The Impact of Fiscal and Industrial Policies on SMEs: How to Recover from a Crisis

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Abstract:

This research studies the effects of industrial and fiscal policy implementation on Italian and German non-financial corporations, in detail SMEs. It makes use of six innovative policy indexes constructed using the yearly national budgetary plans of the two Eu countries. The aim is to analyse the developments in terms of productivity, employment, investment and competitivity in the local SMEs sector, in the years following the latest financial crisis. The indexes allow to run an event-based analysis formed around the different policy shocks, which also takes in consideration the different timing of policy intervention between the two countries. The results show the flaws of Italian policy makers in supporting the recovery for their firms, conditioned by an initial post-crisis period of austerity measures, and by the stringent recommendations of the Commission of the Eu. Germany instead resulted better equipped to respond to the crisis, with a more resilient economy and a tendency toward decisive pro-growth policies. Overall, this research investigates which measures resulted the most efficient in terms of sustainability, audience and impact for SMEs, proposing a framework which will be beneficial for future policy implementations in times of crisis.

1.1 Introduction

In the aftermath of the financial (2008-2009) and the European sovereign crisis (2009-2012), economic policies in the European Union (EU) focused on austerity measures and fiscal consolidation. They aimed at the support of the banking and financial industry, failing to address the consequences for other sectors. This negligence propelled the double-dip recession in 2012 (*Heimberg 2015*), when the brief increase in GDP was not substantiated by an improved outlook for firms (especially small and medium enterprises (SMEs)) (*Corsetti et al. 2017*). In the EU alone, where the subprime crisis developed into a sovereign debt crisis, the financial turmoil caused around a million firms (mostly SMEs) to file for bankruptcy, and more than 7.5 million jobs were lost (EUROSTAT). The gains in the financial sector appeared to be limited to few investors, while losses were in many ways mostly socialized (*Stiglitz et al. 2010*). Several academics then started to call for different measures in favour of the real economy, such "Strategic-" or "People QE", to support SMEs or workers (*Bernardo et al. 2013*) promoting firm's economic resilience.

To respond to the consequences of the crisis, this research wants to contribute to the academic debate about the transmission of fiscal and industrial policy to SMEs, using firm-level accounting and financial data. It aims to be of assistance for Governments (Govs) to "get the micro foundations right" (*Lucas 1979*), aiming at the support of corporate productivity and investment, and in a broader way, improving the ability of SMEs to endure periods of stress. Overall, the research fits in the academic literature about crisis management, with the goal to normalize policy implementation in times of downturns. It calls for the broad scope and relevance of financial and company-oriented analysis, in supporting the decision-making process of policymakers. The conclusions of the paper, moreover, are expected to lower the pressure on central banks (CBs), allowing them to reduce the size and needs for non-conventional policies, focusing on price stability and their role of lender of last resort. The paper aims to reinforce the importance of Govs intervention to recover from a crisis, favouring an expansive New-Keynesian approach, as opposed to the Neoclassical austerity measures implemented in response to the Sovereign crisis.

To do so, the paper focuses on the experiences of Germany and Italy from 2009, when the crisis reached its peak in the EU, until 2020, when the Covid-19 pandemic started. The two are representatives for countries with freedom of policy intervention versus moderate capacity of intervention plus pressing recommendations (from the Council of the EU (CEU)) respectively. Taking into consideration this background, the study will be of use for future research about crisis management for both virtuous and faltering economies, highlighting the different scope of intervention at times of downturn. The paper differentiates from the major banking and corporate finance literature as it makes use of a broad set of

companies' financial variables, to assess the goodness of targeted policy implementations, collected from the Gov's yearly national budgets. The study compares the different approaches adopted by Italy and Germany to recover from the crisis, focusing on measures aimed at non-financial corporations (NFCs) and in detail small and medium sized enterprises (SMEs). Thereby, the paper stands out from the available literature as it assesses the level and timing of policy intervention, intended to promote (1) productivity, (2) employment, (3) investment, and in general, (4) business competitivity (in terms of accounting or tax benefits). Around these four categories, this study introduces six different policy indices, constructed accordingly to the targets reported on the national budgets and aligned to EU standards. The paper examines how economic policies managed to support SMEs specifically, as they represent around 70% of the total business economy for the EU (in the period 2008-2013) (*ECB 2013*), and ample literature is already available on financial institutions (*Taylor 2009*) or the banking sector (*Kollmann et al. 2013*).

Taking in consideration the specific fiscal capabilities of the countries in study, the research offers assistance to future policy makers in targeting various aspects of a "post-crisis" fragile corporate sector. Contributing to the existing literature with an innovative approach focused on a broad set of categories of policy intervention, expected to be more comprehensive than previous methods narrowly focussed on few marketed variables or aggregated outputs (D*e Jong et al. 2017*).

The countries selected are twofold an ideal setting for the research. In the first place, they share the same currency and commitment to the EU treaties, they receive similar policy recommendations (or guidelines in case of Germany) from the CEU, which are aligned toward the same goals, and they benefit from access to the same common market (*Kollmann et al. 2013*). For these reasons, they allow with some assumptions for an event-based study formed around comparable national policies, using a staggered difference in difference model (*Goodman-Bacon 2021*). Such methodology is suitable for the comparison between countries or sectors where certain measures were implemented (treatment group), against comparable ones who did not (control group), allowing as well for the different timing of policy implementation. Out of scope for this study, the nature of the panel data, and the sectors in consideration, would consent, with further assumptions, to control for differences also among same industries but from different countries, to further decompose the impact of the targeted local policies.

Secondly, regardless of the common monetary policy centrally managed by the ECB, national Govs have different fiscal space and capabilities, with their policy manoeuvres that consequently resulted quite diverse (in formulation) among the EU members. The effects of monetary policy will be conveniently ignored in the study, relying on the assumption of the neutrality of money for real economic factors. Nevertheless, the paper will account for the expansionary/countercyclical behaviour of the ECBs in the period of consideration, stressing for the necessity for fiscal and industrial measures

especially at times of loose monetary policies. This scenario allows for an international analysis of comparable policies implementation, which takes in consideration the fiscal constraints of the countries in study. The results will then be beneficial to other nations at times of distress, as they propose different toolkits for policy makers depending on the status of their national balances, assuming at the same time, a dovish central bank.

To run the event study between different countries, same-category measures implemented at national level were grouped, in accordance with the classification provided on the official EU documents. Despite the different formulation, it was therefore possible to construct six policy indices for the categories of intervention, allowing for a comparison across different national measures at different point in time. The categories of policy intervention will be extensively presented in the second chapter, while the full collection of measures will be reported in the appendix.

When the sovereign crisis exploded, continental-EU nationals policy makers referred to the Stability and Growth Pact (SGP) (debt to GDP ratio at max 60% and annual deficit at max. 3%) to motivate their preference toward austerity measures (*Estella.2018*), comforted as well by some promising literature on the effects of excessive deficit procedures (*Alesina* 2012). Despite the rationale, those measures further depressed the EU economies and aggravated the social and political consequences of the crisis even more (*Darvas et al. 2018*). In 2016, Papadimoulis, the vice president of the European Parliament (EP), critically described the SGP as "rendering a growth-oriented policy almost impossible for a growing number of member states". Throughout the study it will be commented whether the novel policies adopted are to be considered pro-growth or pro-stability, with, in line with expectations, the first being mostly adopted by Germany and the latter by Italy.

In the end, the EU Institutional framework limited the scope of action for some of its member (*HLP 2014*) and appeared to be biased toward the decisions of its biggest partners (France and Germany among all) in terms of approach for the recovery. In the early years of the Sovereign crisis, strict austerity measures were imposed on the insolvent EU countries (*Brunnermeier et al. 2016*), but in 2014, Draghi's speech at Jackson Hole concerning a "New Fiscal Focus", officially dismantled the last consensus towards austerity, in favour of an expansive New-Keynesian period of reforms (*Der Spiegel 2014*).

The conclusion of the study will elaborate on the potential impact that those fiscal constraints might have had on the initial policy decision process, and if the EU framework displayed some flaws in its construction.

The most relevant financial and accounting variables used for the analysis will be presented in the third chapter, while the remaining variables will be extensively reported in the appendix. The research aims

to clarify the impact that economic policy implementation had on SMEs, discussing the sustainability (one-off vs. long term) (*Evans et al. 2012)* in terms of Govs's spending, and the audience (in terms of number of firms affected) for the novel measures. The policies selected are indeed aimed at a resilient economic environment in line with the general guidance of the CEU, for the development of a European corporate market (*EU target 2020*) where NFCs and specifically SMEs (the backbone of the European economy), are supported by Institutions in case of down-turns (*OECD 2009 and Izvorski 2018*). After all, the crisis showed that helicopter money to non-virtuous countries fails to efficiently stimulate the economy, if not supported by fiscal counter-cyclical measures and national macroprudential tools, which make Gov's intervention even more relevant to mitigate the effects of boom-bust cycles (*IMF 2016*). EU Institutions adhere to the principle of subsidiarity (*TEC 1992*), which intrinsically prevents and limits supernational authorities to intervene in substitution of Member states to preserve their sovereignty. Nevertheless, EU countries concur on common intents and goals (with regards to the economy among many others), and the countries that suffered the most during the crisis appeared to be the ones with the lower socio-economic convergence over the period 1999-2014 (Italy, Portugal, Spain, Greece, Cyprus, and Ireland, which despite a positive convergence was highly impacted) (*ECB Economic bulletin May 2015*).

The study confirms that both Italian and German policy implementations did have a statistically relevant impact on their local SMSs, with the first ones also outperforming their foreign counterpart for some categories, despite Germany was only moderately affected by the crisis, especially in comparison to Italy. The results obtained by the Italian Gov are to be considered in relative terms, surely positive as reactionary measure to recover from a crisis, but far from being sufficient to converge to German standards. While Italian policymakers deployed mostly shot term pro-stability measures, which given the dramatic situation could not fail to deliver positive results, the German ones promoted structural pro-growth policies aimed at an always stronger future economy. Conditioned by the CEU recommendation and the growing size of public debt, the per-se unstable Italian Govs failed to push forward structural reforms which could decisively revert the outcomes of the crisis, lagging behind Germany in terms of productivity, employment, investment and competitivity.

The conclusions of the study will be beneficial for economies also outside of the EU, and at the same time for crisis originating outside of the financial sector, as the study relies on financial and accounting data to determine the goodness of the national policies adopted in response to a shock. The measures, conditioned by the individual national fiscal capabilities, are in turn reactionary rather than preventive, and could be tailored to the country specific necessities.

The paper is organized as follows: the next section presents a brief background on the issue and the research questions that will be answered. The next chapter reviews the literature that informs the paper,

plus the composition and construction of the policy indices. The third chapter introduces the data and the sample selection, while the fourth introduces the model and comments on the results and the robustness checks. The last chapter concludes the study addressing the results and their implications.

1.2 Background and Research questions

Following decades of deregulation, the financial industry benefited from greater access to liquidity, new technologies, and speculation, at the expense of NFCs, SMEs, individual investors, and plain depositors (*Gaille 2015*). When financial institutions (FIs) exposed to the US subprime mortgage market failed or were bailed out, the global and real economies suffered devastating consequences (*Akerlof 2009*), with the crisis that propagated and evolved internationally (*Wolf* 2015).

To promote the recovery, CBs started, in different measure, to inject liquidity in the markets. However, the lack of vision and political stability in some European countries prevented the efficient channelling of such liquidity, with SMEs suffering the worst consequences (*Elmerskov et al. 2012*). Following pressures from continental countries, the ECB, as opposed to the FED, initially did not act decisively against the crisis (*Mody et al. 2016*), as low interest rates and big injection of liquidity would have exacerbated the fears of Germany, in the first place, of rising inflation (*Cesaratto 2011*). Meanwhile, the beginning of the 2008 credit crunch, followed by the EU sovereign crisis, and the consequent reduction in interest rates took a toll on the profits of the Eurozone banking sector. Banks were even more exposed to default risks, as they hold most of the Gov's debt, especially for those countries with high public debt and most affected by the crisis (*Blundell-Wignall 2012*). Therefore, non-healthy banks restricted their loans to companies, practically passing the credit supply shock to NFCs and SMEs (*ECB 2013*), that have limited capability in raising capital through the markets, compared to their big-cap counterparts (*OECD 2009*). Concurrently, equity markets were rallying with high volatility and falling stock prices, leading to further insolvencies and drops in enterprise values. In summary, NFCs and especially SMEs found themself without their traditional credit channels, experiencing diminishing investment opportunities, equity capital and liquidity, leading to a wave of bankruptcies, as the Govs failed to support the sector.

In response to the incapacity of some EU Govs to stimulate a recovery, and the unwillingness of the banking sector to provide credit (*Arce 2020*), in 2016 the ECB expanded its non-conventional assets purchase programme with the CSPP (corporate sector purchase programme), to buy non-banks bonds in the market to directly inject liquidity in the corporate sector (*De Santis 2018*). Unfortunately, SMEs were once more neglected, as they rarely have access to bond-based financing. In fact, they benefited

from the policy only if they had an established relationship with a bank, which, after the measure, held excess liquidity directly deriving from the lower demand of credit from CSPP-eligible firms (*Betz 2021*).

When the subprime mortgage bubble burst, the fiscal capabilities of the EU members were subjected to the constraints imposed by the SGP. The Pact was implemented in 2011 with the Euro Plus Pact and the Fiscal Compact, and it motivated and justified the measures recommended by the Troika (European Commission's (EC), ECB and International Monetary Fund (IMF)) to countries in distress like Greece. The Pact always sparked much controversy (e.g., *Prodi in 2001* and *Larch et al. 2011*). On one hand, in theory, the strict targets for debt and public deficits limited the capabilities of countries to engage in structural pro-growth reforms. From another side, the punitive arm of the Pact was never implemented in practise (since 2003), failing to justify the poor resolution in Gov's intervention (*De Jong 2020*). The Pact was indeed dubbed "dead" twice, first in relation to France and Germany avoiding punishment in 2003 (*Schäuble 2012*), and in 2016 when also Portugal and Spain eluded sanctions (*De Gross 2016*). Since the crisis, more importance was indeed given to the 3% threshold of budget deficit, for the sustainability of public debt, than to the 60% debt to GDP ratio, which was repeatedly breached by several countries (e.g., the EU average of Debt/GDP ratio for q1 2021 was 100% (Eurostat)). Instead of punitive measures against those who exceeded the limits, the EU started to assist and guide countries in their policy measures, through the "European semester". For example, supervising over the spending reviews, as well-designed expenditure rules are crucial for the consolidation and the maintenance of sound public finances (*Holm-Hadulla et al.2011*).

EU Institutions structurally fail to address corporate national matters, stressing the importance of fiscal and industrial policies to help to create a conducive economic environment to restore the economy, and allow the ECB to manage its rates out of negative territory (*Draghi 2019*).

Nonetheless, despite the Govs' financial burdens, in the aftermath of the crisis, in the EU economic policy mostly evolved into three directions: contention of the downturn, implementation of the financial system and recovery measures (*Röhn et al. 2015*). This paper aims to highlight which recovery measures appeared to be the most beneficial for SMEs, investigating the changes in their business environment, clarifying which policies were more effective, and commenting on the feasibility/sustainability and audience of the measures adopted.

The paper will then be developed and organized around the following research questions:

First: Given that EU macroeconomic policies intrinsically fail to address the necessities of NFCs and in detail SMEs, calling for the intervention of national authorities especially at times of crisis. Would it

be possible to construct a framework to assists Govs in the support of these firms, in terms of productivity, employment, investment and competitivity?

Second: A narrow focus of economic policy and regulation of the financial system inherently marginalises and limits the chances for a resilient economic environment. It weakens the real economy, results in severe crisis also outside of the financial sector and prevents Govs to stimulate a prompt recovery. What would be the impact on SMEs of better-informed policy implementation? Should Govs, in times of crisis, support also NFCs, and especially SMEs, or they should solely favour the banking and the financial sector?

Third: Considering that a European 'one size fits all' procedure does not allow for the necessary flexibility to tackle a crisis, as it does not account for the heterogeneity across firms and national fiscal balances. Would it be viable to implement a toolkit for policymakers, looking at firm-specific characteristics and needs, which would assist them in tailoring their measures to specific sectors of the economy, according to the individual national fiscal capabilities?

2. Literature

This paper aims to contribute to an extensive strand of literature on crisis management, providing recommendations that will assist politicians in the support of the recovery processes for SMEs in future times of crisis. The conclusion will not claim to be effective at times of expansion of the economy as well, as the paper focuses on the ability of Govs to develop specific counter-cyclical measures, and further research is recommended to assess novel policies in good times. The literature that informs the paper relies mostly on two major streams: the relation between companies and fiscal policies, and the official policy measures implemented at national level.

2.1 The relation between companies and fiscal policy

This study adopts a corporate finance perspective to address the need for fiscal and industrial policies, with the hypothesis that targeting NFCs and SMEs, rather than primarily Banks and FIs, could have had positive effects on the process of exiting from the crisis. Despite banks are crucial to both the sustainability of public debt and investor confidence (*Aldasoro et al. 2017, Caporin et al. 2017*), providing liquidity for corporate investment, and a means for productivity for those firms that could not retain workers (*Haughwout et al. 2000*). Therefore, the paper does not argue with the measures adopted for Banks or FIs, but rather investigates extra options in the hands of Govs to stimulate the economy. Previous studies investigated the externalities brought by a credit crunch to NFCs, relating constraints in the banking industry with overall profitability (*Gertler et al. 2010, Bentolila et al. 2013, Transition report 2016*), as well as stock prices and volatility (*Barakchian et al. 2013, Faia et al. 2019*). As expected, the shortage of liquidity causes profitability and prices to fall, while increases the volatility in the markets also due to the increasing number of bankruptcies and the following network contagion effect (*Helwege et. Al 2016*). Previous literature also investigated the relation between fiscal and industrial policies and corporate financing and stability (*Cavalli et al. 2019*), looking at liquidity ratios, output, and employment, to reinstate the important dualism between monetary and fiscal policies, and how the latter should gain from the first. Overall, not only expansionary measures delivered positive results for firms but also tight policies which improve the Govs' budgets, can benefit corporate financing, as these reduce yield spreads and the cost of debt (De *Jong 2018)*. Further studies verged on the relation between policies and debt and equity markets (*Dumicic et al. 2019*), and as expected, wages, output, and consumption (*Fatas et al. 2001*). This paper draws on the above relations by studying multiple measures at the same time, using the innovative indices proposed. This study overlooks the impact of monetary policy, taking the liquidity injected by the ECB as an exogenous prior, but it will nevertheless comment on the impact of having a dovish CB. Moreover, the study will remark the risks

for local companies and the sovereign outlook with respect to tail events, stressing how fiscal and macroprudential policies could, in different forms, improve the financial stability of NFCs. The severe economic situation of Italy for example, was the result of several decades of bad policies (*Treu 2014)*, which could not be amended with simple injection of liquidity. Instead, it required structural measures in favour of the liberalization of the job market and pension and simplification of the bureaucratic stance (*Das 2016*). Despite the credit crunch, it was not the lack of liquidity that prevented Govs to stimulate a quick recovery, since indiscriminate public capital flows per se failed to promote growth and output (*De Jong* 2017). Rather, it was the necessity of more targeted, responsible, and structured policies which could reduce public debt promoting growth *(Melchiorre* 2014). Economic policy is undoubtedly relevant to recover from a crisis, but it should not create a dependency of firms to it, to prevent the risk of zombie firms, which would otherwise fail in a normal competitive market (*Andrews 2019*). With the goal of establishing a resilient economic environment, policymakers could develop pro-growth and pro-stability measures, conditional on their financial constraints (*OECD 2015*). Recent studies show that moderate financial liberalization (*Caldera Sánchez et al. 2016*), and pro-growth policies in the product and labour market (*Caldera Sanchez et al. 2017, Laeven et al. 2018*) facilitate a sustainable recovery, despite at times, increasing credit risk, instability, or political turmoil (*Afonso et al. 2010*). In contrast, pro-stability policies refer to better quality of institutions and institutional network (*Gilles et al. 2015*), improving micro-and macro-prudential policies (*Corsetti et al. 2019*), and a fair and comprehensive tax system which promotes both debt and equity financing, or helps finding alternatives in times of credit crunch (*Overesch et al. 2019*).

This study aims to shed a light on the most effective, feasible and far-reaching policies to support SMEs in times of crisis, given their importance for the economy in terms of real economic activity and employment.

The research examines the financial outlook for firms belonging to the representative countries before and after the introduction of the new Govs' measures, which constitute the core literature that inspired the paper, and is reviewed in the following section.

2.2 Policy measures

The second stream of the literature which informs this empirical essay is represented by the fiscal and industrial measures implemented by Italian and German policymakers, divided in the previously presented categories depending on their targets. The four classifications are constructed according to the definitions available on the yearly national budget programmes, and they are aligned with the CEU

recommendations and EU standards. The measures are collected from the Italian and German "draft budgetary plan", issued by each EU country every year, and by the EC recommendations and opinions on the different member's reform and stability programmes. The budgetary plans were standardized and harmonized across the EU after the crisis, following regulation EU no 473/2013, while the Council delivers recommendations and opinions in accordance with the Council Regulation No 1466/97 of 7 July 1997, to strengthen the surveillance of budgetary positions and guide the coordination of economic policies.

A) Productivity

B) Employment

C) Investment

D) Competitivity

[To be completed]

3. Data and Sample selection.

To perform the analysis the paper relies on two major types of data. The first one, of qualitative nature, is constituted by the measures used to construct the policy indices presented in the previous chapter. They were collected from the national budgetary plans of Italy and Germany, all available on the EC website. After reading through the national records, the measures which could be beneficial to NFCs, and in detail SMEs, were collected, to construct the different indicators for policy intervention. The indices were formed by a combination of discretionary measures taken by the central governments and CEU's country specific recommendations, which were targeted at promoting productivity, employment, and investment, and in general business competitivity.

Indices of policy measures:

Productivity	1. Measures to promote Productivity
Employment	2. Measures for promotion of new Employment
	3. Measures to support Employment
Investment	4. Measures for Investment and R&D
Competitivity	5. Measures concerning Fixed assets and Amortization
	6. Tax measures

The full collection of policies available allowed to draw other three policy indices concerning negative measures (e.g., imposing austerity measures or repealing a previously implemented policy) for productivity, tax, and investment (for Italy only), together with an extra index for taxes, which targeted specific industries. Reverting positive measures was usually motivated by the non-sustainability of the policy, due to high costs for countries with fiscal constraints, bad formulation of the policy, which would lead to a reduced audience, or the poor or below-expectations impact for firms. This study will leave the analysis of the negative measures to future research, as the focus here is on the positive counter-cyclical measures adopted, without delving in the "tapering" process for fiscal policies. The analysis across industries also goes beyond the scope of this paper.

The second type of data, of quantitative nature, was collected from two major sources. Companies' balance sheet and financial information are available on Thomson Reuters databases, while the macroeconomic variables, used as control in the model, are accessible from the Eurostat and ECB database. From Thomson Reuters it was possible to extract observations for 1394 unique listed companies from 2008 until 2020, to construct an unbalanced panel with 137 variables (extensively reported in the appendix) in quarterly frequency. The analysis is run in annual base, due to the timing of release of the yearly national budgets, which are usually issued around October and enter into force in the following January. However, having trimestral data allowed to control for those companies which have their fiscal year different from the calendar one, but they are so few in number that are irrelevant

for the study. In case of discontinuous time series, with maximum one year of missing observations or zeros (due to reporting issues), the values were linearly interpolated. This adjustment could bias the outcomes of the model, smoothing the effect of a policy shock on companies. Anyway, missing observations around a policy event are assumed to cause further bias by overestimating the effect of a shock, once the companies jump in the sample again. The adjustment was in turn necessary to account for those companies which left and entered the database, reducing the risk of survival bias (*Wooldridge 2012*) . From the Eurostat and the ECB statistical database were collected as macroeconomic control variables: the EU 10y sovereign yield curve, the quarterly EU HICP rate, the average EU debt to GDP ratio, the EA GDP at yearly frequency and the ECB 12months interest rate. Those variables, together with "Size", which takes values from 1 to 4 depending if the firms are micro, small, medium, or large, will be used throughout the study for all the different policy indices, and despite, depending on the model, some of them are not statistically significant (looking at their single p-value), taken together they always pass their respective F-tests. All the independent variables were also tested for each policy index using both a Pearson and Spearman correlation matrix and a Variance Inflation Factors test. The results are comforting that multicollinearity does not represent an issue for the study, and only the 12month ECB interest rate results to have a correlation of more than 65% with the 10years ECB rate. As robustness check, the full study was run again excluding the 12month ECB rate, and the results, especially for the variables of interest, do not change remarkably, with their sign never affected. All the regressions in use were also evaluated using the Hausmann test, which consistently rejects the random effect hypothesis for all the policy indices in the study. Fixed effects for company names and dates were indeed selected, in line with expectations, given the nature of the panel.

[*Hausman table*]

The companies were later divided by size into micro, small, medium, and large, following the EC definition n361 of 2003, which differentiate companies by number of employees (micro <10, small <50, medium < 250), annual turnover (micro ≤ 2m€, small ≤ 10m€, medium ≤ 50m€) or balance sheet total (micro ≤ 2m€, small ≤ 10m€, medium ≤ 43m€). The following table reports the number of companies in the study, divided by year and firm size:

	Italy						Germany					
	Micro	Small	Medium	SMEs	Large	Total	Micro	Small	Medium	SMEs	Large	Total
2008	3.0	12.0	27.0	39.0	133.8	214.8	51.0	56.0	123.0	179.0	304.8	713.8
2009	3.0	11.8	33.3	45.0	131.0	224.0	47.0	58.3	129.0	187.3	317.0	738.5
2010	4.0	10.0	35.0	45.0	138.0	232.0	57.8	58.0	122.0	180.0	326.0	743.8
2011	6.0	12.0	35.0	47.0	143.0	243.0	61.0	57.5	117.0	174.5	334.8	744.8
2012	9.5	13.0	39.5	52.5	145.8	260.3	60.8	61.8	118.8	180.5	344.5	766.3
2013	13.0	12.0	39.0	51.0	156.8	271.8	53.3	67.3	117.8	185.0	363.3	786.5
2014	13.0	16.0	50.0	66.0	164.5	309.5	51.3	72.0	112.3	184.3	391.0	810.8
2015	14.0	20.0	53.5	73.5	188.5	349.5	58.5	73.3	103.0	176.3	406.8	817.8
2016	16.5	22.5	57.0	79.5	212.5	388.0	57.3	72.0	105.0	177.0	418.0	829.3
2017	17.0	28.5	73.0	101.5	218.8	438.8	57.0	74.0	110.3	184.3	419.8	845.3
2018	19.0	37.0	81.0	118.0	218.0	473.0	65.0	72.0	111.5	183.5	420.5	852.5
2019	21.0	36.3	78.0	114.3	218.8	468.3	60.5	78.5	113.5	192.0	400.5	845.0
2020	14.5	36.8	81.5	118.3	210.5	461.5	50.5	70.8	108.0	178.8	371.8	779.8
Total	153.5	267.8	682.8	950.5	2279.8	4334.3	730.8	871.3	1491.0	2362.3	4818.5	10273.8
Average	11.8	20.6	52.5	73.1	175.4	333.4	56.2	67.0	114.7	181.7	370.7	790.3
Max.	21.0	37.0	81.5	118.3	218.8	473.0	65.0	78.5	129.0	192.0	420.5	852.5
Min.	3.0	10.0	27.0	39.0	131.0	214.8	47.0	56.0	103.0	174.5	304.8	713.8

As expected, given the size of the economy, and the ease to found and then list a company on the stock market (with Germany consistently outperforming Italy throughout the years in the Forbes rankings for "Best countries for Business"), Germany has in total more than two times the number of companies of Italy. The ratio peaks at more than four times the number of micro companies and falls to 2.11 for large ones. This heterogeneity could have biased the results, as it influences the number of companies which are sampled for the analysis. Anyway, the canonical difference in difference model adopted appropriately relies on the assumptions of parallel trends and no anticipatory effects (*de Chaisemartin & D'Haultfoeuille 2020*). The first assumption entails that changes in averages among treatment and control group would have been parallel if no treatment would happen, and no anticipatory effects assumes that the treatment would not have causal effect before the event happens.

[*Reg. parallel trends*.] (Eq. 1)

The assumption of parallel trends conveniently relies on the averages of treatment and control group, fixing the issue of the different number of companies. Moreover, to account for the diversity in capitalization and size, all the most relevant variables were scaled by their total assets. The variables for the models were then log-linearized, to normalize and smooth their data process and to limit the risk of under coverage sampling bias (*Wooldridge 2012).*

The dependent variables for the models and the firm specific independent variables, used as control, vary according to the policy indices constructed. The first ones are presented here, while the independent variables will be presented with the complete model in the next section.

For the first index, the study relies on a proxy for productivity constructed using revenues and changes in total asset, following the rationale of *Schoar 2002*. The proxy constructed (variable "Rev_net") differentiate from previous literature as it does not rely on industry specific data, but rather aims to

generalize the concept of productivity especially in the context of the analysis of SMEs; for which their number of sales, taken alone, might not be explanatory for the actual health or effectiveness in running the business.

For the employment indices, the dependent variables used are two: "Wage" constructed including salaries, benefits and accrued payrolls, and "Employ" (number of employment). The goal is to evaluate if the policy implemented did have an impact on the total amount of salaries paid out or on the number of workers employed. It is expected that both Wage and Employ will be positively affected by the measures which promote new employment (with higher salaries paid out and higher number of workers), while for the measures concerning the support of employment Wage should reduce, with part of the salaries provided by the Gov, and Employ should not benefit much.

With regards to investment, a variable "Inv" was populated using R&D (research and development) adjusted for amortization, when available, or total investment adjusted for total amortization. Using total investment was necessary due to the granularity of the data available for SMEs, which is not always consistent, and many companies tend to incorporate their expenses for R&D in a total measure for investment.

Boosting competitivity has been a goal for national and European policymakers for long time, but its definition can be quite broad and difficult to model, especially given the availability of data for SMEs. The study focuses on those measures which targeted the accounting of fixed assets and amortization, which were implemented to improve the soundness of companies' balance sheet, and to further stimulate expenditure and investment. Two definitions of fixed assets were adopted: the first one (variable "FA_Amo") calculates fixed assets as the difference between total and current assets, adjusted for amortization. While the second (variable "PPE_Amo"), was computed using a measure for property plant and equipment, once more adjusted by amortization. The last index instead verges on tax competitiveness, assessing the effect of policies on the variable "Tax," which was constructed from income tax, plus the difference between income tax payable and credit, plus the difference between accrued and deferred tax, minus deferred income tax.

The table below displays the mean and standard deviations for all the dependent variables and their component, scaled by total assets, and divided per country.

[*Stats. Dependent variables*]

Here the evolution of the dependent variables over time:

[*Chart dependent variables*]

To run the event-based analysis, it is necessary to show that the variables do have a statistically significant difference between individual countries, confirming that Italy and Germany are suitable countries for the study. To do so, here are reported the results of a Wilcoxon rank-sum test, whose null hypothesis states that the treated and control groups are identical, against an alternative hypothesis that a specific sample of the population has values greater than another. A significant Z score would lead to reject the null hypothesis, proving that Italy and Germany are statistically different one to each other, for the following dependent variables (all scaled by total assets) (*Wooldridge 2012).*

[*Wilcoxon rank-sum test*]

Overall, Italy and Germany appear to be statistically different one from each other for all the dependent variables, confuting the null hypothesis of the Wilcoxon test, and implying that they can be used for the analysis.

The following table shows the overall changes, for the dependent variables, before and after the different policy events for Italy and Germany:

[*Table dependent variables aroud policy events*]

Concerning the independent variables instead, the following table shows the evolution of the macroeconomic variables used as control for the model

[*Table independent variables-fixed*]

While here is the evolution of all the different firm-specific variables included, divided per policy index.

[*Table independent variables- firms specific*]

4 Model, Results and Robustness

4.1 Model and results

This research relies on the experience of *Buckley* 2002, Arpaia 2009, *Ekberg* 2013 for the analysis of common shocks on the heterogeneous European market, using a diff-in-diff model with a panel structure.

[*Reg diff-in-diff*] (Eq. 2)

The research wants to highlight in the first place the diverse behaviour of companies and sovereigns, explaining such deviations with structural differences among national sectors (SMES vs. large firms).

Studying firm-level and macroeconomic variables, usually comes with some empirical trade-offs, which can only be overcome by a model with light parametrization. A diff-in-diff approach allows to understand the effects in the treatment group of a specific modelled event, assuming that most of the improvements at company level are due to endogenous policy actions, rather than monetary policy, foreign spill overs, or trade activities. Applying such methodology implies some limitations in the parametrization of asymptotic properties, given that the number of point estimators for the treatment effect in the data is usually quite limited compared to the number of observations (*Conley et al.* 2011); and the variables studied often present strong cointegration (*Bertrand et al.* 2004). The model per se entails some simplifying assumptions on noise dispersion within the data, and the robustness of the results obtained; but to address this, extra control variables were included (e.g., firm specific and macroeconomic ones). Throughout the paper, before turning to the diff-in-diff approach, all the firm-specific variables were regressed against the relevant dependent, followed by another regression using the complete set of controls against the dependent.

For the study three different models are formulated. The first will be a canonical multi time-periods diff-in-diff model which will evaluate the effects of policy implementation for SMEs, as opposed to large firms within the same country. The second model is as well a canonical diff-in-diff which will focus on the effects of the new local measures comparing the developments for national versus foreign SMEs. The third one will be a staggered diff-in-diff model with the extra assumption of variation in treatment timing, built on the work of *Callaway & Sant'Anna* 2021, *Goodman-Bacon* 2021 and *Wooldridge* 2021.

[*Reg. staggered diff-in-diff*] (Eq. 3)

The aim is to expand the simplistic diff-in-diff approach accounting for the different moments of intervention of the two countries in study, testing the relative impact of being an early or a late reformer on the different periods in consideration.

1)   For the first index, the dependent variable used is a proxy for productivity constructed using revenues adjusted by change in total assets. In line with a simplifying Cobb-Douglas production function, wages and capital are assumed to be the only two means of production for the firm, and for this reason are used as firm-specific control variables for the regression. As previously stated, the microeconomic independent variables differ between policy indicis, except for "Size", but they were all tested against their respective dependent before being included in the models. Before moving to the first diff-in-diff, the dependent Rev_net was as well regressed including the macroeconomic variables previously introduced.

[*Model 1*]

Rev.net is the vector of the dependent variable Rev.net, scaled by total asset and log linearized, constructed for the corresponding i company in period t . $Y_{i,k,t}$ is a matrix of k firm specific explanatory variables, while $lZ_{l,t-1}$ represent the matrix of the macroeconomic variables. $\beta_{0,i}$ is the firm-specific intercept in the model, $\beta_{1,k}$ and $\beta_{2,L}$ are the coefficients of the two matrices and $\varepsilon_{i,t}$ is a vector of error terms. For the study of the first index the models are run four times using as firm specific variables "Wage" and four different measures of capital: a) total investment (variable "Tot_Invest), b) a variable "K1", which is computed as total investment minus amortization, depreciation and wages (as reported on Thomson Reuters), c) a constructed "K2" variable which is formed as total investment minus amortization, depreciation and wages (as reported by Worldscope database, still available through Thomson Reuters) and d) total capital mins wages (variable "TC_net").

In detail, when the data is available, the two measures K1 and K2 are expected to accurately isolate the yearly capital invested in the company, assumed to be the other only means of production in the Cobb-Douglas function together with the workforce. When total investment is not available, K1 and K2 are populated using "TC_net".

To understand which independent variables are relevant for the difference in difference, the log of wage and the log of the four definitions of capital, scaled by total asset, were regressed over the dependent "Rev_net".

[*Regressions*]   (Eq. 4)

Looking at the p-values only, total investment appears to be the only definition of capital which is not statistically significant to explain Rev_net, but it still passes the F-test for both wage and total investment taken together. Given these first results, the models for the first index could be run four times using all the different measures of capital previously described. Prior to the diff-in-diff analysis, all the independent variables (both firm-specific and macroeconomic) were tested against the dependent.

[*Full regressions*]   (Eq. 5)

Once all the component of the regressions were assessed, it was possible to move to the core difference in difference estimation at country level and between countries. The setting is ideal for a staggered diff-in-diff or two-way fixed effect estimation, assessing the impact of comparable policy measures implemented at different point in time (Whited 2021). Nevertheless, before applying the first model, three new dummies were created: the first one is a Date dummy which distinguish the time periods before and after the policy shock (so called "treatment" for diff-in-diff models)

Date_prod0_ITA = (Year <=2010)

Date_prod1_ITA = (Year >=2011 & Year <=2012)

Date_prod2_ITA = (Year >=2013 & Year <=2017)

Date_prod3_ITA = (Year >=2018)

Date_prod0_GER = (Year <=2011)

Date_prod1_GER = (Year ==2012)

Date_prod2_GER = (Year >=2013 & Year <=2014)

Date_prod3_GER = (Year >=2015 & Year <=2019)

Date_prod4_GER = (Year >=2020)

In Italy, four policy measures, expected to be favourable for productivity defined four different time periods, with the first measure published in 2010 and effective from 2011, and the last one published in 2017 and effective from 2018.

In Germany instead, five different events compose the policy index, with the first measure published in 2011 and the last one effective from 2020.

The second dummies differentiate between treatment and control group, where the treated companies are the national SMEs, and the control group are large companies for the first model, and the foreign SMEs for the second one. For the first model the regressions do not take in consideration micro firms, so that the diff-in-diff will return the impact of policy implementation on SMEs only, opposed to large firms. For the second model instead, the comparison will be between different countries' SMEs, first testing Italian policies against German SMEs, and afterwards the effect of German policy implementation for German SMEs against the Italian ones.

Treated_ITA_SME = (SME_Index ==1 & Country =="Italy")

Treated_GER_SME = (SME_Index ==1 & Country =="Germany")

The last dummies necessary for the diff-in-diff estimation are the interaction variables DID, which result from the multiplication of the Date and the Treatment dummies

DID_prod0_ITA_SME = Treated_ITA_SME * Date_prod0_ITA

DID_prod1_ITA_SME = Treated_ITA_SME * Date_prod1_ITA

DID_prod2_ITA_SME = Treated_ITA_SME * Date_prod2_ITA

DID_prod3_ITA_SME = Treated_ITA_SME * Date_prod3_ITA

DID_prod0_GER_SME = Treated_GER_SME * Date_prod0_GER

DID_prod1_GER_SME = Treated_GER_SME * Date_prod1_GER

DID_prod2_GER_SME = Treated_GER_SME * Date_prod2_GER

DID_prod3_GER_SME = Treated_GER_SME * Date_prod3_GER

DID_prod4_GER_SME = Treated_GER_SME * Date_prod4_GER

These are the variables of interest for the study, which isolate and explain the effects of the policy implementation for the local SMEs.

To conclude, the first two canonical models have the following form for all the policy indices constructed:

[*Full model*]   (Eq. 6)

$\beta 5, i$ Is the relevant coefficient for the analysis, as it signals if the novel measures adopted did have an impact on local SMEs, for this first index, in terms of productivity.

Making use of (a) total investment as a proxy for capital, the Did variable result to be significant in period 0 (-82%*), period 1(+35.77%*) and period 2 (+24.22%**)[1].

For (b) K1, the Did dummy is significant in period 0 (-20.63% *), period 2 (+5.81%**) and period 3 (5%***).

With (c) K2 the Did is significant in period 0 (-21.5%*) and period 2 (+ 6.79%*) only.

At last, using (d) total capital net, the dummy for the diff-in-diff is significant in period 0 (-18.44%*), period 2 (+5.54%**) and period 3 (+4.72%***).

The results concerning period 0, despite being statistically relevant, are not informative for policy makers as they refer to the time period before the first policy introduction, and they will not be commented. Irrespectively of which proxy is used for capital, the results clearly show that from period

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1. Throughout the paper the results will be presented and commented only when statistically significant, Superscripts indicate statistical significance at 0.01 (*), 0.05 (**) and 0.10 (***) percent levels

1 onward Italian SMEs benefitted from the policies implemented more than their large counter parts. Most of the policies for this first index concern the reduction or abolition of taxes for productivity contracts, which appeared to bring a positive impact on SMEs of 35,77% for period 1 using Tot_investment. A positive impact in period two of 24,22% using (a), 5,81% using (b), 6,79% using (c) and 5,54% using (d), and to conclude, an impact of 4,72% in period 3 using TC_net. The magnitude of the results obtained can be questioned due to the availability and consistency of the data. However, in general, looking at the positive (negative) sign of $\beta 5,i$, it can be noted that the Italian Government managed (did not manage), within its capacity, to stimulate productivity for SMEs with its novel policy measures.

Starting from period 1, the regressions are tested for common trend pre-treatment, and for the entire period; with the latter delimited by the publication of a subsequent policy event (e.g., for prod1 the pre-treatment period ends in 2010 and the entire one ends in 2012). A Wald test is further performed for common time effects pre-treatment between treatment and control group, using a set of dummy variables constructed from the interaction between Treated_ITA/GER_SME and Year.

[*trend regressions*]   (Eq. 7)

In period 1 regression (a) appears to have a negatively deviating time trend for the pre-treatment state (-19.64%) statistically significant at 1%, while there is no evidence of deviating time trends for the entire period. The result from the Wald test moreover strongly indicates that the null hypothesis of common time effects in the pre-reform period should be rejected.

Having negatively deviating time trends before the introduction of a policy could lead to an overestimation of the impact of such measure for SMEs. Nevertheless, this research does not aim to comment on the levels of the coefficient of the relevant Did variables, but rather assesses if the policies selected delivered more or less favourable conditions for the national firms in response to the crisis.

In period 2 regression (a) display a positively deviating time trend pre reform state (+12.41%*) and a slightly positive deviation for the entire period (7.8%**). Regression (b) and (c) as well present a marginally positive deviation in time trend pre-reform (2%*** and 3.5%** respectively) and for (c) an even smaller effect on the entire period (1.2%***). The previous results were confirmed for regression (d) as well, with positive a deviation pre-reform (3.09%*). For all the regressions the Wald test indicates the absence of common time effects in the pre-reform period.

Positively deviating time trends could lead to an underestimation of the coefficient of interest, but again here it is important to look at the sign of the relevant coefficients, which appear to be all positive, proving the improvement of productivity for SMEs, when the policies became effective.

In period 3 regression (b) shows marginally negative deviation for the entire one (-0.6% significant at 5%). Regression (d) instead appears not to have deviating time trends pre-reform and for the entire period, and as in regression (c), no common time effects for the pre-reform period.

The test for parallel trends is usually not sufficient nor necessary to validate the diff-in-diff model, and it is rather used as a tool to moderate the interpretation of the results obtained. Moreover, the test should not be considered conclusive for the selection of the approach to use or shocks to consider, as conditioning a diff-in-diff model to only the data which do not present parallel trends can lead to biased results for the whole methodology (Roth 2018).

Concerning the control variables, despite some faltering p-values, they all pass the F-test and including them in the model appears to bring benefits to both the statistical significance of the dummy variables of interest, and to the R-squared of the regressions.

[*Table model 1*]

Following the analysis at national level, the second model compares the effect of Italian policy measures between Italian SMEs and German ones. Here the regression applied is the same as for model one, but it is limited to SMEs and expanded for both the countries (Italy and Germany). Excluding large and micro firms from the second model entails that the dummy variable "Teated_ITA/GER_SME" is omitted because of collinearity with the Did.

The Did dummy for regression (a) results statistically significant for period 0 (-24.04%**) and period 1 (+30.36%**). For regression (b) the Did variable is significant in period 1 (+8.99***) only. The Did is not significant for regression (c) in any period, and, using regression (d) the Did is significant for period 3 (+5.83%***) only. These results are in line with expectations, as period 1 and period 3 are the two periods in which only Italy implemented some measures, while in period 2 also Germany did so, causing the DID variable to be non-significant.

In period 1 both regression (a) and (b) did not appear to have deviating time trends pre-reform and for the entire period, as well as no common time-effects pre-reform. In period 3 instead, regression (d) shows marginally positive time trend pre-reform (1.82%) significant at 1%, but no trends for the entire period nor common time-effects pre-reform.

Overall, the Italian policy measures resulted to affect SMEs positively, also in comparison to their German counter parts, with an effect ranging from 30,36% to 8,99% in period 1 using Tot_Invest and K1 respectively, and 5,83% in period 3 using TC_net.

[*Table model 2*]

The same two model were also applied for Germany only and for a comparison between Germany and Italy, following German policy implementations.

Using regression (a) for model one German policy makers had a significant impact on their SMEs in almost all the periods, with the Did variable relevant for period 0 (-19.99%*), period 1 (-38.76%*), period 3 (44.01%*) and period 4 (-29.33%*). For regression (b) the Did variable was significant in period 0 (-9%*), period 3 (4.81%*) and period 4 (6.13%**). Using (c) and (d) the DID variable of interest is significant in period 0 (-7.97%* and -7.37%*), period 3 (4.22%* and 4%**) and period 4 (6.52%** and 5.17%***).

For period 1 regression (a) shows no time trend both for pre-reform and for the entire period.

For period 3 as well regression (a) shows no time trend (pre-treatment and for the entire period) and no common time effects before the treatment. Regression (b) instead result to have marginally positive time trend pre-reform (2%*) and neglectable time trend for the whole period (0.76%**). Using regression (c) and (d) the results are in line with the previous one, with marginally positive time trends before the treatment (1.99%* for (c) and 1.83%* for (d)) and neglectable time effect for the full period (0.65%** for (c) and 0.59%** for (d)).

Period 4 regression (a) exhibit marginally positive time trend pre-reform and during the whole period (3.26* and 3.29%* respectively). Regression (b), (c) and (d) instead have neglectable positive time trend for both the pre-treatment and the entire period (0.7%* and 0.86%* respectively for (b), 0.64%* and 0.8%* for (c) and 0.58%* and 0.73%* for (d)). For all the regressions the Wald test always excluded common time effects pre-treatment.

German policy measures in turn appeared to have negative impact on SMEs in period 1 (-38,76% for (a)), but reverted to positive impact in period 3 (by 44,01% for (a), by 4,81% for (b), 4,22% for (c) and 4% for (d)) and in period 4 (6,13% for (a), 6,13% for (b), 6,52% for (c) and 5,17% for (d)). Regarding period 1 it can only be concluded that the measures adopted by the German government appeared to be more beneficial for large companies as opposed to SMEs, without diminishing the goodness of the policy per se. In detail, the first measure implemented by the German Government aimed at a simplification of the national bureaucratic framework, for which large companies appeared to benefit the most.

[*Table model 1*]

When German policies are evaluated comparing German vs Italian SMEs, the DID dummy for regression (a) is significant for period 0 (22.17%**), period 1 (-53.09%*), period 2 (-28.66**) and period 4 (100%*). For (b) the DID is significant in period 1 (-16.51%*) only and using (c) it is possible to find significance for period 1 (-14.03%**), period 3 (-5.32%***) and period 4 (9.36%***). Applying (d) the DID is relevant for period 3 only (-5.76%***).

In period 1 regression (a) displays no time trend pre-treatment and for the whole period. Regression (b) instead has marginally positive time trend both pre-treatment and for the whole period (3.32%* and 3.43%* respectively). For (c) as well marginal positive time trend pre-treatment and for the entire period are present (3.18** and 3.3%* respectively). For period 2 regression (a) shows no statistically significant time trends pre-treatment and for the whole period. In period 3 regression (c) and (d) exhibit marginal positive time trend pre-treatment (1.8%* and 1.7%* respectively) but no time trend for the full period. Period 4 shows for regression (a) a marginal positive time trend pre-treatment and for the full period (3%* and 3.15%* respectively), while for regression (c) marginally positive time trend coefficients (0.49%*** for the pre-treatment and 0.47%*** for the whole period). All the regressions display no common time effects pre-treatment.

German policy measures, in line with the previous results, appeared to have a negative effect on German SMEs compared to the Italian counterpart in period 1 (-53,09% using (a), -16,51% using (b), and -14,03% using (c)). In period 2, as expected, German measures still appeared to lag behind the ones of Italy, with the German SMEs which, despite the policy implementation, suffered a loss of -28,66% for (a). This result for period 2 is nevertheless ambiguous, as looking at the previous model, German SMEs did not result to be significantly affected by the national policy implementation. In period 3 again the diff-in-diff returns negative coefficients for the productivity of German's SMEs (-5.32% for (c) and -5,76% for (d)). Period 4 seems to be the only period when German policies outperformed Italian ones in terms of productivity for SMEs, with positive coefficients for (a) of 100% and (c) at 9,36%. Those coefficients need to be considered with cautiousness, and rather than focusing on their values, it is interesting to notice their sign.

[*Table model 2*]

To conclude, the third and last model was run, using a staggered diff-in-diff approach or two-way fixed effect estimation (Wooldridge *2021*). In this setting it was evaluated the effect of the introduction of comparable policy measures at different point in time between the two countries, comparing early reformers to late reformers, over a period of time before the late reformers reform. But also, late reformers to early reformers over a period of time when the early reformers already reformed (*Callaway & Sant'Anna* 2021).

[*Staggered-early reformer*]   (Eq. 8)

[*Staggered-late reformer*]   (Eq. 9)

In this setting it is possible to notice that for regression (a) Italian SMEs (with Italy being the "early reformer") had a positive effect of 41.19%** on productivity, while the result for Germany is also statistically significant but at 1% and with coefficient of -64.8%. The results comfort previous expectations, given that Italy was the first country to introduce a measure in favour of productivity, with positive effect for its SMEs and in relative terms negative effect for the German ones.

Period 2 could not be compared as it ends for both the countries at the same point in time, while in period 3, with Germany being the early reformer, the profitability of the German SMEs benefitted by 29.8%* and the Italian lost -19.38%***. Looking at period 3, with Italy early reformer, the productivity of Italian SMEs benefitted 30.79%**, while Germany appears not to be statistically significant. The results once again are in line with the expectations, with the early reforming country which is capable of positively affecting the productivity of its national SMEs in comparison to the late foreign reformer.

Using regression (b) instead, the result for Italy is not statistically significant, while for Germany it has a negative impact on productivity by -17.47%*. In period 3, with Germany early reformer, Italy is statistically significant, losing -9%* with respect to Germans SMEs. Running the same regression, with Italy being the early reformer, does not return statistically significant results for both Italy and Germany.

For regression (c) the Italian relevant dummy is again not statistically significant, while for Germany it has coefficient -17.84%*. For Germany in period 3 the results are in line with regression (b), with DID_prod2_ITA_SME being the only DID statistically significant with coefficient -9.9%*. Using Italy as early reformer returns a positive effect of 6.15%***, while Germans SMEs suffered a -7.16%*** of productivity. Here the results are again in line with expectations, with the late reformers having negative impact on their SMEs in relative terms.

Using regression (d) for period 1, with Italy early reformer, returns a negative impact on Germans SMEs of -15.26%*, and for period 2 (with Germany first reformer) Italian SMEs lost -8.4%* of productivity compared to their counterpart. For period 3 instead only Italy, early reformer, is statistically significant with a positive effect of 7.53%**. The results continue to be in line with the previously discussed dynamics of policy introduction, where late reformers are penalised in comparison to early ones.

[*Table model 3*]

The results show that both Italian and Germany policy measures did have an impact on the national SMEs, at times also outperforming their large conational. In a comparison between the two countries,

given the seriously negative outlook of the Italian economy following the crisis, in relative terms, Italian SMEs benefitted more from national policies than the German ones. Nevertheless, average Italian productivity (scaled by total assets) still lays well under German productivity as per Chart X here reported.
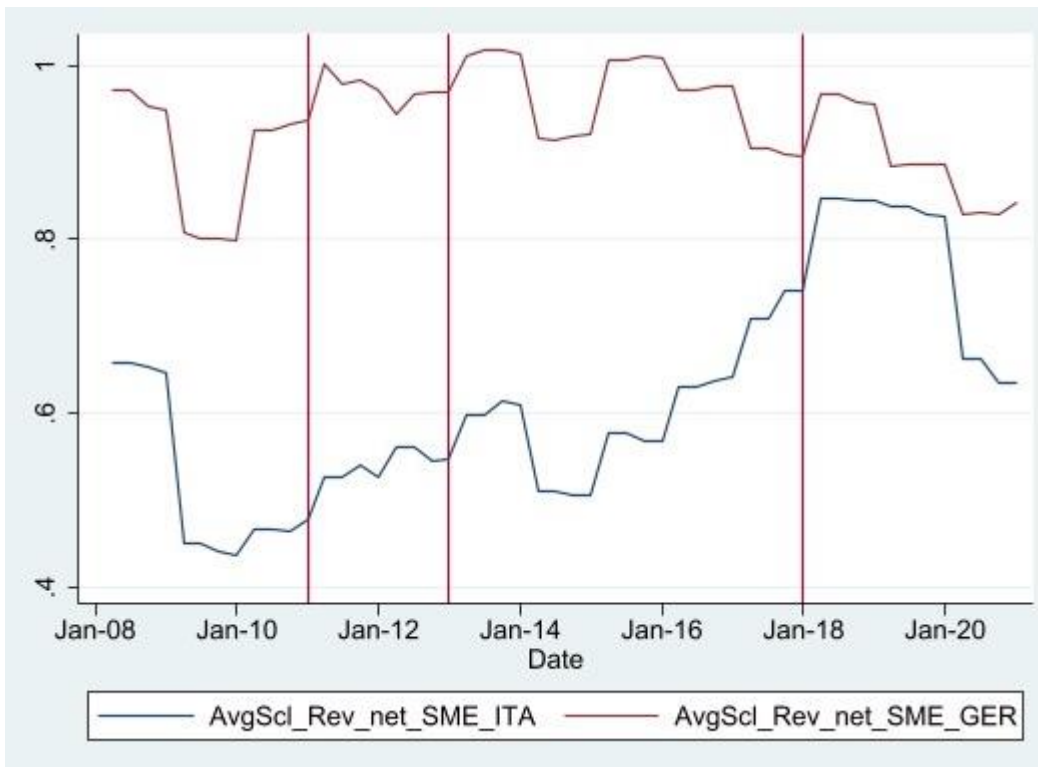
The staggered diff-in-diff analysis proves how early reformers were effective in improving the national productivity of local SMEs, highlighting the benefits of prompt and decisive intervention.

The first policy index analysed demonstrated how in terms of boosting productivity the Italian Government resulted more efficient than the German one, but still with considerable margins of improvement. In terms of feasibility the Italian Gov. achieved the results reported mostly lowering taxes for productivity contracts, which can be considered as a long-term pro-growth measure, as long as positive taxes are imposed. Germany as well focussed on pro-growth measures, promoting the simplification of legislation and the digitalization, both considered feasible within the German fiscal capabilities. In terms of audience, the policies implemented by both the countries were targeted to all the national firms, with Italian SMEs being the ones profiting the most. The results obtained should be treated cautiously as Germany already had policy measures in place to promote productivity, and their effects are not picked up from this index. Overall, to fairly assess the capacity of German policymakers to stimulate productivity, the study should go back to the years preceding the crisis, which is out of the scope of this paper. Italian policy makers clearly did have a positive impact on productivity for SMEs

in the aftermath of the crisis, but more decisive policies (in terms of monetary and time commitments) and simplification of legislation, are still far behind other countries (according to the CEU).

[*chart Ita and Ger productivity*]

2) The second policy index verges on those measures which were supposed to promote employment. Here the three models are repeated twice using two different dependent variables: (a) the logarithm of "Wage" scaled by total assets, and (b) the logarithm of "Employment" (number of employees). As for the first index, before moving in to the three diff-in-diff models, all the independent variables were tested against the dependent, always passing the relevant F-test even in case of non-significant p-values. For this second index the time dummies for the policy measures are as follows:

Date_job_promo0_ITA = (Year <= 2011)

Date_job_promo1_ITA = (Year >= 2012 & Year <= 2018)

Date_job_promo2_ITA = (Year >= 2019)

Date_job_promo0_GER = (Year <= 2011)

Date_job_promo1_GER = (Year >= 2012 & Year <= 2013)

Date_job_promo2_GER = (Year == 2014)

Date_job_promo3_GER = (Year >= 2015 & Year <=2018)

Date_job_promo4_GER = (Year >= 2019)

While the definition of the "treated" dummies remains the same throughout the different indices, the Did variable given by the multiplication of the Date and Treated dummies changes accordingly to the timing of the policy implemented.

[*Regs*]   (Eq. 10)

Using Wage as dependent, the relevant Did dummies for Italy appear to be statistically significant for period 0 and period 1 only, with +8.9%* and -5.6%* respectively. Using Employment as dependent instead, the dummy variables are significant for period 0 at +3.4%** and for period 2 at -5.9%*. The results for Italy are difficult to interpret, as the Italian Government introduced a novel policy measure every year from 2012 to 2018. Looking at wages, it seems that the Italian government with its policy implementation did not positively affect the total amount of wages for SMEs employees. This result is against expectations, as the measures implemented mostly referred to public assistance in terms of tax benefits in support for trainings and new hirings, and wages as well as employment should have increase rather than decline. The measures did not appear to be sufficient to promote a recovery from the crisis,

as those SMEs which found their self with shortages of liquidity intrinsically could not benefit from the novel policies as much as their large national counterparts. Looking at employment instead, Italian policies failed to promote new hirings for SMEs, with the number of employees which was negatively affected for period 2.

[*Table model 1*]

Concerning common trends, some marginally negative time trend appeared for regression (b) in period 3 only, with coefficient -4.8%* and -7.2%* for the pre-treatment and for the entire period respectively. The hypothesis of common time effects pre-reform was excluded using the previously presented Wald test. The presence of time trends could bias the result obtained in period 3, nevertheless, the existence of a negative trend can already signal how the Italian Government was not able to materially revert the declining number of employees for SMEs, failing to actively promote employment for the sector.

The second model again compares the effects of Italian policy implementation on its national SMEs in comparison to the German SMEs sector.

 [*Table model 2*]

The results are statistically significant for regression (a) in period 1 and 2 (-7.6%* and 13.9%* respectively), and for regression (b) for all the three periods, with positive coefficient in period 0 (+7.8%*) and negative coefficients for period 1 (-3.4%*) and period 2 (-2.5%***). Looking at Italian SMEs, in comparison to their foreign counterparts, the Italian policy implementation did have a negative impact on both wages and number of employees in period 1 (from 2012 to 2018), while for period 2 wages appeared to increase, and employment remained negatively affected. The result for period 2, using wage as dependent variable needs to be taken with a pinch of salt, as in the previous model, the policy implementation did not have a statistically significant effect on Italian SMEs overall.

In terms of time trends, for regression (a) a slightly positive time trend pre-treatment is visible for period 1 (1.5%***), compensated by an overall negative time trend for the entire period (-1.2%**). For period two instead the results of the previous model are confirmed, with a marginally negative time trend in both the pre-treatment and entire period (-1.6%* and -1.5%* respectively). Using regression (b), for period 1, a marginally positive time trend (1.2%*) is visible for the entire period, while for period 2, despite being statistically significant the coefficients are so small to be irrelevant. Common time-trend pre reform were excluded once again for all the above.

Overall Italian policy measures did not seem to be enough to stimulate wages or employment for the national SMEs sector, lagging behind in comparison to larger Italian firms, but also to German SMEs. The strong increase in employment in the years 2012 to 2014 was only matched by a mild increase in wages (Table x), probably hinting on a temporary increase of unskilled labour. It could be concluded

that the policies appeared as pro-stability, as they failed to structurally reform the economy, and firms only benefitted from them in times of crisis, with new hirings which were not accompanied by higher wages and were not retained when the measures were abolished.

Moving to Germany, it is possible to notice that in period 0 and 1 the German policy measures did have a positive impact on wages, at least in comparison to their larger conational firms. Using regression (a) the relevant dummies are statistically significant for each period excluding period 2. In the first two the coefficient is positive at 12%* and 10.9%* while for period 3 and 4 it turns negative at -8.4%* and -17%*. For regression (b) instead the Did dummy is significant in periods 0, 3 and 4. In detail, for the last two periods, German policies appeared to have had a negative effect on number of employees for SMEs, with coefficients of -5.7%* and -9.2%*. It appears that in the last two periods in study the measures implemented did not support SMEs, but rather benefitted large companies.

 [*Table model 1*]

Using wage as dependent variable, marginally positive time trend (1.4%*) are visible for period 1 for the pre-treatment period, while marginally negative trends are significant for period 4 for both the pre-treatment (-2%*) and entire period (-1.7%*). Using Employ as dependent variable instead, there are marginally negative time trend pre-treatment and for the entire period for both period 3 (-2.2%* and -6.4%* respectively) and period 4 (-2.7% 8 and -4%* respectively).

No common time trend pre-reform was visible, but the negative performances and coefficients also for Germany show the difficulties that Govs have in stimulating employment for SMEs, irrespectively of the fiscal capabilities of the local country.

Looking at the comparison between German SMEs and Italian ones, it is possible to infer that German policy makers were more capable of targeting their policies also in favour of SMEs. In terms of expectations, the measures adopted in Italy should have increased wages and employment for SMEs, with the government partially supporting salaries and incentivizing new hirings. In Germany instead both wages and employment should have remained stable, with a readjustment of the duration of the contracts of workers.

For regression (a) German measures resulted statistically significant and beneficial for its SMEs in period 1 and 2 (13.4%* and 12.8%* respectively), bouncing back to negative effects only in period 4 (-13.97%*). Using (b) instead, the effect on SMEs was positive in both period 3 and period 4 (4.5* and 2.5%* respectively). These last results are comforted by the previous model in terms of significance, but they remark how, despite German measures for this second index favoured large firms more than SMEs, they were still outperforming the Italian ones.

[*Table model 2*]

Testing for common time trends and using regression (a), it appears that for period 1 and 2 there is a marginally positive (1.8%* and 1.3%* respectively) trend pre-treatment and for period 2 also for the entire period (1%*), while for period 4 there is a negative time trend both pre-treatment (-1%*) and for the entire period (-3%*).

All the results in terms of wages for period 3 and 4 in Germany should be considered with cautiousness, as from the year 2015 until 2020 the German minimum wage was raised inconsistently from 8.50 to 9.50 euros. Raising the minimum wage was not included in this policy index (which is in majority formed using policies to promote the conversion of contracts from short to long term), and for this reason the results are expected to underestimate the real efficacy of German policy makers.

[*Table model 3*]

Moving to the third model and using the staggered diff-in-diff approach, with Italy being the early reformer, the results are statistically significant for regression (a) for Italian SMEs in period 1 before 2013, with a negative impact of -0.06%** on wages. Looking at German SMEs, with Germany being the late reformer, it appears that in period 1 German policies had a negative impact on wages of -4.2%** and in period 4 of -0.7%*. The incapacity of policy makers to revert a downward process for wages is also visible by the presence of common negative time trends, and a general reduction in salaries in the aftermath of the financial crisis.

Looking at (b) instead, the relevant Did dummy is significant only for Italy in period 1 (Italy being an early reformer) within the period 2015-2018, with negative impact on the number of employees of -4.1%* for Italian SMEs compared to the German ones. This result is in line with the ones from Model 2, as in period 4 German policy measures already appeared to outperform the Italian ones even without accounting for the timing of intervention.
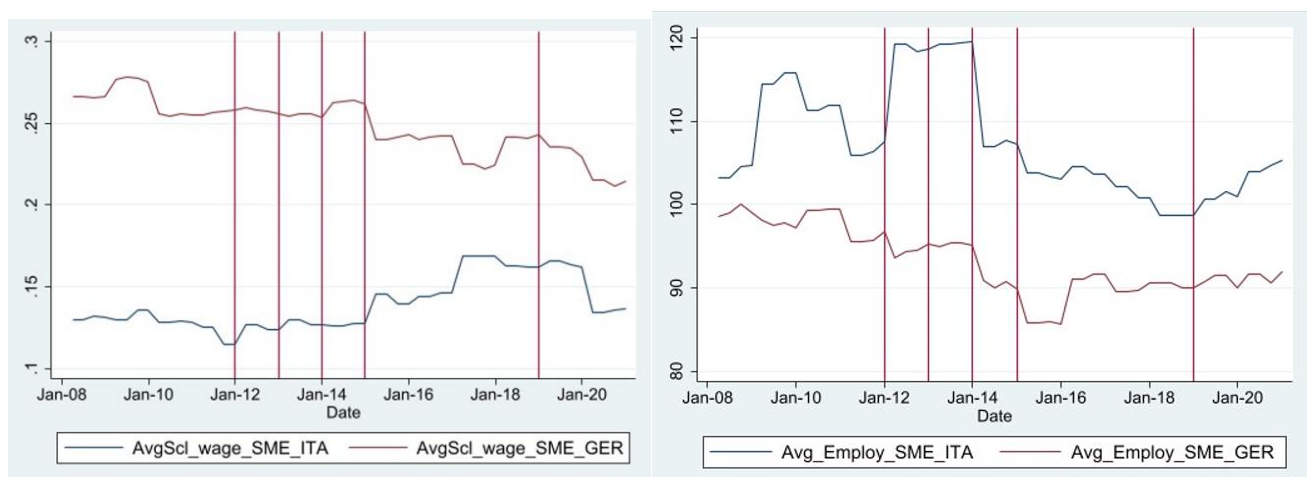
The results of this third model prove how both the two countries struggled in promoting employment for SMEs in terms of wages paid out and number of workers. Overall, German policy makers performed better, even without accounting for the increase in the minimum wage. Italian policy makers mostly tried to promote new hirings (using tax benefits), and as such, their measures resulted to be pro-stability rather than structural. Employment was in part promoted (until 2014), reducing the need for unemployment benefits, but concerning the sustainability of the policies, the new hirings might have led to many low-income earners, which still require Gov assistance, and further research on the amount of Gov transfers is advised. The audience was limited by the initial financial capabilities of the firms, as only those which could afford to increase their work force benefitted, while the ones with shortage of liquidity were automatically excluded. In Germany instead, where the unemployment rate is consistently below the Italian one, policy makers mostly aimed at improving the quality of the jobs provided, supporting companies who switched from "mini jobs" to long term contracts. The pro-growth measures adopted were feasible in terms of investment into long term contracts, to curb the need for unemployment benefits, but the audience was conditioned to only those firms who already hired workers, using short term contracts. From chart X it is possible to visually clarify the results obtained. In Germany, SMEs consistently paid more wages (in relation to the firm specific total assets) than in Italy, and the small convergence that the two countries enjoyed from 2015 onward was reverted with the beginning of the covid pandemic in 2020. Despite the lower level of wages paid out, Italian SMEs consistently hired more workers than German SMEs, with the increase in employment in the years 2012 to 2014 (Chart X) that was probably fuelled by unskilled labour with short term contracts.

3) The third index refers to those policies implemented to support employment, and as per index 2, all the three models were run two times. First using the logarithm of wages divided by total assets (a), and then using the logarithm of the number of employees (b). All the independent variables were tested and appeared to be collectively significant for the analysis.

[*Reg*] (Eq. 11)

The Date dummies for this index are the following:

Date_job_sup0_ITA = (Year <= 2009)

Date_job_sup1_ITA = (Year >= 2010 & Year <= 2013)

Date_job_sup2_ITA = (Year >= 2014 & Year <= 2015)

Date_job_sup3_ITA = (Year >= 2016)

Date_job_sup0_GER = (Year <= 2011)

Date_job_sup1_GER = (Year == 2012)

Date_job_sup2_GER = (Year >= 2013 & Year <= 2015)

Date_job_sup3_GER = (Year == 2016)

Date_job_sup4_GER = (Year >= 2017 & Year <=2018)

Date_job_sup5_GER = (Year >= 2019)

In line with the rest of the study, the most relevant variables are DID_job_sup*t*_ITA_SME and DID_job_sup*t*_GER_SME, constructed multiplying the time dummies previously presented and the "Treated" dummy for national SMEs.

The first canonical diff-in-diff model verifies if Italian and German policy makers managed to support employment in their local SMEs sector. In Italy, looking at wages, the measures adopted resulted statistically significant in all the periods, positively influencing wages paid out in period 0 and in period 1 (+8.5%* and +4.18%** respectively) and negatively in period 2 and in period 3 (-5.4%* and -4.1%*). The results for regression (b) instead are less clear, as the relevant coefficients are significant only in period 0 (10.2%*) and in period 3 (-3.6%**). Concerning (a), a marginally positively deviating time trend pre-policy is present for period 1 (3.1%*), and for the entire period for period 2 until 2015 (1%*). In period 3 instead, there is an irrelevant but statistically significant negative time trend pre-policy (-0.4%*) and for the entire period (-0.7%*). The Wald test for the interaction variables confirms ones more that no common time effects pre-reform can be discerned. In regression (b), the negative time trends for period 3 both pre-policy (-4.1%*) and overall (-5.5%*) were confirmed, also in line with the presence of common time effects in the pre-reform period as confirmed from the Wald test.

[*Table model 1*]

Italian policy makers did have an impact on supporting wages for local firms, with SMEs benefitting the most in period 2 and 3, at least in comparison to large companies. With regards to the number of employees instead, the measures adopted did not result significant, showing that policies aimed at supporting short term contracts or wage negotiation, did not promote new hirings. In line with the expectations, the level of wages reduced thanks to the public assistance from the Gov, and the number of employment remained mostly unaffected.

With the second model it is evaluated whether the new Italian policy measures positively affected SMEs in comparison to the German ones.

Looking at (a), the relevant Did dummies turned up to be statistically significant from period 1 onward, with Italian companies first positively affected (-10.3%* in period 1 and 2) and then paying more wages

than their foreign counterparts (15.5%*) in period 3. For (b) instead, as for the first model, the results are significant for period 0 and period 3 only, showing again a positive impact for Italian SMEs in period 0 (12.1%*) and negative in period 3 (-6.2%). Moreover, in line with the previous model, in period 1 using (a) some positively deviating time trend is visible in the years preceding 2010 (7.3%*), which would revert to negatively deviating time trend pre-reform (-19%*) and for the entire period (-2%*) looking at period 3. With regards to number of employees instead no time trend is visible in any period, and for both the regressions, no time effect pre-reform was detected.

[*Table model 2*]

Wages paid out (as fraction of total assets) by Italian SMEs did lag on average behind the ones of Germany, at the same time occupying more workers. From 2016 onward instead, when the Italian government started to assist companies for new short-term contracts, they slightly converged to the German levels.

This third index shows that German policy makers as well appeared to struggle in supporting employment for SMEs. Concerning wages, they did manage to have a statistically significant impact in all the five periods, but with positive effects only until 2015, 12 %* for period 0, 10.4%* in period 1 and 4.54%* in period 2. Subsequently, the policy implemented had an overall negative impact on wages paid out of -4.17%* in period 3, -10.8%* in period 4 and -17%* in period 4, but the increase in the national minimum wage is expected to have compensated for it. In terms of number of employees instead, the results are significant and positive in period 0 (11%*) but negative in period 4 and 5 (-5.84%* and -9.26%* respectively). Regression (a) for period 1 displays a marginal positively time trend deviation for both the pre-policy period (1.4%*) and the whole period (0.8%***), while in period 2, only for the pre-policy period (1.2%*). From period 3 onward instead, there are negative time trend deviations pre-policy (-1.01%* in period 3, -1.4%* in period 4 and -2%* in period 5) and for the full period (-0.8%* in period 3, -0.9%* in period 4 and -1.7%* in period 5), which are statistically significant but non remarkable for the analysis. Common time effects for the pre-reform period are again not present.

[*Table model 1*]

The policies implemented in Germany provided assistance for low wage earners, and appeared to be more beneficial for large firms than SMEs, but the real impact of increasing the minimum wage should be further analysed.

In comparison to Italian SMEs, German policy makers managed to improve wages in period 1 and period 2 (10.5% and 13% respectively), but in period 4 and 5 the measures implemented in Italy outperformed the German ones. In terms of number of employees instead Germany consistently did

better for its SMEs than Italy, with a positive impact of 4.39% and 2.5% for both period 4 and 5. For (a) period 1 displays positive time trend deviation in the years preceding 2011 and until 2012 (1.87%*** and 1.08%***), which is confirmed also for period 2 until 2012 (1.33%*). As expected from the previous model, the last two periods have a negative time trend deviation: -1.41%* until 2016 and -1.2%* for the period ending in 2018 for period 4, and -2.03%* until 2018 and -2.3%* for the entire period for period 5.

Looking at regression (b), from period 4 onward, there are positive time trend deviations of 1% until 2016, and of 0.69% for the period ending in 2018. For period 5, the positive deviations are of 1.2% until 2018 and of 1% until 2020 for period 5. The hypothesis of common time effects pre-period is again rejected for all the duration of the study and for both regressions.

[*Table model 2*]

Overall, it looks like German SMEs operate with less workers and pay higher wages than the Italian ones. Nevertheless, it is important to remind that in the aftermath of the crisis, under the pressure of the CEU, Italian policy makers, with the aim of improving their national statistics, tried to boost employment promoting short term contracts, as little as one weeklong*. Germany instead is a virtuous country in terms of employment, and its policy stance aimed at improving the quality of the contracts provided, rather than focussing on the pure number of new hirings.

With regards to the staggered approach, with Italy being the early reformer in 2009, German SMEs had a negative impact on their wages of -7%** compared to the Italian ones, and as well as in 2015 by -4.69%**. In 2012 instead, being the early reformer, the wages for German SMEs benefited by 4.79%**. Italian measures instead, appeared to be beneficial for the wages paid out by its SMEs for the period ending in 2018 only, with a positive 10.6%* overall.

Looking at (b), despite being the early reformer, before 2010 Italy was not able to support Employment for its SMEs, and actually, the policy measures adopted (funding for wage negotiation) lead to -5.3%* of employment. After 2013, with the introduction of new funds for the unemployed, Italian policy makers managed to deliver a 1.8%*** increase in employment, which was again reverted to -3%** in the period preceding 2019.

[*Table model 3*]
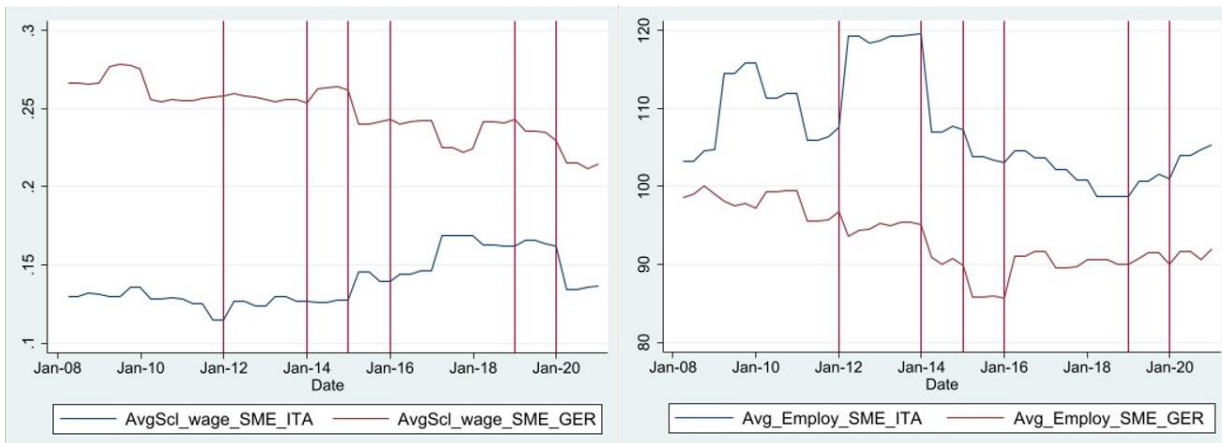
Overall, as for the previous index, both the countries after the crisis did struggle to support wages and employment. In Germany the policy measures appeared to be feasible and pro-stability, reducing taxes on low earners, and providing assistance to the unemployed. The levels of wages paid out and the number of employees diminished during the time in consideration, but the increase in the minimum wage which somewhat explains both the two trends. The Gov. partially subsidize companies for the salaries to be paid, and employment that felt with the increase in real wages. Assessing the audience for the index is difficult, as more data would be necessary to investigate the national unemployment composition.

Italian policy makers were only able to stimulate wages paid out by SMEs from 2014 onward, but at levels remarkably lower than in Germany. Concerning this index, most of the Italian policies were aimed at supporting the unemployed, without structural measures in place and with measures that favoured stability and neglected future growth. The feasibility of the measures is actually arguable, as a country should try to promote employment rather than solely assist those without a job, which lead to further increases of Gov debt without even reintroducing the unemployed in the work force. In terms of audience instead, given the number of unemployed following the crisis, it can be assumed that the measures reached many people, but from this index it is possible to notice once more how a virtuous country like Germany was able, despite the financial crisis, to develop policy measures which would bring growth in the long run (e.g. increase in minimum wage) , while Italian policy makers struggled to stabilize the economy.

4) The fourth policy Index consists of those measures aimed at promoting R&D or in general investment. Among the firm specific variables expected to be relevant for this regression, the logarithm of Cash (scaled by total assets) appears to be the most significant and beneficial for the three models.

[*Reg*]   (Eq. 12)

The time variables constructed are the following:

Date_inv_g0_ITA = (Year <= 2010)

Date_inv_g1_ITA = (Year >= 2011 & Year <=2013)

Date_inv_g2_ITA = (Year >= 2014 & Year <= 2015)

Date_inv_g3_ITA = (Year >= 2016 & Year <= 2017)

Date_inv_g4_ITA = (Year == 2018)

Date_inv_g5_ITA = (Year >= 2019)

Date_inv_g0_GER = (Year <= 2010)

Date_inv_g1_GER = (Year == 2011)

Date_inv_g2_GER = (Year >= 2011 & Year <= 2013)

Date_inv_g3_GER = (Year >= 2014 & Year <= 2020)

Italy appeared to be more active than Germany for this specific Index, but this is also in line with the more stringent recommendation received by the CEU and the stagnating levels of aggregate investment (*Pisu 2017*). As for all the study, the variables of interest are the "DID_inv*t*_ITA/Ger_SME", build on the Date dummies presented above.

Model 1 returns disappointing results for Italian policy makers, as they appeared to have had positive influence on their SMEs in period 0 (+51.9%*) only, while in period 2 (-29%*), period 4 (-26%**) and period 5 (-29%*) they caused a strong reduction in R&D or Investment for their SMEs. Negatively deviating time trends are present for period 2 both before 2013 and until 2015 (-11%* and -10%* respectively), but also for period 4 before 2017 and until 2018 (-7.9%* and -5%* respectively) and in period 5 before 2012 and until 2020 (-4.7%* and -3.1%* respectively). Common time-effects pre-trend were again excluded after using the Wald test. The policies implemented mostly focus on promoting R&D for SMEs and supporting innovation and investment through patents and trademarks (the world-famous "Made in Italy"). The measures adopted appeared to be inadequate and to benefit mostly large firms, proving the incapacity of Italian politicians to support Investment for targeted sectors (at least for SMEs).

 [*Table model 1*]

The second model confirms the results previously presented. Comparing the Italian SMEs to the German ones, the measure implemented appeared to be statistically significant in period 0 (45%*), in period 2 (-39.72%*) and in period 4 (-29.2%***). Italian SMEs were at disadvantage both compared to their conational larger firms but also against their foreign counterpart. Negatively deviating time trends are confirmed in period 2 (-12%* and -11%* for the period until 2013 and 2015 respectively) and in period 4 (-8%* and -7.9%* until 2017 and 2018 respectively), with no common time-effects pre-trend.

The Italian Government received numerous recommendations from the CEU to promote investment in R&D and Innovation, but it always lagged behind EU standards and targets. Different policy makers over the course of the years failed to address the issue, and the only positive effect on SMEs was in period 0, when no policy was implemented. The continuous presence of negatively deviating time trends is also a sign that Italian policy makers were not capable of reverting the falling levels of private and public investment, which might have been partly due to the highly dysfunctional bureaucracy in the country, and lack of confidence in the national authorities (Italy changed six ruling coalition in just eleven years).

[*Table model 2*]

German policy makers resulted significantly more capable than their Italian counterpart in promoting investment for their firms, and in detail, SMEs benefitted from the novel measures in both period 0 (13%**) and in period 2 (9.99%**), while lost -13.7%*** and -11.8%* in period 1 and 3 respectively compared to their large conational.

Differently from Italy, in Germany are visible some positively deviating time trends for period 1, 6.4%* before 2010 and 4.1%*** before 2011, and in period 2, 2.8%*** until 2011, which reverted for period 3 to -3.5%* for the full period. No common time effects pre-trend were visible. German policies mostly promoted expenditure in education, R&D, and innovation, without focusing on specific sectors. The measures adopted were not aimed at reducing taxes for innovators, but rather at the development of an environment for companies and non-educational research centres, where R&D and Innovation could strive.

[*Table model 1*]

Looking at model 2, German SMEs diminished their level of investment compared to Italian ones in period 0 (-45.9%*) and in period 1 (-43%**) but gained a 41.7%* in period 3. The results are justified by period 0 being the only positive period for Italian SMEs, and in period 1 large German firms benefitted more than SMEs, as visible from the previous model. Counterintuitively instead, despite in model 1 German SMEs were at disadvantage compared to their larger firms, they still managed to outperform the Italian ones, which from 2014 did not experience any positive effect from the novel measures.

In detail, Italian policy makers were not even able to benefit from the negatively deviating time trend that Germany experienced in the period ending in 2020 (-3.4%*), showing how a virtuous country is able to outperform others, even in times of downturn. No common time effects pre-trend detected.

[*Table model 2*]

Using the staggered diff-in-diff approach instead, with Germany being the early reformer in 2011, it is possible to already see a positive impact for German SMEs compared to the Italian ones (29.2%*), but also a positive impact for Italian SMEs after their policy implementation in 2012 (27.2***). Going further, the positive trend was also confirmed for German SMEs in the years before 2017 (22.5%*) and for Italian SMEs from 2015 onward (29%*).

[*Table model 3*]

Overall, looking at the 3 models all together, the effects of the measures implemented in Italy were only visible in relation to German SMEs and taking Italy as a late reformer. The presence of negative trends was confirmed also by table Z, but the positive results for model 3 entails that the novel Italian policy measure per se did bring some benefits for SMEs investment. Apparently, those measures were not correctly targeted to SMEs, and they were not enough in comparison to German ones, with the positive impact of Italian policies which was subdued by other factors. The third model proves that Italian policies had a small positive effect, but it was simply not enough to achieve the stated targets.
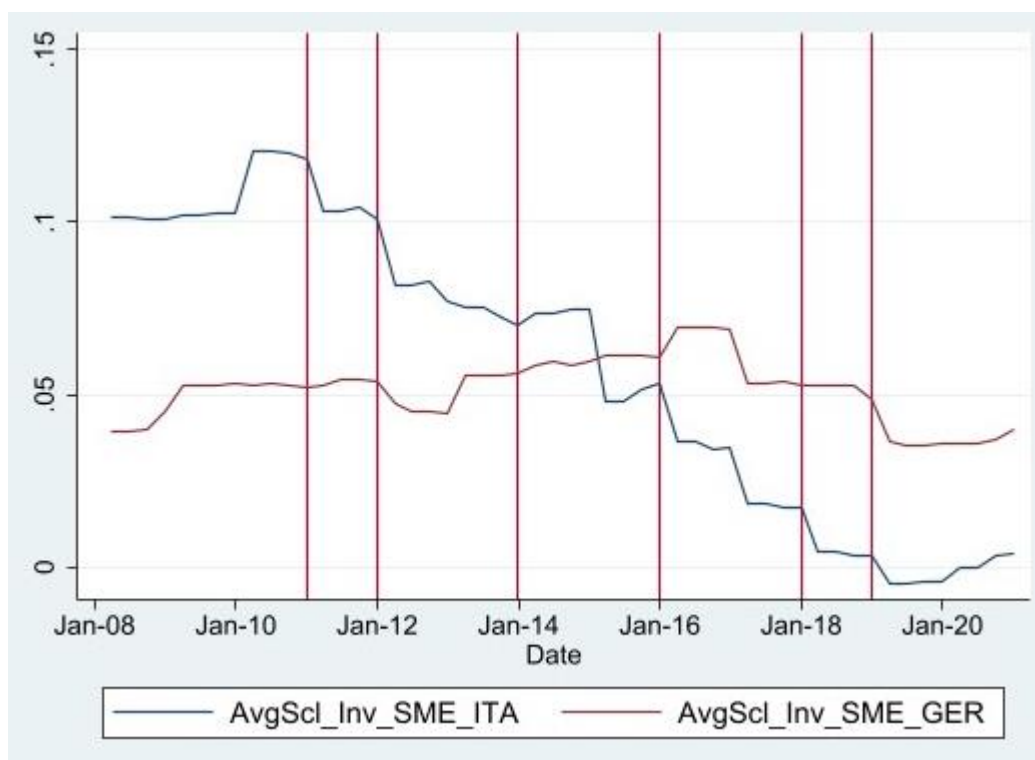
In terms of feasibility, Germany with its pro-growth approach heavily invested in education, research, and innovation, to promote investment within its companies but also in research centres and innovative consultancy firms. Such measures are usually highly welcomed by EU authorities as they have a structural impact and a long-term prospect, as opposed to merely tax reductions as implemented in Italy. Tax deductions are possible only until there are margins to diminish taxes, and they always require some

form of expectation from the beneficiaries in terms of scope and duration. Generally speaking, reducing taxation for investment in specific sectors (e.g., R&D) can be considered as a pro-growth policy if well formulated, but this was not the case for Italy. With regards to the audience, Germany again outperformed Italy. German policies were not targeting specific sectors and were rather aimed at reinforcing investment in innovation and R&D in a broad way, also promoting the interaction between companies and academia and hybrids (research centres and non-academic institutions). Italian policies instead just failed in their impact, and audience, and it appear that no pro-growth policy might be efficiently working as long as the national bureaucracy will not be simplified. The novel measures implemented are also reasonable and in line with the CEU recommendations, but they seem to fail to reach the wished outcomes.

5) The last two indices are constituted by those policies which are expected to promote competitivity at national and EU level. The fifth index is constructed by those measures which affected the accounting reporting of fixed assets (FA), in terms of amount and speed of depreciation and amortization. These measures are expected to be beneficial for firms as they promote investments and modernization. They were mostly enacted by Italian policy makers to counterbalance the post-crisis growing aggregate savings, introducing super and hyper amortization for purchases of tangible assets, but especially for "smart equipment": softwares and IT components related to the EU corporate digitalization process. The analysis is run using two different regressions: (a) is constructed using as dependent variable "Fa_Amo", fixed assets adjusted by depreciation and amortization while (b) uses "PPE_Amo", which is property plant and equipment (PPE) adjusted by depreciation and amortization. In the two regressions fixed assets and property plant and equipment are used respectively as independent firm-specific variables, together with total amortization and depreciation. Here are the relevant Date dummies for the index:

[*Reg*] (Eq. 13)

Date_FA_Amo0_ITA = (Year <= 2013)

Date_FA_Amo1_ITA = (Year == 2014)

Date_FA_Amo2_ITA = (Year >= 2015 & Year <= 2016)

Date_FA_Amo3_ITA = (Year >= 2017)

Date_FA_Amo0_GER = (Year <= 2017)

Date_FA_Amo1_GER = (Year == 2018)

Date_FA_Amo2_GER = (Year >= 2019)

While the German index is constructed around one event only, in Italy the measures were implemented in two phases, the first between 2013 and 2014, and the second started in 2017 and is still ongoing.

Italian policy makers evidently did manage to positively affect the amount of FA (adjusted) for their SMEs. In period 0, before any policy implementation, SMEs were negatively affected by -10%, but in period 1 the trend reverted by 5,61%*** and improved by 4,59%** in period 2. Period 3 also displays a 3.1% increase of fixed assets, but statistically significant only at 10%.

With regards to PPE instead, the results appear significant only for period 0 and for period 3 (43.9%* and -42.8%* respectively). It is worth to notice how the results have inverted sign for fixed assets and property plant and equipment, but concerning SMEs, FA is a more accurate and accessible variable that PPE. The negative impact for SMEs in regression (b) might indeed be simply due to large firms being more accurate in reporting their PPE, with the model overweighting their contribution.

Using regression (a) moreover, Italian SMEs experienced some positively deviating time trends, by 3.9%* until 2013 and 3.7%* until 2014, but also by 2.8%* in the full period ending 2014 and 1.8%* until 2016. For (b) instead, some marginal negative time trends are visible for the last period, with -6.2%* for the period ending in 2016 and -3%* for the full one. Both the regressions do not present common time-trends pre reform.

[*Table model 1*]

The second model return results in line with the first one, with Italian policy makers that did have a relevant impact on the fixed assets and PPE of Italian SMEs also in comparison to their German counterpart.

In period 0 Italian SMEs suffered a -12.4%* in their FA, which reverted in period 1 to +8.38%*** and +16.2%* in period 2. For the last period the effect on Italian SMEs felt to -4.8%***, but the result is justified by the decisive positive intervention that German policy makers had for their SMEs in that period. Regarding PPE as well, the results are in line with model 1: +30.2%* in period 0, -15.9%*** in period 1 and +13.4%** in period 2. The last two results need to be taken with caution as Italian measures for period 1 and 2 appeared not to be statistically significant for model 1. In period 3 instead, Italian SMEs suffered a decrease of -30.8%* in PPE compared to the German SMEs, which was already expected given the big drop visible for period 3 in model 1.

Concerning time trends, for regression (a) in period 1 there is evidence of some positively deviating trends in the years before 2013 (6.1%) and in the period ending in 2014 (5.9%), which continued for period 2 as well with 4.1% before 2014 and 4.6% for the full period until 2016. In period 3 the time trend is still positive but smaller, 3% until 2016 and 3.7% for the full period. Looking at (b) time trends are only statistically significant for period 3, where some marginal negative trends are visible before

2017 (-2.5%) and for the full period (-4.1%). Also, for this second model no common time-trends pre reform are visible.

[*Table model 2*]

Looking at Germany, in period 0 the local SMEs suffered a -5.2%* on their fixed assets compared to their large conational, which reverted to +5.6%** in period 1 and continued with a +3.34%*** for period 2. As for the Italian case, Germany as well presents opposite signs for PPE, with a positive impact of 11%* in period 0 and negative effect of -18.9%* in period 1. German policy makers simply increased the threshold for immediate depreciation of low-value assets purchased, mostly in support of those SMEs which found their self cash-constrained. While it is possible to see how fixed assets for SMEs increased overall, the variable PPE is still assumed to be mostly populated by large firms, and the negative results are in line with expectations.

Moreover, for period 1 and regression (a), marginally negatively deviating time trends are visible, in the order of -1.2% for the year before 2017 and -1.4% for the full period until 2018, but also for period 2 until the year 2020 (-1%). Regression (b) reports similar results, with negatively deviating time trends of -2.9% until 2017 and -2.9% after the reform became effective in 2018. The hypothesis of common time-trends pre-reform was again excluded.

[*Table model 1*]

The results from model 2 are in line with the previous ones. Using (a), in period 0 German SMEs appeared to be at disadvantage to the Italian ones (-8%*), but in period 2 they reverted the trend gaining a 6.5%** over their foreign counterpart. In terms of (b) instead, the results appear statistically significant for all the periods: -35%* in period 0, +17.2%* in period 1 and +31.2%* in period 2. Overall, German policy makers appeared to have a better impact on their SMEs than the Italian ones, despite the latter issued more measures and the Italian economy experienced remarkably lower firm investments.

Relevant time trends are only evident for regression (b), with negatively deviating trends of -3.6% pre-reform (before 2017) and again -3.4% until 2018 for period 1, and -3.9% until 2018 and -3.6% for the full period looking at period 2. No common time-trend pre-reforms are visible.

[*Table model 2*]

Moving to model 3, with Italy being the early reformer in 2013, the adjusted fixed assets of Italian SMEs benefitted by 6.7%** by the novel measure, while German SMEs suffered a loss of -11.6%*. Taking in consideration the measure implemented in 2014, with Italy still being the early reformer, the results do not change by much, with Italian SMEs benefitting by 6.7%* and German ones loosing -11.3%*. With regards to the Italian policy implemented in 2017 instead, the measure is not statistically

significant, while the negative effect on German SMEs is moderate but still remarkable (-7.5%*). Using Germany as early reformer in 2018 instead, lead to an improve of fixed assets for German SMEs by 12.5%*, while the effect for Italy could not be determined.

For PPE instead, using Italy as the early reformer in 2013, it is possible to notice that German SMEs did lose -11.8%* compared to their Italian counterpart, and -18.8%* taking Italy as early reformer in 2014. For 2017 instead, Italian SMEs experienced a -13.4%*** decrease in PPE, followed by a -10.3%* for German SMEs in 2018. Looking at Germany as early reformer in 2018 instead, German SMEs benefitted by the novel policy measure by 39.8%* in comparison to the Italian ones.

[*Table model 3*]
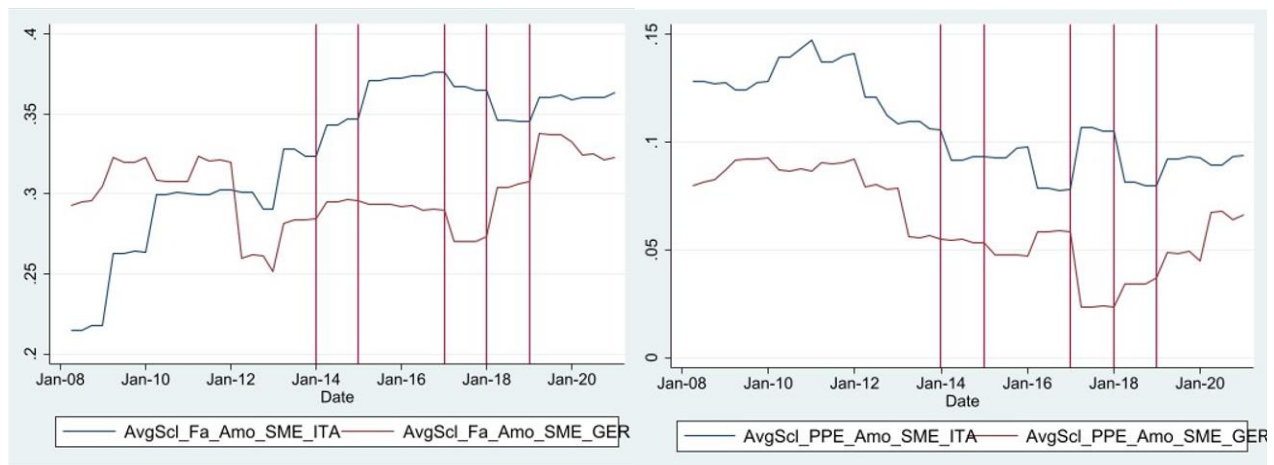
This index was mostly populated by Italian policies, which were initially implemented to stimulate a rebounce of investment for firms. The measures after all delivered positive results especially for fixed assets, and they have been extended and implemented over the years. The measures in turn went from being pro-stability, when general tangible assets were targeted, to pro-growth, continuously improving the condition for amortization (e.g., super, and hyper amortization). While further analysis is advisable with relation to other investment measures, the policies implemented appeared to be positive both in terms of feasibility and audience. In the first place, the measures were issued as generally oriented to fixed assets, but over the years, they resulted to be a good mean for the Gov to stimulate also the digitalization process and the modernization of firms, and the policies were expanded and implemented. In terms of audience both SMEs and large firms appeared to benefit from it, as the policies were broadly defined and with no limitations to the amount of investment or the type of assets to (super)amortize. German policy makers did not look to give too much importance to this category of measures, as the only policy enacted was targeted to low-value assets investments only. In this regard, in terms of sustainability no issue seemed to arise, but the audience of the policy is assumed to have been limited

to SMEs and firms with low cash, as large companies or capital-intensive ones are not expected to benefit much from a faster and simpler depreciation for tangible assets up to the value of 800€ only. For the first time Germany focussed more on a pro-stability approach, while Italian policy makers went for targeting stability to promoting future growth (with investments in modernization and digitalization).

6) Among the many tools that policy makers have in their hands to promote competitivity, tax manipulation in the corporate and labour market often resulted to be the most common in the EU, especially given fixed exchange rates and a common CB. Corporate tax competition is a topic which is often the cause of intense debate in the EP, as the countries with the most advantageous regulation want to keep their attractiveness (e.g., Luxemburg Ireland, Malta and the most vocal The Netherlands (Smith-Meyer 2016)), and oppose an EU-wide harmonization of taxes. Homogeneous taxation for labour, savings and corporation would minimize the comparative advantage of those "fiscal heavens" (Baldwin 2000), with a consequent equalitarian redistribution of welfare among the member (Zodrow 2003). This index, like the previous one, is composed primarily of Italian policies, as the tax measures adopted in Germany in the time in consideration were mostly targeted to specific industries, for which further research is recommended.

The dependent variable used for this index is the logarithm of "Tax" scaled by total assets, to understand the effects of the novel policy measures on the net amount of taxes paid by companies. The firm-specific control variables used for this index are the proxy for productivity constructed for the first index "Rev_net", the amount of "Cash", and gross income ("GI"), scaled by total asset and log-linearized. The three were chosen as they are expected to be a strong determinant for the firm's amount of taxes to be paid. They were tested and resulted to be statistically significant both individually, looking at their p-value, but also as collection, looking at the F-test.

[*Reg*]   (Eq. 14)

The Date dummies for the index are the following:

Date_tax_fin0_ITA = (Year <= 2012)

Date_tax_fin1_ITA = (Year >= 2013 & Year <= 2016)

Date_tax_fin2_ITA = (Year >= 2017 & Year <= 2018)

Date_tax_fin3_ITA = (Year == 2019)

Date_tax_fin4_ITA = (Year >= 2020)

Date_tax_fin0_GER = (Year <= 2013)

Date_tax_fin1_GER = (Year >= 2014 & Year <= 2015)

Date_tax_fin2_GER = (Year >= 2016)

Italian policy makers did have a statistically significant effect on the amount of taxes paid by SMEs throughout all the periods until the year 2018. In detail, while in period 0 they paid 53.3%* more taxes, from 2013 onward Italian SMEs benefitted from a reduction in taxes of -8.59%** for period 1 and -11.23%* in period 2 compared to their large conational.

Amid the years preceding 2017, a small positively deviating time trend of 9.5%* was visible for period 1 and confirmed by a 3% positive trend for period 2 both before 2017 and 2018, with no time-trends pre-reform.

Considering the positive trends, which is bad news with regards to taxes, and the general increase in taxation, scaled by total assets, for Italian companies, the measures adopted appeared to be quite efficient in supporting SME. Apparently, a general reduction in corporate income tax was effectively transmitted to NFCs (FIs and Banks have special taxation rules), with SMEs benefitting more than large companies. The results might be justified by large firms incurring in numerous direct and indirect taxes to run their operations, from social security contributions for workers to withholding tax on dividends, interests, and royalties, to VAT costs arising from the supply chain. The positive effects might indeed be explained by the simpler and more concentrated business model of SMEs, but further analysis on all the taxation costs incurred by Italian firms is advisable, as for this index, all the measures are limited to the reduction of the corporate income tax.

[*Table model 1*]

Looking at model two instead, Italian measures again did lag behind the policies introduced by Germany in the year preceding the crisis. Italian SMEs experienced an increase of taxes paid out of 11.75%** in period 1 and 10.59%** in period 2, compared to their foreign counterpart. In period 3 and 4 instead the results point at a reduction of taxes of -21.37%* and -27.63%* respectively, but the latter are ambiguous, as in model 1 Italian policies did not appear statistically significant for the last two periods.

Until 2017 a negatively deviating time trend of -3.3%** was visible for period 2, confirmed for period 3 at -4.1%* and at -3.8%* for the period ending in 2018. Looking at period 4 as well, there is evidence of negatively deviating time trends before 2018 (-3.9%*) and for the full period (-4.1%*). Once more no time-trends pre-reform are visible for any period.

[*Table model 2*]

The only two policies selected for Germany concerned the continuation and confirmation of the reduction in VAT, which went from 19% in 2007 to 16% in 2020 (EC). In period 0 German SMEs had a negative impact on their taxes paid out of 18.24%* which was reverted in period 1 by -16.92%*.

Period 2 is not statistically significant, as the policy implemented in 2015 was already clearly anticipated and communicated by the Gov, nullifying the effect of the shock. Negative time trends of -8.5%* before 2013 and of -5.7%* for period until 2015 were also visible, with the Wald test which confirms the absence of common time effects pre-reform with 94% confidence.

[*Table model 1*]

With regards to Model 2, it appears that the analysis between German and Italian SMEs is not statistically significant for the relevant Did variable in any of the three periods. At international level the measures adopted did not look to have much impact, but again, the policy shocks were probably smoothed by the clear communication from policy makers, which helped SMEs forming expectations around the decrease in VAT.

[*Table model 2*]

The third model as well does not present statistically significant results, apart from a negative effect for German SMEs in period 0, with an increase in taxes in the year 2014 of 12.12%** using Italy as early reformer. In Germany, most of the relevant measures for this last index were implemented in the years preceding the crisis, and no policy shock was really present. Although, looking at table x, it is possible to see how in 2014 in Italy taxes remained mostly flat, while in Germany they increased before having a remarkable drop in 2015.

[*Table model 3*]

In light of the goal of promoting competitivity, Italian policy makers once again resulted only partially effective. The reduction in corporate income tax rate is a sustainable policy, expected to promote growth and capital accumulation (Alesina 2013). Nevertheless, the overall taxes paid by Italian firms did increase over the years, along with an increase in the VAT of 2% points (from 20% to 22%). The policies were also far reaching in terms of audience, but they were not enough to stimulate a prompt recovery in the corporate sector, and most of all, they were offset by other increases in taxes. On the other side instead, despite the crisis, Germany improved its competitivity and reinforced its position as exports leader in the EU, further reducing taxes and stimulating growth. Decreasing the VAT moreover is one of the measures with the greatest audience, as it is a tax which affects everybody throughout the supply chain, up to the final consumer.

4.2 Robustness of the results

The results obtained are comforted by a few robustness checks. (1) The analysis was run again excluding the 12-month ECB interest rate. (2) The time trends between Italy and Germany were analysed more in detail, to make sure the two countries can be used for the difference-in-difference approach under the assumption of parallel trends. (...)

[To be completed]

5 Conclusions

The paper investigates the different approaches of Italian and German policy makers, in addressing the consequences of the latest financial crisis and the EU sovereign crisis for their local SMEs sector. The banking and the financial industries benefitted from financial assistance and bailouts from Governments and the ECB. Small and medium enterprises instead, did not receive a similar support, despite being the EU horsepower, in terms of value-added averaging 60% of the total business economy, and number of employees, retaining 70% of the total workforce.

The study makes use of six different policy indicis to assess the ability of policy makers to stimulate productivity, employment, investment and competitivity for SMEs, in period of crisis and stagnation.

The measures selected for the indices resulted significant for the research, highlighting the importance of fiscal and industrial policy intervention to moderate the consequences of a crisis. The research runs from 2009 to 2020, unfortunately missing some important policy measures. In the years 2004-2008 Germany embarked on a plan of pro-growth structural economic reforms to liberalize the job market, limit the costs of the public pension system, and in addition, through several tax cuts for both firms and people, promoted GDP growth and employment. The increase in spending, together with the bank's bailouts happening in the aftermath of the crisis, worsened the German fiscal situation, pushing their debt to GDP from 60% in 2001 to 82% in 2014. Meanwhile, the Italian debt went from 110% to 135% of GDP in the same period, often ignoring the CEU recommendations and lacking the ability to develop structural forward-looking policies. (*Melchiorre 2014*).

The political instability and the high level of public debt in countries like Italy limited the scope of intervention for politicians, exacerbating the consequences of the recession. The austerity measures adopted in reaction to the crisis reassured the markets, but did not restore confidence in the real economy, motivating the shift in consensus toward expansionary policies in new-Keynesian style.

Over the years Italian policy makers appeared to be effectively supporting SMEs in stimulating productivity, investment in fixed assets, and in a lesser way, wages. At the same time, the level of unemployment, the general investment in R&D and in property plants and equipment, and the amount of taxes paid deteriorated. The results prove that moderate pro-stability measures were not sufficient to invert the negative trends in the economy. The measures in favour of productivity were beneficial but appeared to be too soft, as they were often conditioned on an initial investment which not all the SMEs could afford, and the Gov would only partly compensate firms for their extra expenditures. The policies enacted to promote fixed assets instead resulted decisive and favourable, showing that targeted monetary incentives are effective to stimulate SMEs. With regards to wages, the policies introduced were not sufficient to restore the level of salaries to pre-crisis period, and the small increase visible over the years, is probably due to a physiological bounce back after the austerity measures imposed before 2013. Short term contracts temporary and artificially

boosted employment in the years preceding 2015, but the reticence of the Italian Gov to develop unpopular measure in favour of the liberalization of the job market will still put Italy at a disadvantage compared to Germany. The Italian Gov failed to support wage growth and employment, as well as investment, especially at the expenses of SMEs. The measures in favour of R&D and PPE served mostly large companies, and the ones specifically targeted to SMEs were strongly unsuccessful, calling for more funding and incentives to promote research and innovation. To conclude, Italian SMEs were not sufficiently supported by the Gov, at the same time incurring in increasing taxes also in comparison to their large conational.

German policy makers instead, managed with their policy measures to stabilize or even improve the condition for their SMEs sector. While productivity, and investment in R&D, fixed assets, and PPE remained mostly constant over the 12 years period, the increases in the minimum wage are expected to have reduced the pressure on salaries for firms, and the number of employees in the work force. Despite the increasing public debt, German policy makers reduced the amount of taxes for business, showing that virtuous countries, where not recommended by organizations like the CEU, should embark in expansive policies to recover from a crisis.

[Incomplete]

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