than €1,500 per month, approximately 8 million individuals qualify for the subsidy. Of these, about 3.4 million are women, and approximately 2.3 million are located in the South. A potential mechanism for assigning the subsidy involves covering a portion (e.g., 50%) of the difference between what is paid by the employer and the eligibility threshold (€1,500 per month). In Table 2, we report the number of eligible workers by region and gender, along with their average wage, the subsidy to which they are entitled according to the mechanism described above, and their subsidy rate.

It is important to note that the amount of the subsidy and the subsidy rate are negatively correlated with the amount paid by the employer: the subsidy and the subsidy rate are higher for the workers paid less. This structure highlights how the subsidy aims to provide greater support to lower-income workers, helping to reduce income disparities across both regions and genders.

Based on the assumed labor market elasticities and the characteristics of eligible low-wage workers, the aggregate results of the scenario analysis are presented in Table 3. The results indicate that wages could increase by between 4.5% and 9.5%, with an average increase of 7.1%. Similarly, employment among eligible workers might rise by 1.3% to 3.2%, averaging an increase of 2.1%. This corresponds to the creation of between 102,000 and 252,000 new jobs, with an average of approximately 166,000. Considering that there were 14.4 million full-time workers in 2019, the subsidy is estimated to generate an increase in full-time employment of between 0.7% and 1.8%, primarily concentrated among the most vulnerable segments of the labor force. The total cost of implementing the subsidy is estimated at 16 billion euros, representing about 2.5% of that year's total public outlays. These estimates provide an order of magnitude for the

Table 2: Distribution of eligible workers and subsidy parameters by region and gender

Gender, Region	Eligible workers (in thousands)	Avg. wage (euro per month)	Avg. subsidy (euro per month)	Subsidy rate
Men, North	3,006	1,223	140	11.4%
Men, South	1,541	1,136	185	16.3%
Women, North	2,575	1,182	160	13.5%
Women, South	832	1,083	210	19.4%

Notes. The table shows the number of workers eligible for the subsidy across different segments of the Italian labor market. Data refer to the year 2019. The number of eligible workers is expressed in thousands and includes those earning less than €1,500 per month. Columns also report the average wage, the average subsidy, and the subsidy rate.

potential effects and costs of the subsidy, acknowledging that actual outcomes may vary due to changes in the labor market structure and unforeseen economic developments.

Table 4 provides a detailed breakdown of the estimates across different labor market segments. It is evident that, in relative terms, the category that would benefit most from the subsidy comprises low-wage women residing in the South. This labor market segment is expected to experience an increase in employment ranging from 2.2% to 5.3%, alongside a wage increase between 6.1% and 14.2%. However, as the smallest segment, it would contribute to an absolute increase in female employment in the South of between 18,000 and 44,000 workers.

In terms of relative changes in employment, low-wage male workers in the South and low-wage female workers in the North are expected to experience similar increases. Specifically, male employment is anticipated to increase between 1.2% and 3.5%, while female employment is expected to rise between 1.6% and 3.5%. In absolute terms, however, the increase in female employment in the North would be substantially higher, ranging from 42,000 to 90,000, compared to an increase of 19,000 to 53,000 for male employment in the South. Additionally, both groups are expected to experience similar wage increases, ranging between 3.1% and 8.6% for men, and between 4.6% and 8.6% for women.

Finally, in terms of relative changes in employment, low-wage male workers in the North are expected to experience the lowest effects, with increases ranging between 0.8% and 2.2%. However, despite receiving, on average, the lowest subsidy, they are anticipated to register a substantial increase in wages, ranging from 4.2% to 8.6%, second only to low-wage women in the South. This is due to their relatively inelastic labor supply compared to workers in other segments, and to a labor demand that is not excessively rigid. The inelastic supply means that wage increases are more pronounced, as there is less responsiveness in labor supply to counteract wage adjustments. Consequently, even with lower subsidy levels, these workers benefit significantly from wage enhancements.

6 Discussion

In this paper, we discuss the introduction of permanent and generalized public subsidies in Italy to supplement the wages of low-skilled workers. This initiative entails a de facto reform of the labor income taxation system by implementing a form of negative taxation for workers with the lowest wages. The primary goals of the subsidy are: *(a)* incentivizing the labor supply among populations currently marginalized in the labor market, thereby increasing net take-home wages in sectors where employment opportunities exist; *(b)* boost labor demand in labor-intensive sectors, creating new employment opportunities, especially for low-skill workers;

Table 3: Aggregate impact of the subsidy under different elasticity scenarios

Elasticities (ε_s, ε_d)	D_s	ΔW	$\Delta\%W$	ΔL	$\Delta\%L$	C
Low, Low	60%	88	7.34%	101,515	1.28%	15,825
Medium, Low	45%	67	5.54%	137,343	1.73%	15,897
High, Low	37%	54	4.45%	159,139	2.00%	15,941
Low, Medium	72%	105	8.76%	121,632	1.53%	15,867
Medium, Medium	58%	85	7.11%	176,804	2.22%	15,979
High, Medium	49%	72	5.99%	214,394	2.70%	16,055
Low, High	78%	115	9.54%	132,854	1.67%	15,891
Medium, High	66%	97	8.08%	201,446	2.53%	16,030
High, High	58%	84	7.01%	251,659	3.16%	16,132

Notes. The table presents aggregate estimates of the subsidy's impact across various elasticity scenarios. D_s represents the incidence of the subsidy on workers, ΔW is the absolute change in workers' monthly wage, and $\Delta\%W$ is the percentage wage increase. ΔL and $\Delta\%L$ denote the absolute and percentage increases in employment, respectively. C indicates the total cost of the subsidy (in millions of euros).

(c) reduce undeclared work within these sectors;[3] (*d*) enhance the labor income of families at risk of poverty, thereby mitigating income inequality that is particularly pronounced in Italy's most economically depressed regions and disproportionately affects families of foreign origin.

Summarizing the projections presented in Section 5, based on 2019 data, approximately 8 million workers would benefit to some extent from the subsidy. The overall financial burden is estimated at around €15 billion per year, representing less than 1% of the national Gross Domestic Product (GDP) and approximately 2.5% of government expenditure. Although this figure may initially appear substantial, the implementation of this measure should be accompanied by a comprehensive review of existing welfare instruments that the subsidy would partially replace. This dual approach would yield both direct savings – through the elimination of redundant income support measures – and indirect savings – by addressing the costs associated with widespread social marginalization. Such marginalization includes phenomena like NEETs (Not in Education, Employment, or Training), the "working poor", and the challenges of integrating immigrants into a socially cohesive framework that is already under significant strain. Furthermore, the net cost of the subsidy could be partially offset by the emergence of economic activities currently operating undeclared. Additionally, positive macroeconomic effects are anticipated, stemming from increased aggregate demand driven by higher lower-income earnings and the enhanced participation of a broader workforce in wealth generation.

The proposed intervention, when combined with targeted policies aimed at alleviating poverty among families with non-employable members, offers distinct advantages over alternative policies of the past such as the *Reddito di Cittadinanza* (RdC, which, when fully implemented, costed about 8 billion per year), or other forms of universal minimum income. This is particularly relevant in the Italian context, where increasing employment is a priority. Although the RdC was nominally linked to a commitment to seek employment, it often disincentivized job acceptance and retention, especially for marginal workers – primarily women and young people – who reside in regions where the labor market offers only low-wage opportunities. Moreover, unlike wage subsidies, the RdC had no impact on labor demand. Subsidies can reduce the cost of labor for employers while increasing workers' net income, assuming wage levels allow for such adjustments.

[3]Consider that in domestic work alone, undeclared workers are estimated to be 765,000, approximately 55 percent of those employed in the sector (e.g., see Assindatcolf, 2024).

Table 4: Disaggregate impact of the subsidy under different elasticity scenarios

Elasticities $(\varepsilon_s, \varepsilon_d)$	D_s	ΔW	$\Delta\%W$	ΔL	$\Delta\%L$	C
			Men, North			
Low, Low	67%	93	7.63%	22,940	0.76%	5,089
Medium, Low	50%	70	5.72%	34,410	1.14%	5,108
High, Low	40%	56	4.58%	41,293	1.37%	5,119
Low, Medium	78%	109	8.90%	26,764	0.89%	5,095
Medium, Medium	64%	89	7.28%	43,795	1.46%	5,124
High, Medium	54%	75	6.16%	55,586	1.85%	5,143
Low, High	83%	117	9.54%	28,675	0.95%	5,098
Medium, High	71%	100	8.18%	49,158	1.64%	5,133
High, High	63%	88	7.15%	64,520	2.15%	5,158
			Men, South			
Low, Low	50%	70	5.72%	18,822	1.22%	3,463
Medium, Low	35%	49	4.04%	24,357	1.58%	3,475
High, Low	27%	38	3.12%	27,377	1.78%	3,482
Low, Medium	67%	93	7.63%	25,096	1.63%	3,477
Medium, Medium	52%	73	5.97%	36,007	2.34%	3,501
High, Medium	43%	60	4.91%	43,021	2.79%	3,517
Low, High	75%	105	8.59%	28,232	1.83%	3,484
Medium, High	62%	87	7.11%	42,835	2.78%	3,516
High, High	53%	74	6.06%	53,143	3.45%	3,539
			Women, North			
Low, Low	60%	84	6.87%	41,827	1.62%	5,132
Medium, Low	48%	67	5.49%	54,376	2.11%	5,157
High, Low	40%	56	4.58%	62,741	2.44%	5,173
Low, Medium	69%	97	7.93%	48,262	1.87%	5,145
Medium, Medium	58%	81	6.65%	65,777	2.55%	5,179
High, Medium	50%	70	5.72%	78,426	3.05%	5,204
Low, High	75%	105	8.59%	52,284	2.03%	5,153
Medium, High	65%	91	7.43%	73,481	2.85%	5,194
High, High	57%	80	6.54%	89,630	3.48%	5,226
			Women, South			
Low, Low	56%	117	10.77%	17,926	2.15%	2,142
Medium, Low	40%	84	7.76%	24,199	2.91%	2,158
High, Low	31%	66	6.06%	27,729	3.33%	2,167
Low, Medium	67%	140	12.93%	21,511	2.59%	2,151
Medium, Medium	52%	108	10.01%	31,225	3.75%	2,175
High, Medium	42%	88	8.16%	37,361	4.49%	2,191
Low, High	73%	154	14.22%	23,662	2.84%	2,156
Medium, High	59%	125	11.53%	35,972	4.32%	2,187
High, High	50%	105	9.70%	44,366	5.33%	2,208

Notes. The table presents disaggregate estimates of the subsidy's impact across various elasticity scenarios. D_s represents the incidence of the subsidy on workers, ΔW is the absolute change in workers' monthly wage, and $\Delta\%W$ is the percentage wage increase. ΔL and $\Delta\%L$ denote the absolute and percentage increases in employment, respectively. C indicates the total cost of the subsidy (in millions of euros).

Furthermore, the implementation of wage subsidies for low-skilled workers is pivotal for the sustainability of Italy's pension system. By effectively integrating the substantial portion of the workforce that is currently underutilized – comprising approximately 5.5 million individuals, including a significant number of foreign-origin workers – these subsidies can significantly enhance labor market participation. Increased employment not only elevates current income levels but also boosts contributions to the pension system through higher payroll taxes and social security contributions. This is especially critical in the context of Italy's aging population and declining birth rates, which exert pressure on the pension framework by increasing the dependency ratio.

It is crucial to underscore that the proposed subsidy is complementary – rather than substitutive – to public policies that foster investments in human capital, digital infrastructure, and basic research aimed at enhancing productivity growth in sectors where technological advancement is most pronounced. In advanced economies, technological progress has led to significant labor market polarization, where labor-intensive occupations requiring relatively low-skilled workers continue to maintain substantial importance. As a result, systematic public intervention is needed to support these workers and counter the trend of their relative impoverishment. This intervention must also include immigrant workers, who are disproportionately concentrated in precarious and poorly compensated jobs. Ensuring access to employment that provides a decent standard of living is a foundational step for the integration of immigrants into Italian society.

Wage subsidies targeting the working poor, whether native-born or foreign, can serve as a valuable mechanism for social inclusion and contribute to civil progress. Concurrently, such subsidies can help dismantle an unsustainable family-based welfare model that, in Italy to a far greater extent than in other Western countries, keeps young adults financially dependent on their families and women at home to care for children and elderly relatives. Regarding inclusion, it is important to note that the subsidy is compatible with minimum wage requirements (whether statutory or established through national employment contracts with *erga omnes* validity), provided that these wage levels are not excessively high relative to the average productivity of firms. The subsidy, therefore, can be seen as a key element of a broader welfare reform agenda aimed at shifting the current system away from a disproportionate focus on protecting the elderly toward better support for working women and young families.

While a comprehensive analysis of the impact of the subsidy on productivity is beyond the scope of this paper, it is nonetheless important to briefly consider its potential effects. The introduction of the subsidy could foster productivity growth in sectors characterized by high labor intensity and relatively low productivity. By reducing the prevalence of undocumented work and drawing workers out of the underground economy, the subsidy can facilitate organizational improvements and enhance access to credit. These changes may, in turn, enable the expansion of micro-enterprises, leading to greater efficiency and a reduction in the number of individual businesses, which are significantly more common in Italy than in comparable countries.

Additionally, the subsidy's direct targeting of employees might encourage some self-employed workers to transition to wage-dependent employment or formally hire staff. This shift could lead to an increase in firm size, which is likely to have positive implications for productivity by addressing the structural dwarfism that characterizes the Italian production system. Italy's average firm size, around 4.1 workers, is significantly smaller than that of countries such as France, the United Kingdom, and Germany, placing Italy near the bottom of firm size rankings in Central-Western Europe. Economic literature consistently highlights that firms below a certain size threshold tend to exhibit lower productivity levels and offer wages significantly below sectoral averages. Consequently, the high prevalence of "atomistic" firms in Italy contributes to the stagnation of national productivity, as their limited capacity undermines the overall performance that medium to large firms might otherwise achieve.

When designing an indirect subsidy that is paid to employers, it is crucial to embed robust

anti-fraud measures that protect both workers and public funds. First, employers could be required to use a standardized digital payroll system, paying wages exclusively via traceable bank transfers. The public agency would only release the subsidy after verifying each transfer and matching it against registered employment contracts. Second, periodic audits – such as random checks of "ghost employees" and cross-checks with social security records – would deter firms from misreporting wages or staff rosters. Third, a secure online portal where workers can confirm their monthly pay and hours could add an extra layer of protection against underpayment. Finally, clear legal penalties for employers found to be abusing the system – including fines, temporary suspensions, or permanent exclusion from the subsidy program – would serve as a strong deterrent. By combining these practical steps with the productivity advantages of an indirect subsidy, policymakers can help ensure the measure truly raises incomes for low-wage workers while preserving the integrity of public resources.

7 Conclusions

In this paper, we have explored the introduction of a permanent and generalized subsidy for low-wage workers in Italy. To assess its potential effects, we have developed a formal labor market model that incorporates segmentation by skill level and firm productivity, capturing the dynamics of wage setting and employment. By focusing on a subsidy aimed at full-time workers earning less than €1,500 per month, we have estimated its potential impact and examined how its labor market effects and fiscal costs vary across differ ent labor demand and supply elasticity scenarios for various segments of low-wage workers.

Our analysis demonstrates how this policy could address structural challenges in the Italian labor market by improving outcomes for low-wage workers, reducing income inequality, and promoting social inclusion. By prioritizing vulnerable groups such as women, young workers, immigrants, and residents of economically disadvantaged regions, the subsidy has the potential to mitigate economic marginalization and increase employment in labor-intensive, low-skill sectors. These findings underscore the importance of a well-designed subsidy in fostering a more inclusive, equitable, and resilient labor market.

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Appendix

Case in which the subsidies are levied on the workers

Suppose that the government pays the subsidies directly to the low-skilled workers rather than to their employers. In this case, each employed i-worker may receive a subsidy $S_i = (p_i - 1)W_i$, where

$$p_i = \begin{cases} 1 & \text{if } W_i \geq W_{\max} \\ \left(\dfrac{W_{\max}}{W_i}\right)^{\mu} & \text{otherwise,} \quad 0 < \mu < 1. \end{cases} \tag{A1}$$

The supply of i-workers is now given by

$$L_i^s = \begin{cases} \Psi_i W_i^{\gamma_i} & \text{if } W_i \geq W_{\max}, \quad \Psi_i > 0, \gamma_i > 0, \\ \Psi_i (W_i + S_i)^{\gamma_i} & \text{if } R_i - S_i \leq W_i < W_{\max}, \\ 0 & \text{otherwise.} \end{cases} \tag{A2}$$

In the presence of subsidies levied on the workers, the equilibrium wage paid by firms employing i-workers (their labor cost) is (see Figure XXX):

$$W_i^{\circ} = \begin{cases} \left(\dfrac{1-\alpha}{2-\alpha}\alpha^{\frac{1}{1-\alpha}} B_i \Psi_i^{-1}\right)^{\frac{1-\alpha}{1+\gamma_i(1-\alpha)}} & \text{if } \left(\dfrac{1-\alpha}{2-\alpha}\alpha^{\frac{1}{1-\alpha}} B_i \Psi_i^{-1}\right)^{\frac{1-\alpha}{1+\gamma_i(1-\alpha)}} \geq W_{\max} \\ \left(\dfrac{(1-\alpha)B_i\Psi_i^{-1}}{(2-\alpha)W_{\max}^{\mu\gamma_i}}\alpha^{\frac{1}{1-\alpha}}\right)^{\frac{1-\alpha}{1+(1-\mu)\gamma_i(1-\alpha)}} & \text{otherwise.} \end{cases} \tag{A3}$$

Similarly, the equilibrium number of i-workers employed is:

$$L_i^{\circ} = \begin{cases} \left(\dfrac{1-\alpha}{2-\alpha}\alpha^{\frac{1}{1-\alpha}} B_i \Psi_i^{\frac{1}{\gamma_i(1-\alpha)}}\right)^{\frac{\gamma_i(1-\alpha)}{1+\gamma_i(1-\alpha)}} & \text{if } \left(\dfrac{1-\alpha}{2-\alpha}\alpha^{\frac{1}{1-\alpha}} B_i \Psi_i^{-1}\right)^{\frac{1-\alpha}{1+\gamma_i(1-\alpha)}} \geq W_{\max} \\ \Psi_i W_{\max}^{\mu\gamma_i}\left(\dfrac{(1-\alpha)B_i\Psi_i^{-1}}{(2-\alpha)W_{\max}^{\mu\gamma_i}}\alpha^{\frac{1}{1-\alpha}}\right)^{\frac{(1-\mu)\gamma_i(1-\alpha)}{1+(1-\mu)\gamma_i(1-\alpha)}} & \text{otherwise.} \end{cases} \tag{A4}$$

Finally, when the subsidies are levied on the workers, the parameter values are such that in equilibrium $W_n^{\circ} > R_n > ... > W_{i^{\#}}^{\circ} > R_{i^{\#}} > p_{i^{\#}-1}^{\circ} W_{i^{\#}-1}^{\circ} > R_{i^{\#}-1} > ... > p_1^{\circ} W_1^{\circ} > R_1$, where $p_i^{\circ} W_i^{\circ}$ is the take-home wage of the workers that receive some subsidy, i.e. those whose skill level i is strictly below $i^{\#}$ ($i^{\#} \geq 3$), and

$$\begin{aligned} W_{i^{\#}-1}^{\circ} = &\left(\frac{(1-\alpha)B_{i^{\#}-1}\Psi_{i^{\#}-1}^{-1}}{(2-\alpha)W_{\max}^{\mu\gamma_{i^{\#}-1}}}\alpha^{\frac{1}{1-\alpha}}\right)^{\frac{1-\alpha}{1+(1-\alpha)(1-\mu)\gamma_{i^{\#}-1}}} < \\ &< W_{\max} \leq W_{i^{\#}}^{\circ} = \left(\frac{1-\alpha}{2-\alpha}\alpha^{\frac{1}{1-\alpha}} B_{i^{\#}} \Psi_{i^{\#}}^{-1}\right)^{\frac{1-\alpha}{1+\gamma_{i^{\#}}(1-\alpha)}}. \end{aligned} \tag{A5}$$

In this case, at equilibrium the wage elasticity of demand for i-workers, ε_{di}, can be approximated by

$$\varepsilon_{di}^{\circ} \approx \frac{(L_i^{\circ} - L_i^*)/L_i^*}{(W_i^{\circ} - W_i^*)/W_i^*}, \tag{A6}$$

where W_i° is the net labor cost that firms incur to employ an i-worker after the introduction of the subsidies.

Similarly, at equilibrium the wage elasticity of supply of i-workers, ε_{si}, can be approximated by

$$\varepsilon_{si}^\circ \approx \frac{(L_i^\circ - L_i^*)/L_i^*}{(p_i^\circ W_i^\circ - W_i^*)/W_i^*}. \tag{A7}$$