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Does Fiscal Devaluation Work for Everyone? Diversified Impact of Fiscal Devaluation on Employment Rates*

Czy dewaluacje fiskalne są skuteczne dla wszystkich? Zróżnicowany wpływ dewaluacji fiskalnych na stopę zatrudnienia

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Abstract

The study analyses the effects of fiscal devaluation on employment rates and finds that the significance and magnitude of this impact vary considerably by gender and age. The effect is substantially stronger for men than for women. For men, it is statistically significant across all age groups, with the strongest impact observed among the youngest cohort. For women, it is significant only in the 25–54 age group. Labour and product market regulations also influence the strength and variation of this effect, indicating that institutional quality significantly shapes the outcomes of fiscal reforms. The findings support combining fiscal devaluation with structural reforms aimed at enhancing labour market.

Słowa kluczowe:
zatrudnienie, polityka fiskalna, instytucje rynku pracy, dewaluacje fiskalne, modele danych panelowych

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Streszczenie

Badanie analizuje wpływ dewaluacji fiskalnych na stopę zatrudnienia i wskazuje, że znaczenie oraz skala tego wpływu różnią się istotnie w zależności od płci i wieku. Efekt jest zdecydowanie silniejszy dla mężczyzn niż dla kobiet. W przypadku mężczyzn jest on statystycznie istotny we wszystkich grupach wiekowych, przy czym najsilniejszy wpływ obserwuje się w najmłodszej kohorcie. Dla kobiet efekt jest istotny jedynie w grupie wiekowej 25–54 lata. Regulacje rynku pracy i rynku produktów również wpływają na siłę i zróżnicowanie tego efektu, co wskazuje, że jakość instytucji znacząco kształtuje rezultaty reform fiskalnych. Wyniki badania wspierają łączenie dewaluacji fiskalnych z reformami strukturalnymi ukierunkowanymi na poprawę funkcjonowania rynku pracy.

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Introduction

Fiscal devaluation (FD) is a budgetary-neutral tax shift from labour to consumption that can mimic domestic currency depreciation and therefore serves as a competitiveness enhancing policy tool, especially for countries in monetary unions (e.g. eurozone). It usually involves a reduction of employers' social security contributions (ESSC) accompanied by an offsetting increase in value added tax (VAT) to ensure fiscal neutrality.[1]

Historically, the idea of FD can be traced back to **Keynes [1931]**, who proposed that an increase in import tariffs accompanied by an increase in export subsidies could result in elevated price competitiveness in international trade, similar to the effects of an exchange rate devaluation. An alternative approach for enhancing price competitiveness may involve purely fiscal measures, such as a reduction in employers' social security contributions (ESSC) and an increase in value-added tax (VAT), to ensure fiscal neutrality.

Interest in fiscal reforms inspired by FD increased in the aftermath of the global financial crisis, as policy makers viewed them as a potential means to enhance price competitiveness and boost economic growth. A shift from labour to consumption taxes was recommended to many economies struggling with subdued performance by institutions such as the **IMF [2011]** and the **European Commission [2013, 2016]**. The European Commission advocated for tax shifts in the form of fiscal devaluation in Belgium, France, Germany, Italy, Latvia, and Spain between 2011 and 2014, and when the Troika conditioned its 2012 rescue programme for Portugal on the adoption of such measures (see, e.g., **Puglisi [2014]**). **Ciżkowicz et al. [2020]** identify more than 30 instances of FD in EU countries from 1995 to 2014. Moreover, FD has been identified as a potential response to challenges in the post-COVID economic context, characterised by decelerating growth, elevated inflationary pressures, and a reduced fiscal space largely resulting from the fiscal costs of the pandemic (e.g., **OECD [2021]**).

Numerous studies based on general equilibrium models argue that FD enhances labour market performance.[2] In theory, the overall increase in employment induced by FD depends on two key factors. First, it relies on nominal price stickiness, which is necessary for lower labour costs—resulting from reduced ESSC—to be passed through to final goods prices. The positive impact of FD on labour demand is weakened if prices do not respond to the tax shift (e.g., **Engler et al. [2017]**). This may occur, for instance, when strict product market regulations limit competition. In such circumstances, reductions in labour costs brought about by FD are not reflected in lower goods prices but instead lead to higher profit margins for producers or retailers. Second, the impact of FD on employment also depends on the wage elasticity of labour supply. Reduced private consumption due to VAT rates should increase labour supply and thereby limit wage pressure. However, the labour supply growth may be constrained by generous unemployment benefits or persistent wage pressures stemming from centralised wage bargaining systems and strict employment protection legislation. Such labour regulations strengthen the wage bargaining position of workers and limit nominal wage stickiness. Consequently, an increase in VAT—necessary to keep the tax shift budget-neutral—is immediately followed by nominal wage increases aimed at maintaining real incomes. Thus, the institutional environment is likely to play a significant role in determining the overall effect of FD on employment growth.

However, empirical research on the economic impact of FD remains scarce. In particular, there is little evidence on the channels through which FD affects employment growth or the conditions that determine the magnitude and persistence of these effects. Existing empirical studies indicate that the impact of FD on aggregate employment is weakened by labour market regulations that create rigidities in real wages and labour supply, such as generous unemployment benefits or centralised wage bargaining (e.g., **Ciżkowicz et al. [2020]**). Yet, there has been no detailed empirical verification of how FD influences employment rates across different gender and age groups, how these effects depend on the institutional environment, or how they are distributed over time. This is important from a policy perspective, as it helps identify which groups benefit from such reforms and which may experience welfare losses.

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1 In this paper, we use VAT and consumption taxes interchangeably. Analogously, ESSC and labour taxes are also used interchangeably.

2 See e.g. **Engler et al. [2017]**, **Gomes et al. [2016]**, **Burlon et al. [2019]**.

This study contributes to the literature by examining the impact of FD on employment rates by gender and broad age groups (20–24, 25–49, 50–64, and 20–64 years old), while accounting for differences in institutional settings across countries. It also analyses the temporal dynamics of FD effects (up to four years ahead) using the local projection method [**Jordà, 2005**]. The analysis is based on panel data for European Union countries from 1995 to 2019.[3]

The findings yield several policy implications. First, they show that FD increases the employment rate, and that the magnitude of this increase is much stronger for young people and men than for middle-aged workers and women. Second, they demonstrate that the ability of FD to increase the employment rate depends largely on standard labour market regulations (e.g., the strictness of employment protection legislation, the centralisation of wage bargaining, and the generosity of unemployment benefits), as well as on product market regulations that constrain competition. The results of the study indicate that FD can play a significant role in increasing employment rates, provided it is implemented in countries with sufficient labour market flexibility. This underscores the need for a comprehensive fiscal and structural reform agenda.

Econometric methodology and model

The empirical analysis relies on the estimation of the impulse response function coefficients directly from the following fixed effects local projection (LP) model:

$$\Delta ER_{c,t+h} = \alpha_0 + \alpha_1 FD_{c,t} + \alpha_2 X_{c,t} + \theta_c + \varepsilon_{c,t+h}$$

where $\Delta ER_{c,t+h}$ denotes the change in the employment rate[4] (in percentage points) between year $t-1$ and year $t+h$ in country c; $FD_{c,t}$ is the measure of FD, i.e. the ratio of employers' social security contributions (ESSC) to value-added tax (VAT) revenue, both expressed as percentages of GDP, and $\varepsilon_{c,t+h}$ is the error term. The standard LP framework involves projecting the outcome at horizon h onto the treatment and other covariates at t [**Jordà, 2005**]. This study examines the impact of FD, which consists of simultaneous changes in ESSC and VAT. Our measure follows the approach proposed by **Bosca et al.** [**2013**], also applied in other studies, e.g. **Ciżkowicz et al.** [**2020**]. Changes in the FD measure may reflect coordinated shifts from labour to consumption taxes (i.e. actual FD), but they can also result from cyclical fluctuations in either ESSC or VAT revenues, potentially leading to endogeneity bias. Ideally, this issue would be addressed by identifying exogenous changes in VAT and ESSC using the narrative approach proposed by the **IMF** [**2010**]. However, although this method has been extensively developed in recent years, it has not yet been applied to identify exogenous changes, particularly in ESSC. To mitigate this problem and test the robustness of the results, we applied two additional approaches. First, instead of the raw FD measure, we used a cyclically adjusted version (*FD_cyc*) as the ratio of cyclically adjusted ESSC and VAT revenues. The latter series were derived as the errors terms from the fixed effects panel regression, in which we separately regress ESSC and VAT revenues on the output gap for the analysed EU economies. Second, we followed an approach proposed by, e.g., **de Mooij and Keen** [**2012**] and **Franco** [**2013**] and used separate variables for ESSC and VAT revenues, each expressed as a percentage point of GDP, i.e. the effective contribution and the tax rate.

The set of model control variables includes country fixed effects (θ_c) to account for unobserved time-invariant country-specific factors, the lagged change in the employment rate, and a rich set of macroeconomic and institutional variables that may influence changes in the employment rate over time ($X_{c,t}$). Macroeconomic conditions are controlled by the country-level GDP annual growth rate and the cyclically adjusted primary fiscal balance. The latter variable is particularly important, as it allows us to use the FD estimates to show how a budget-neutral shift from ESSC to VAT taxes can affect the employment rates. The set of institutional control variables includes the lagged time-varying wage bargaining coordination index and its square to account

[3] Denmark was excluded from the sample due to a marginal level of employers' social security contributions.
[4] The employment rate is defined as the ratio of total employment to population for a specific age or gender group.

for country-level wage pressure. Previous empirical research confirms that the wage bargaining system significantly affects labour market performance and that this relationship is non-linear (e.g., **Bassanini, Duval [2006]**; **Jaumotte [2011]**). The model specifications also include lagged unemployment benefit net replacement rates and the employment protection legislation index for regular contracts. In addition, we also used narrative dummies for labour market reforms to control for major changes in the generosity of unemployment benefits and employment protection legislation across the analysed EU economies (see **Bordon et al. [2016]**). A detailed description of all variables and their sources is provided in Table 1. The **Driscoll and Kraay [1998]** nonparametric covariance matrix estimator is applied to calculate coefficient standard errors, accounting for spatial correlation of the error terms. The coefficient of our interest is α_1, which reflects the impact of FD on cumulative changes in the employment rate over a four-year time horizon. Accordingly, the model coefficients were estimated separately for each annual horizon (h = 0, 1, 2, 3, 4) for each age and gender group considered.

In addition to estimating the FD effects for employment rates by age group and gender, the study also examines how these effects vary depending on the distribution of selected labour marker regulations (i.e., employment protection legislation, generosity of unemployment benefits) and product market regulations. To this end, the baseline specification was re-estimated for subsamples consisting of observations divided by regulation level (below and above the median, respectively). Differences between coefficients of the impulse response function for the time horizons reflect how the effects of FD vary across the analysed institutional environments.

Although data for the dependent variable (i.e., the employment rate), as well as key explanatory variables such as gross domestic product, fiscal balance, ESSC and VAT revenue are available through 2023, the final sample was limited to 2019. This restriction stems from the lack of cross-country comparable data on key labour market institutions (e.g., wage bargaining coordination, net unemployment benefit replacement rates) beyond 2020. Moreover, we expanded the dataset on major labour and product market reforms for all European countries from 2013 only up to 2019. This allowed us to make a significant contribution to the literature on structural reforms and their impact on economic activity.

Table 1. Descriptive statistics and source of data

Variable	Description	N	Mean	St. Dev.	Min	Max	Source
er20_64T	Emp. rate 20–64 years total	607	68.50	6.03	51.60	82.40	Eurostat
er20_64F	Emp. rate 20–64 years female	607	61.34	8.96	32.70	80.20	Eurostat
er20_64M	Emp. rate 20–64 years male	607	75.73	5.36	59.30	87.70	Eurostat
er20_24T	Emp. rate 20–24 years total	607	50.97	11.77	22.10	81.00	Eurostat
er20_24F	Emp. rate 20–24 years female	607	46.85	13.12	17.60	79.20	Eurostat
er20_24M	Emp. rate 20–24 years male	607	55.00	11.09	26.40	84.40	Eurostat
er25_49T	Emp. rate 25–49 years total	607	78.65	5.31	60.50	89.10	Eurostat
er25_49F	Emp. rate 25–49 years female	607	71.68	8.70	35.00	86.70	Eurostat
er25_49M	Emp. rate 25–49 years male	607	85.54	5.01	70.40	94.70	Eurostat
er50_64T	Emp. rate 50–64 years total	607	54.62	9.97	32.40	82.00	Eurostat
er50_64F	Emp. rate 50–64 years female	607	46.39	13.79	13.80	79.90	Eurostat
er50_64M	Emp. rate 50–64 years male	607	63.28	8.10	41.70	84.10	Eurostat
ESSC	Employers' social security contribution (% GDP)	635	6.51	2.40	0.70	11.70	Eurostat
VAT	VAT revenue (% GDP)	635	7.36	1.40	3.40	13.30	Eurostat
FD	ESSC/VAT ratio	635	0.91	0.37	0.09	2.47	Own calculation based on Eurostat
GDP	GDP growth rate	613	0.03	0.04	−0.16	0.25	Eurostat
CAPB	Cyclically adjusted primary fiscal balance (% GDP)	635	−2.51	3.21	−30.46	6.12	AMECO
Coord	Coordination of wage-setting	634	2.42	1.30	1.00	5.00	OECD/AIAS ICTWSS
Coord_sqr	Square root of the Coord	634	7.53	7.22	1.00	25.00	Own calculation

Variable	Description	N	Mean	St. Dev.	Min	Max	Source
EPL	EPL for regular contracts and collective dismissal	447	2.54	0.68	1.10	4.58	OECD and own calculation
NRR	Unemployment benefit net replacement rate for couples	623	0.53	0.19	0.09	1.04	Eurostat
Level	Predominant level of wage bargaining	634	2.53	1.13	1.00	5.00	OECD/AIAS ICTWSS
PMR	Product market regulation index	461	2.40	1.05	1.09	5.28	OECD and own calculation
EPL reform	EPL narrative-based major reform	564	0.04	0.22	–1.00	1.00	**Duval et al.** [**2018**] + own extension for EU new member states
UB RR reform	PMR narrative-based major reform	564	0.01	0.13	–1.00	1.00	**Duval et al.** [**2018**] + own extension for EU new member states

Source: Authors' own elaboration.

Estimation results

The coefficients of the impulse response function confirm that FD leads to an increase in the employment rate, although the magnitude of this improvement varies considerably across gender and age groups (Table 2). Below, we focus our discussion on two aspects: the point estimates from the regressions and the impact of the average shift from ESSC to VAT. This shift is defined as one standard deviation of the annual changes in both variables, amounting to approximately 0.5% of GDP and corresponding to a 0.12 decrease in the FD measure. We will refer to this value as the average FD shift in the sample.

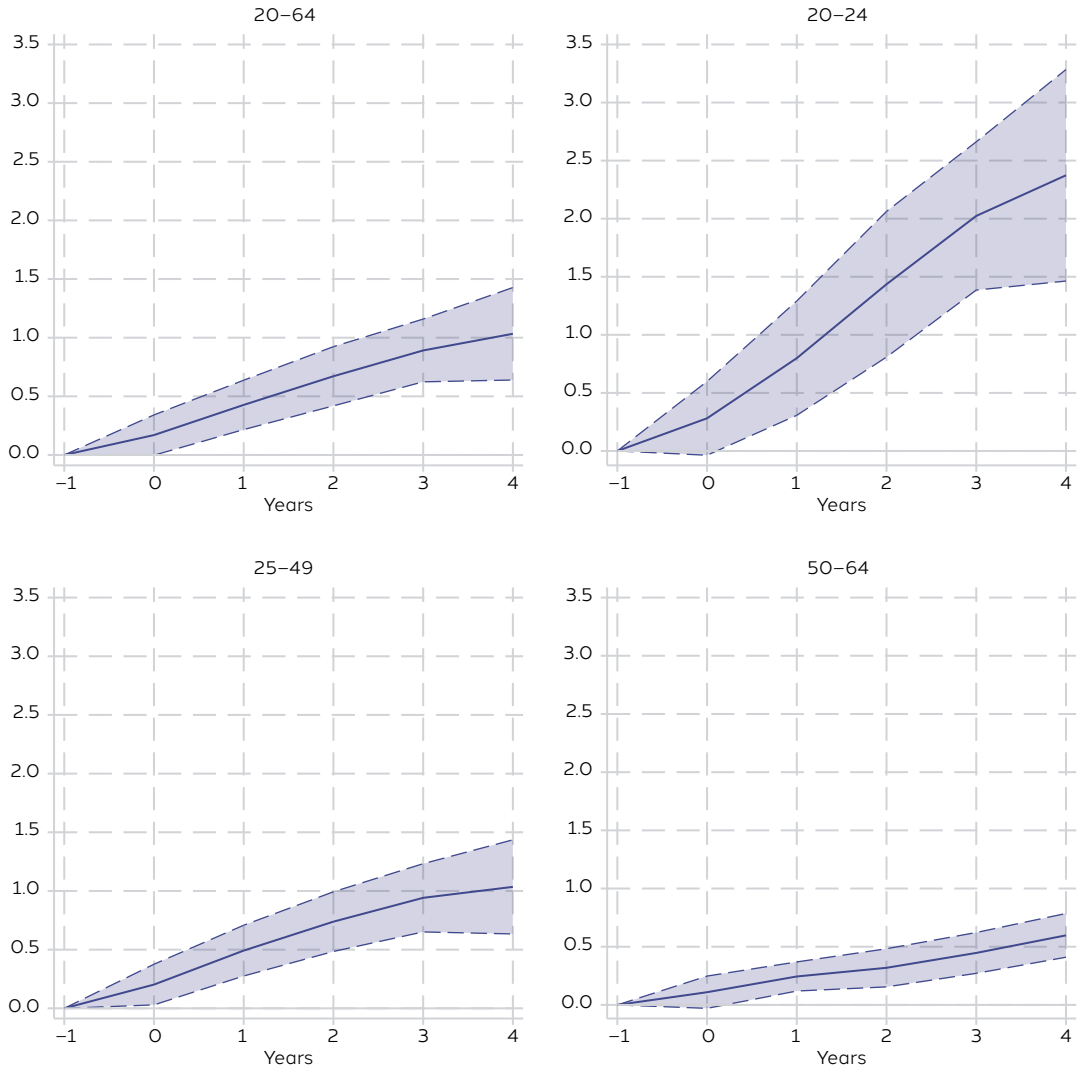
The baseline results show that the FD coefficient is statistically significant and its absolute value increases over time (Table 2). The negative estimates should be interpreted as a confirmation of the favourable impact of a shift from ESSC to VAT on the employment rate. To provide a more intuitive interpretation, we recalculated the FD estimates to reflect the change in employment rates resulting from the average FD shift. The findings suggest that, for individuals aged 20–64, the average FD shift leads to a cumulative increase of 1 percentage point in the employment rate over four years (Figure 1). A similar improvement is seen for those aged 25–49. In contrast, for the youngest group (20–24 years), the same FD shift results in an increase of about 2.5 percentage points—more than twice the effect observed in the broader 20–64 age group. For older workers (50–64 years), the effect is smaller, with an increase of 0.7 percentage points.

The strong response of the employment rate among the youngest individuals (aged 20–24) to changes in FD can be attributed to their limited work experience and lower qualifications, which make labour demand for this group more sensitive to labour costs. For individuals aged 25–49, qualifications play a greater role in securing employment, rendering them less responsive to fiscal changes. In contrast, the employment rate of older workers (50–64) is strongly influenced by regulations governing their transition from the labour market into retirement. Consequently, their employment rate is less dependent on labour costs.

The detailed results presented in Table 2 show that there are material differences in the impact of selected control variables on the employment rate. First, strict EPL hampers the employment rate of the youngest workers more than twice as much as it does in the other age groups. Second, although a generous unemployment benefit replacement rate reduces the employment rate among workers aged 50–64, it does not affect employment in the remaining age groups. Third, the estimates show that wage pressure stemming from the wage bargaining system suppresses employment rates in a non-linear manner, with the effect being most pronounced among the youngest workers. Finally, major reforms decreasing the generosity of unemployment benefits substantially contribute to higher employment rates. On average, such reforms are responsible for a 2-percentage-point increase in the employment rate among workers aged 20–64. Major reforms of EPL regulations, in turn, raise the overall employment rate by approximately 1 percentage point only in the final year. For

workers aged 20–24, however, EPL reforms increase the employment rate by more than 4 percentage points in the fourth year, with the effect becoming significant from the second year onwards.

Figure 1. Impact of tax shift from ESSC to VAT on the employment rate across selected age groups



Note: The tax shift is equivalent to a simultaneous decrease in ESSC and increase in VAT revenue by approximately 0.5% of GDP, i.e. one standard deviation of annual changes in ESSC and VAT observed in the sample. The simulated tax shift (solid line) corresponds to a decrease in FD of 0.12. The shaded area represents the 90% confidence interval.

Source: Authors' own elaboration.

Table 2. Local projection estimates of fiscal devaluation effects on employment rates by age group

Panel A: 20–64 years old

	Year_0	Year_1	Year_2	Year_3	Year_4
FD	–1.408 (0.865)	–3.538*** (1.059)	–5.561*** (1.271)	–7.383*** (1.348)	–8.562*** (1.985)
CAPB diff (t-1)	0.024 (0.017)	0.072*** (0.024)	0.044 (0.034)	–0.022 (0.052)	0.017 (0.057)
Coord (t-1)	0.189 (0.367)	1.241 (1.001)	3.077** (1.429)	4.366*** (1.511)	4.344** (1.549)
Coord sqr (t-1)	–0.040 (0.056)	–0.223 (0.155)	–0.527** (0.228)	–0.729*** (0.237)	–0.696** (0.244)
NRR (t-1)	–0.768 (0.931)	–0.843 (1.521)	–1.572 (1.992)	–3.358 (2.289)	–4.495* (2.480)

	Year_0	Year_1	Year_2	Year_3	Year_4
EPL (t-1)	−1.080*** (0.324)	−2.531*** (0.455)	−3.938*** (0.551)	−5.163*** (0.603)	−6.541*** (0.598)
EPL reform	−0.127 (0.147)	−0.300 (0.278)	0.182 (0.384)	0.480 (0.414)	1.160** (0.506)
UB RR reform	0.602* (0.337)	1.240** (0.483)	2.161*** (0.457)	2.300*** (0.635)	2.038** (0.762)
R2	0.583	0.665	0.703	0.728	0.745
N	405	385	364	343	322

Note: The **Driscoll and Kraay [1998]** nonparametric standard errors in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Panel B: 20–24 years old

	Year_0	Year_1	Year_2	Year_3	Year_4
FD	−2.332 (1.600)	−6.623** (2.477)	−11.894*** (3.158)	−16.766*** (3.214)	−19.664*** (4.586)
CAPB diff (t-1)	0.110** (0.039)	0.237*** (0.060)	0.228** (0.091)	0.113 (0.123)	0.160 (0.113)
Coord (t-1)	1.495 (0.998)	4.357* (2.534)	8.990** (3.428)	13.749*** (3.397)	14.443*** (3.703)
Coord sqr (t-1)	−0.204 (0.149)	−0.672 (0.398)	−1.474** (0.552)	−2.314*** (0.488)	−2.376*** (0.557)
NRR (t-1)	0.003 (1.880)	0.439 (3.320)	0.030 (4.823)	−0.379 (5.677)	−2.543 (6.419)
EPL (t-1)	−2.595*** (0.681)	−5.189*** (0.878)	−7.673*** (1.070)	−9.827*** (1.452)	−12.413*** (1.528)
EPL reform	0.340 (0.249)	0.969 (0.685)	2.217** (0.937)	3.352*** (0.991)	4.259*** (1.314)
UB RR reform	1.214 (0.813)	2.311* (1.221)	3.496** (1.416)	3.190* (1.563)	2.634* (1.425)
R2	0.366	0.503	0.557	0.587	0.592
N	405	385	364	343	322

Note: The **Driscoll and Kraay [1998]** nonparametric standard errors in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Panel C: 25–49 years old

	Year_0	Year_1	Year_2	Year_3	Year_4
FD	−1.677* (0.872)	−4.075*** (1.089)	−6.119*** (1.281)	−7.802*** (1.465)	−8.573*** (2.020)
CAPB diff (t-1)	0.036* (0.019)	0.076** (0.029)	0.058 (0.035)	−0.003 (0.050)	0.063 (0.047)
Coord (t-1)	0.136 (0.429)	1.183 (0.910)	2.873** (1.049)	3.690*** (1.060)	3.317** (1.278)
Coord sqr (t-1)	−0.040 (0.068)	−0.232 (0.143)	−0.517*** (0.165)	−0.640*** (0.170)	−0.555** (0.202)
NRR (t-1)	0.013 (0.841)	0.793 (1.407)	1.213 (1.644)	0.217 (1.813)	−0.314 (1.912)
EPL (t-1)	−0.984*** (0.315)	−2.224*** (0.497)	−3.477*** (0.669)	−4.549*** (0.721)	−5.698*** (0.620)
EPL reform	−0.168 (0.103)	−0.370 (0.235)	0.060 (0.401)	0.366 (0.439)	1.033* (0.563)
UB RR reform	0.289 (0.275)	0.946** (0.392)	2.002*** (0.579)	2.303*** (0.610)	1.892*** (0.517)
R2	0.571	0.659	0.710	0.747	0.773
Obs	405	385	364	343	322

Note: The **Driscoll and Kraay [1998]** nonparametric standard errors in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Panel D: 50–64 years old

	Year_0	Year_1	Year_2	Year_3	Year_4
FD	−0.907 (0.698)	−2.025*** (0.629)	−2.642*** (0.825)	−3.701*** (0.882)	−4.953*** (0.947)
CAPB diff (t-1)	−0.030 (0.022)	0.008 (0.030)	−0.020 (0.034)	−0.067 (0.055)	−0.062 (0.076)
Coord (t-1)	−0.666 (0.562)	−0.620 (1.080)	−0.009 (1.580)	0.746 (1.888)	1.052 (2.038)
Coord sqr (t-1)	0.099 (0.089)	0.098 (0.171)	0.023 (0.260)	−0.068 (0.302)	−0.077 (0.323)
NRR (t-1)	−1.630 (1.064)	−2.118 (1.729)	−3.931 (2.452)	−6.537** (2.756)	−7.564** (2.937)
EPL (t-1)	−1.188*** (0.338)	−2.876*** (0.538)	−4.346*** (0.594)	−5.364*** (0.586)	−6.534*** (0.608)
EPL reform	−0.192 (0.261)	−0.533* (0.304)	−0.242 (0.316)	−0.095 (0.399)	0.496 (0.458)
UB RR reform	0.455 (0.342)	0.941** (0.428)	1.837*** (0.511)	2.128*** (0.733)	2.390** (0.849)
R2	0.363	0.496	0.543	0.569	0.585
Obs	405	385	364	343	322

Note: The **Driscoll and Kraay [1998]** nonparametric standard errors in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Source: Authors' own elaboration.

Table 3. Local projection estimates of fiscal devaluation effects on employment rates by age group and sex

		Year_0	Year_1	Year_2	Year_3	Year_4
20–64	Total	−1.408	−3.538***	−5.561***	−7.383***	−8.562***
		(0.865)	(1.059)	(1.271)	(1.348)	(1.985)
	Men	−1.975*	−4.766***	−7.070***	−8.952***	−9.793***
		(1.117)	(1.176)	(1.261)	(1.298)	(2.063)
	Women	−0.874	−2.419**	−4.046***	−5.785***	−7.260***
		(0.646)	(0.929)	(1.344)	(1.511)	(2.030)
20–24	Total	−2.332	−6.623**	−11.894***	−16.766***	−19.664***
		(1.600)	(2.477)	(3.158)	(3.214)	(4.586)
	Men	−3.420	−8.869***	−14.719***	−19.772***	−22.839***
		(2.088)	(2.807)	(3.635)	(3.644)	(5.066)
	Women	−1.511	−4.730**	−9.499***	−14.070***	−16.696***
		(1.209)	(2.240)	(2.787)	(2.901)	(4.227)
25–49	Total	−1.677*	−4.075***	−6.119***	−7.802***	−8.573***
		(0.872)	(1.089)	(1.281)	(1.465)	(2.020)
	Men	−2.248*	−4.728***	−6.627***	−8.195***	−8.513***
		(1.143)	(1.270)	(1.292)	(1.374)	(2.070)
	Women	−1.214*	−3.455***	−5.576***	−7.310***	−8.494***
		(0.667)	(0.996)	(1.391)	(1.666)	(2.141)
50–64	Total	−0.907	−2.025***	−2.642***	−3.701***	−4.953***
		(0.698)	(0.629)	(0.825)	(0.882)	(0.947)
	Men	−1.394	−3.902***	−5.505***	−6.703***	−7.906***
		(0.968)	(0.823)	(1.075)	(1.354)	(1.534)
	Women	−0.502	−0.452	−0.146	−1.137	−2.419**
		(0.523)	(0.601)	(0.883)	(0.791)	(0.886)

Note: The **Driscoll and Kraay [1998]** nonparametric standard errors in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Source: Authors' own elaboration.

The results demonstrate that women's employment rates are slightly less responsive to the shift from ESSC to VAT revenues than those of men (Table 3). The point estimates show that, by the fourth year, the impact of FD on the employment rate among women in both the 20–64 and 20–24 age groups was more than 20% lower than the corresponding impact for men. These differences may reflect a higher elasticity of male labour supply to FD-induced increases in labour demand, compared with that of young women, who are more likely to consider additional factors—such as access to childcare, the differential tax wedge for primary and secondary earners within the household, the generosity of social transfers, or the retirement age—when making employment decisions. Interestingly, in the final year, the FD coefficients for female workers aged 50–64 were more than three time lower than for men. This may primarily be due to retirement entitlements and other regulations encouraging older women to leave the labour market early. In contrast, the results indicate no significant gender differences in the impact of FD among prime-age workers (25–49 years old).

Consistent with the findings of theoretical studies, the empirical results confirm that the effects of FD on the employment rates of workers aged 20–64 depend on institutional factors causing rigidity in real wages or labour supply (Table 4).

First, the positive effects of the tax change occur more quickly and are much larger in countries with relatively flexible employment protection legislation (Panel A). By contrast, in countries with strict EPL, the tax change still improves employment rates, but the magnitude of this increase is roughly half of that in economies with flexible firing regulations. The difference in FD effects depending on the stringency of EPL may reflect the impact of employment protection laws on labour market flows (e.g., **Blanchard, Wolfers [2000]**). Specifically, strict EPL rules discourage employers from hiring new workers because they would have to pay higher firing costs if they wanted to reduce the number of employees. Strict EPL regulations also strengthen workers' wage bargaining and thus contribute to higher wage pressure (e.g., **Boeri, Jimeno [2005]**). By making it harder or costlier to lay off workers, EPL can reduce wage flexibility. Strong EPL often benefits insiders, i.e. current employees with stable contracts, who may push for higher wages, knowing their jobs are protected. In turn, the beneficial effects of FD are less likely to materialise under such circumstances.

Second, the results indicate that FD leads to an increase in the employment rates significantly more in countries with a low net unemployment benefit replacement rate (NRR) than where these benefits are generously high (Panel B). Specifically, in the fourth year, the magnitude of FD effects is four times larger for both men and women than in high NRR economies. Moreover, the point estimates indicate that in low NRR economies the impact of FD on male employment rates is about 50 percent larger than for women. This suggests that men's employment is more responsive to labour tax changes than women's. The difference may stem from non-wage factors affecting female employment, such as maternity leave or childcare responsibilities, highlighting the need for further research.

Third, the results indicate that in the initial years, FD effects are stronger in countries with centralised wage bargaining systems (Panel C). This suggests that centralised wage-setting may moderate short-term wage pressures, temporarily amplifying the impact of FD on employment rates. However, by the end of the analysed period (i.e. the fourth year), FD effects remain statistically significant and substantial only in countries with decentralised wage bargaining systems. This pattern aligns with previous empirical findings (e.g. **Du Caju et al. [2008]**), which show that real wage rigidities tend to be lower in decentralised wage bargaining systems, facilitating stronger long-term employment growth. These results also reinforce the conclusions of **Ciżkowicz et al. [2020]**, emphasising the role of wage flexibility in enhancing FD-induced employment effects. However, the empirical findings suggest that the relationship between wage bargaining systems and the FD effects on employment is nuanced, underscoring the need for more detailed empirical investigation.

Lastly, the results indicate that FD improves employment rates significantly more in countries with high product market competition reflected in a low product market regulation index (Panel D). In these low-PMR environments, FD effects are statistically significant immediately upon implementation, and their magnitude is considerably larger for both men and women. Initially, FD effects for men are twice as large as those for women. However, after four years, the effects converge to similar levels regardless of gender or the strictness of PMR.

The established nonlinearities confirm that labour market institutions that cause real wage rigidity and strict product market regulations substantially reduce the magnitude of beneficial FD effects. This is because strict employment protection legislation and generous unemployment benefits contribute to increased wage pressures, which may partially offset the reduction in labour costs induced by FD. In turn, workers are able to gain immediate upward wage adjustments in response to a VAT increase associated with the FD tax shift. Furthermore, stringent product market regulation limits competitive dynamics, further constraining the positive employment effects of FD. These mechanisms are crucial for the strength and persistence of FD effects on employment.

Table 4. Local projection estimates of fiscal devaluation effects on employment rates by labour and product market regulation stringency

Panel A: Employment protection legislation (EPL)

EPL		Year_0	Year_1	Year_2	Year_3	Year_4
Total	High EPL	−0.546	−1.618**	−4.215***	−5.592***	−5.445***
		(0.387)	(0.668)	(1.034)	(1.127)	(1.610)
	Low EPL	−4.015***	−5.558***	−8.131***	−10.833***	−11.720***
		(0.610)	(1.291)	(1.852)	(1.994)	(2.625)
Men	High EPL	−0.091	−1.457	−3.912***	−5.581***	−5.140***
		(0.590)	(0.902)	(1.120)	(1.238)	(1.577)
	Low EPL	−5.370***	−7.100***	−10.387***	−12.682***	−13.786***
		(0.701)	(1.707)	(2.121)	(2.246)	(2.954)
Women	High EPL	−1.040***	−2.043***	−4.639***	−5.823***	−6.002***
		(0.359)	(0.605)	(0.923)	(1.134)	(1.825)
	Low EPL	−2.689***	−3.939***	−5.780***	−8.616***	−9.275***
		(0.614)	(1.070)	(1.763)	(1.905)	(2.553)

Panel B: Unemployment benefit net replacement rate (NRR)

NRR		Year_0	Year_1	Year_2	Year_3	Year_4
Total	High NRR	−2.708***	−3.551***	−4.473***	−4.755***	−4.559**
		(0.837)	(1.191)	(0.889)	(1.083)	(1.779)
	Low NRR	−2.795**	−6.000*	−9.704**	−15.361***	−16.060***
		(1.163)	(2.855)	(3.451)	(3.145)	(4.153)
Men	High NRR	−3.537***	−4.636***	−5.571***	−5.382***	−4.706*
		(1.119)	(1.530)	(1.239)	(1.422)	(2.319)
	Low NRR	−4.324***	−7.882**	−12.169***	−18.439***	−19.431***
		(1.375)	(3.257)	(3.582)	(3.609)	(4.722)
Women	High NRR	−1.807***	−2.406**	−3.263***	−3.992***	−4.296***
		(0.578)	(0.860)	(0.647)	(0.751)	(1.238)
	Low NRR	−1.439	−4.679*	−7.780**	−12.482***	−12.799***
		(1.060)	(2.445)	(3.397)	(3.018)	(3.751)

Panel C: Predominant level at which wage bargaining takes place

		Year_0	Year_1	Year_2	Year_3	Year_4
Total	Centralised	−3.743***	−12.261***	−13.919***	−10.645***	−9.318*
		(1.134)	(1.752)	(2.099)	(3.378)	(5.134)
	Decentralised	−2.783***	−4.026***	−6.173***	−9.027***	−10.387***
		(0.440)	(0.741)	(1.263)	(1.349)	(1.747)
Men	Centralised	−5.356***	−15.717***	−16.437***	−13.818***	−10.448
		(1.039)	(1.773)	(2.300)	(3.961)	(6.037)
	Decentralised	−3.581***	−5.046***	−7.417***	−10.270***	−11.554***
		(0.545)	(0.783)	(1.244)	(1.251)	(1.626)

		Year_0	Year_1	Year_2	Year_3	Year_4
Women	Centralised	−2.255	−8.773***	−10.936***	−7.619**	−8.316*
		(1.534)	(1.805)	(2.127)	(3.098)	(4.223)
	Decentralised	−2.020***	−3.090***	−4.977***	−7.706***	−9.247***
		(0.440)	(0.749)	(1.265)	(1.469)	(1.957)

Panel D: Product market regulation (PMR)

		Year_0	Year_1	Year_2	Year_3	Year_4
Total	High PMR	−0.984	−1.596	−3.387	−4.632*	−5.553**
		(0.795)	(1.354)	(2.027)	(2.300)	(2.502)
	Low PMR	−3.118***	−4.373***	−5.211***	−5.289***	−4.219***
		(0.335)	(0.997)	(1.524)	(0.589)	(1.252)
Men	High PMR	−1.383	−2.203	−4.297*	−5.905**	−6.589**
		(0.840)	(1.407)	(2.180)	(2.379)	(2.614)
	Low PMR	−4.254***	−5.797***	−6.757***	−6.137***	−4.078*
		(0.493)	(1.390)	(1.850)	(0.509)	(2.284)
Women	High PMR	−0.712	−1.133	−2.347	−3.400	−4.486
		(0.801)	(1.432)	(1.875)	(2.271)	(2.562)
	Low PMR	−1.955***	−2.840***	−3.677**	−4.340***	−4.315***
		(0.221)	(0.720)	(1.310)	(0.968)	(0.750)

Note: The **Driscoll and Kraay [1998]** nonparametric standard errors in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Source: Authors' own elaboration.

Robustness checks

In order to verify the robustness of our results, we performed the following checks.

First, we addressed the potential endogeneity issue of the FD measure by applying an instrumental variable two-stage least squares fixed-effects panel data estimator. We used the first lags of the FD measure as instruments. The estimates from this approach for all analysed age groups are qualitatively the same as those we obtained from the baseline regressions. This confirms the robustness of the results discussed in the previous section (Table 5).

Table 5. Robustness check #1: impact of FD on employment rate – IV approach

	Year_0	Year_1	Year_2	Year_3	Year_4
20–64	−1.511**	−3.337***	−5.747***	−8.234***	−9.619***
	(0.627)	(1.043)	(1.415)	(1.700)	(2.011)
20–24	−3.755**	−8.565***	−14.417***	−19.739***	−24.370***
	(1.670)	(2.510)	(3.300)	(3.906)	(4.724)
25–49	−1.880***	−3.945***	−6.402***	−8.368***	−8.808***
	(0.631)	(1.033)	(1.370)	(1.610)	(1.867)
50–64	−1.066	−1.361	−2.352	−4.358**	−5.994***
	(0.753)	(1.171)	(1.587)	(1.917)	(2.296)

Note: Estimation results from instrumental variable two-stage least-squares within estimator, robust standard errors in parentheses. FD measure was instrumented by its first lags. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Source: Authors' own elaboration.

Second, we run our baseline specification using a cyclically adjusted FD measure in order to address potential endogeneity bias. The results are qualitatively similar to those we obtained using the raw FD measure. This also shows that our baseline findings do not suffer from endogeneity (Table 6).

Third, we re-estimated our model specifications using ESSC and VAT measures as separate variables (Table 7). This modification does not qualitatively affect the obtained results. To facilitate a direct comparison between the baseline results using FD and those obtained using separately the ESSC and VAT measures, the estimation results were converted into employment rate changes and compared in Table 8. The latter confirms the favourable FD effects on the employment rates regardless of how fiscal devaluation is incorporated into the model specification.

Table 6. Robustness check #2: impact of cyclically adjusted FD measure on employment rate

across different age groups	Year_0	Year_1	Year_2	Year_3	Year_4
20–64	–1.427	–3.594***	–5.611***	–7.484***	–8.639***
	(0.871)	(1.057)	(1.240)	(1.341)	(2.002)
20–24	–2.262	–6.678**	–12.106***	–17.118***	–19.860***
	(1.584)	(2.416)	(3.086)	(3.216)	(4.597)
25–49	–1.677*	–4.056***	–6.079***	–7.809***	–8.564***
	(0.872)	(1.088)	(1.255)	(1.463)	(2.048)
50–64	–0.960	–2.166***	–2.756***	–3.870***	–5.166***
	(0.716)	(0.641)	(0.835)	(0.866)	(0.925)

Note: The **Driscoll and Kraay [1998]** nonparametric standard errors in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Source: Authors' own elaboration.

Table 7. Robustness check #3: impact of cyclically adjusted FD measure on employment rate across different age groups

20–64		Year_0	Year_1	Year_2	Year_3	Year_4
Total	ESSC	0.006	–0.269	–0.724**	–1.258***	–1.633***
		(0.102)	(0.211)	(0.282)	(0.291)	(0.364)
	VAT	0.475***	0.795***	1.046***	1.077**	0.987*
		(0.161)	(0.247)	(0.286)	(0.391)	(0.525)
Men	ESSC	–0.021	–0.400	–0.962***	–1.602***	–1.968***
		(0.141)	(0.246)	(0.325)	(0.348)	(0.427)
	VAT	0.614***	0.997***	1.231***	1.161**	0.921
		(0.201)	(0.290)	(0.323)	(0.463)	(0.617)
Women	ESSC	0.031	–0.156	–0.470*	–0.887***	–1.254***
		(0.076)	(0.186)	(0.260)	(0.271)	(0.337)
	VAT	0.346***	0.616***	0.881***	1.021***	1.079**
		(0.122)	(0.204)	(0.273)	(0.340)	(0.449)

20–24		Year_0	Year_1	Year_2	Year_3	Year_4
Total	ESSC	0.019	–0.391	–1.199*	–2.585***	–3.454***
		(0.194)	(0.448)	(0.617)	(0.586)	(0.874)
	VAT	0.599	1.433*	2.392***	2.462**	2.167*
		(0.395)	(0.748)	(0.832)	(0.913)	(1.160)
Men	ESSC	0.029	–0.534	–1.626**	–3.212***	–4.343***
		(0.230)	(0.480)	(0.665)	(0.666)	(0.983)
	VAT	1.004**	1.972**	2.745***	2.771**	2.252*
		(0.428)	(0.719)	(0.817)	(0.992)	(1.301)
Women	ESSC	–0.006	–0.261	–0.800	–1.962***	–2.513***
		(0.179)	(0.449)	(0.621)	(0.576)	(0.804)
	VAT	0.277	0.997	2.143**	2.223**	2.156*
		(0.409)	(0.826)	(0.913)	(0.941)	(1.115)

25–49		Year_0	Year_1	Year_2	Year_3	Year_4
Total	ESSC	−0.038	−0.381*	−0.931***	−1.430***	−1.788***
		(0.095)	(0.220)	(0.299)	(0.324)	(0.391)
	VAT	0.472***	0.772***	0.918***	0.951**	0.774
		(0.159)	(0.228)	(0.276)	(0.421)	(0.565)
Men	ESSC	−0.071	−0.437	−1.010**	−1.594***	−1.886***
		(0.135)	(0.276)	(0.382)	(0.409)	(0.482)
	VAT	0.566**	0.797***	0.851**	0.729	0.435
		(0.204)	(0.272)	(0.329)	(0.518)	(0.683)
Women	ESSC	−0.013	−0.314	−0.839***	−1.240***	−1.659***
		(0.073)	(0.196)	(0.244)	(0.281)	(0.351)
	VAT	0.402***	0.767***	0.985***	1.167***	1.106**
		(0.129)	(0.193)	(0.260)	(0.354)	(0.482)

50–64		Year_0	Year_1	Year_2	Year_3	Year_4
Total	ESSC	0.062	−0.103	−0.175	−0.449	−0.621**
		(0.117)	(0.159)	(0.191)	(0.263)	(0.233)
	VAT	0.466***	0.643***	0.836***	0.944***	1.102***
		(0.146)	(0.193)	(0.242)	(0.228)	(0.297)
Men	ESSC	0.042	−0.310	−0.619**	−0.995**	−1.229***
		(0.164)	(0.204)	(0.279)	(0.417)	(0.412)
	VAT	0.610***	1.028***	1.350***	1.374***	1.392***
		(0.185)	(0.244)	(0.271)	(0.247)	(0.358)
Women	ESSC	0.071	0.050	0.205	0.038	−0.068
		(0.107)	(0.189)	(0.207)	(0.202)	(0.190)
	VAT	0.335***	0.302	0.395	0.618**	0.923***
		(0.119)	(0.203)	(0.256)	(0.245)	(0.283)

Note: The **Driscoll and Kraay [1998]** nonparametric standard errors in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Source: Authors' own elaboration.

Table 8. Comparison of the results expressed as percentage-point changes in the employment rate for the FD variable and the separate ESSC/GDP and VAT/GDP variables

		Year_0	Year_1	Year_2	Year_3	Year_4
20–64	FD	0.170	0.427	0.671	0.891	1.034
	ESSC & VAT	0.235	0.532	0.885	1.168	1.310
20–24	FD	0.281	0.799	1.436	2.024	2.374
	ESSC & VAT	0.290	0.912	1.796	2.524	2.811
25–49	FD	0.202	0.492	0.739	0.942	1.035
	ESSC & VAT	0.255	0.577	0.925	1.191	1.281
50–64	FD	0.109	0.244	0.319	0.447	0.598
	ESSC & VAT	0.202	0.373	0.506	0.697	0.862

Note: The recalculation was performed for a tax shift equivalent to a simultaneous decrease in ESSC and an increase in VAT revenue by approximately 0.5% of GDP, representing the standard deviation of annual changes in ESSC and VAT observed in the sample.

Source: Authors' own elaboration.

Conclusions

The study analyses the effects of fiscal devaluation on employment rates and finds that both the significance and magnitude of this impact vary substantially by gender and age group. The effect is, on average, twice as strong for men as for women. For men, it is statistically significant across all age groups, with the strongest

effect observed among the youngest workers. For women, the impact is significant only in the 25–49 age group. Labour market regulations also influence the strength and distribution of these effects, indicating that institutional quality can either bolster or limit the impact of fiscal reforms. Overall, the findings support combining fiscal devaluation with structural reforms aimed at increasing labour market flexibility.

References

Bassanini, A., Duval, R. [2006], *Employment Patterns in OECD Countries: Reassessing the Role of Policies and Institutions*. OECD Social, Employment and Migration Working Papers, No. 35. Paris.

Blanchard O., Wolfers J. [2000], The Role of Shocks and Institutions in the Rise of European Unemployment: the Aggregate Evidence, *The Economic Journal*, 110: 1–33.

Boeri T., Jimeno J. [2005], The effects of employment protection: Learning from variable enforcement, *European Economic Review*, 49 (8): 2057–2077.

Bordon A., Ebeke C. H., Shirono K. [2016], *When Do Structural Reforms Work? On the Role of the Business* Cycle and Macroeconomic Policies, IMF Working Papers No. 062.

Boscá J. E., Doménech R., Ferri J. [2013], Fiscal Devaluations in EMU, *Hacienda Pública Española / Review of Public Economics*, 206 (3): 27–56.

Burlon L., Notarpietro A., Pisani M. [2021], Fiscal devaluation and labor market frictions in a monetary union, *Economic Modelling*, 97 (C): 135–156.

Du Caju P., Gautier E., Momferatou D., Ward-Warmedinger M. E. [2008], *Institutional Features of Wage Bargaining in 23 European Countries, the US and Japan*, ECB Working Paper No. 974.

Ciżkowicz P., Radzikowski B., Rzońca A., Wojciechowski W. [2020], Fiscal devaluation and economic activity in the EU, *Economic Modelling*, 88 (C): 59–81.

De Mooij R., Keen M. [2013], Fiscal devaluation and fiscal consolidation. The VAT in troubled times, [in:] Alesina A., Giavazzi F. (eds.), *Fiscal Policy After the Financial* Crisis: 3–485.

Driscoll J. C., Kraay A. C. [1998], Consistent Covariance Matrix Estimation with Spatially Dependent Panel Data, *The Review of Economics and Statistics*, 80(4): 549–560.

Duval R., Furceri D., Hu B., Jalles J., Nguyen H. [2018], *A Narrative Database of Major Labor and Product Market Reforms in Advanced Economies*, IMF Working Paper No. 18/19.

Engler P., Ganelli G., Tervala J., Voights S. [2017], Fiscal Devaluation in a Monetary Union, *IMF Economic Review*, 65: 241–272.

European Commission [2013], *Study on the impacts of fiscal devaluation*, Taxation Papers, Working Paper No. 36.

European Commission [2016], *The Economic Impact of Selected Structural Reform Measures in Italy, France, Spain and Portugal*. Technical Report No. 023, European Economy.

Franco, F. [2013], *External Rebalancing in the EMU, the Case of Portugal, Adjusting to External Imbalances within the EMU, the Case of Portugal*. Nova School of Business and Economics Working. Paper Series 556.

Gomes S., Jacquinot P., Pisani M. [2016], Fiscal devaluation in the euro area: a model-based analysis, *Economic Modelling*, 52 (A): 58–70.

Holzner M., Tkalec M., Vizek M., Vukšić G. [2018], Fiscal devaluations: evidence using bilateral trade balance data, *Review of World Economics (Weltwirtschaftliches Archiv), Springer, Institut für Weltwirtschaft (Kiel Institute for the World Economy)*, 154 (2): 247–275.

Holzner M., Vizek M., Vukšić G. [2022], Wage Bargaining Coordination, Taxation and Labor Costs: The Effects of Fiscal Devaluation, *Comparative Economic Studies*, 64: 324–349.

IMF [2011], *Fiscal Monitor: Addressing Fiscal Challenges to Reduce Economic Risks*, Appendix 1. Fiscal Devaluation: What Is It—and Does It Work? World Economic and Financial Surveys. International Monetary Fund.

IMF [2010], *World Economic Outlook: Recovery, Risk, and Rebalancing*. International Monetary Fund, Washington.

Jaumotte F. [2011], *The Spanish Labor Market in a Cross-Country Perspective*, IMF WP No. 11/2011.

Jordà Ò. [2005], Estimation and Inference of Impulse Responses by Local Projections, *American Economic Review*, 95 (1): 161–182.

Keynes J. M. [1931], *Committee on Finance and Industry Report*, Addendum, Macmillan Report.

OECD [2021], *An Action Plan for Environmental Fiscal Reform in Italy*.

Puglisi, L. [2014], *Fiscal Devaluations in the Euro Area: What has been done since the crisis?*, Taxation Papers 47, Directorate General Taxation and Customs Union, European Commission.