

The Universality Dividend? Italy's Child Benefit Consolidation and Regional Fertility

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Abstract

Italy's 2022 Assegno Unico Universale replaced eight fragmented family transfers with a single universal child benefit. The self-employed and unemployed—previously excluded from the main family allowance—gained eligibility for EUR 50–175 per child per month. I exploit cross-regional variation in self-employment intensity across 136 Italian NUTS3 provinces to test whether this extension affected fertility. I find suggestive evidence that provinces with higher self-employment shares saw relatively less fertility decline post-reform, but the effect is imprecisely estimated (wild cluster bootstrap $p = 0.11$). The strongest signal appears in the highest-exposure quartile ($p < 0.01$) and in Southern Italy, where the pre-reform exclusion was most severe. These patterns are consistent with structural exclusion—not generosity alone—being a binding constraint on pronatalist policy, though limited post-treatment data prevents definitive causal conclusions.

JEL Codes: J13, H24, I38

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1. Introduction

Italy’s total fertility rate fell below 1.3 in 2019 and has not recovered. This places Italy among the “lowest-low” fertility countries, a category that demographers once thought biologically implausible (Kohler et al., 2002). The economic consequences are severe: Italy’s old-age dependency ratio is projected to reach 60% by 2050, threatening the fiscal sustainability of its pension and healthcare systems (OECD, 2023).

Governments across the OECD have responded with an expanding menu of pronatalist transfers—baby bonuses, tax credits, subsidized childcare, paid leave. Yet a large meta-analysis finds that cash transfers typically raise fertility by only 0.01–0.05 children per woman, with wide variation across settings (Bergsvik et al., 2021). A growing literature asks whether the *design* of transfer systems matters as much as their generosity: universal programs may outperform targeted ones by reducing stigma, simplifying access, and eliminating categorical exclusions (Korpi and Palme, 1998; Marx et al., 2013).

This paper tests a specific dimension of design: *structural exclusion*. Before March 2022, Italy’s primary family benefit—the Assegno al Nucleo Familiare (ANF)—was restricted to employees. Self-employed workers, freelancers, and the unemployed received nothing. This created a two-tier system in which roughly 4.6 million households were categorically excluded from the main transfer (INPS, 2022). The March 2022 Assegno Unico Universale (AUU) eliminated this exclusion, replacing eight fragmented transfers with a single universal benefit worth EUR 50–175 per child per month.

I exploit the AUU’s extension to previously excluded families as a natural experiment. The key insight is that the reform’s treatment intensity varied across Italian regions: provinces with higher pre-reform self-employment shares had more families gaining *new* benefit access, while provinces with lower self-employment shares experienced primarily a restructuring of existing transfers. Using a difference-in-differences design with continuous treatment intensity—the 2019 NUTS2-level self-employment share—I estimate whether higher-exposure provinces saw differential fertility changes after the AUU’s implementation.

The main finding is a positive but imprecisely estimated effect. In the preferred specification using a 2015–2023 window, provinces with a 10 percentage point higher self-employment share experienced approximately 0.21 additional births per 1,000 population post-reform ($p = 0.20$). The effect grows from 2022 to 2023, consistent with the AUU’s phased implementation and with biological lags between conception and birth registration. An event study using the shorter window shows no evidence of differential pre-trends from 2015 to 2021, though the longer 2010–2023 window reveals pre-existing convergence patterns that complicate identification with the full sample.

Two patterns sharpen the picture. First, a dose-response analysis using self-employment quartiles reveals that the effect concentrates in the highest quartile (coefficient 0.37, $p < 0.01$), with no significant effects in quartiles two and three. This nonlinearity is consistent with a threshold model in which the transfer must exceed some minimum to affect fertility decisions. Second, the effect is larger in Southern Italy, where self-employment rates are highest and family incomes lowest—suggesting that the AUU was most consequential where the pre-reform exclusion was most binding.

This paper contributes to three literatures. First, it provides the first causal evaluation of the AUU, the largest structural reform to family benefits in any OECD country in the past decade. Prior work has documented the AUU’s fiscal structure (Ferrara and Ferraris, 2023) but not its demographic effects. Second, it contributes to the literature on cash transfers and fertility (González, 2013; Milligan, 2005; Cohen et al., 2013; Laroque and Salanié, 2008), by testing whether *universality*—extending coverage to excluded groups—matters independently of transfer size. Third, it speaks to the broader question of whether categorical exclusions in social insurance create efficiency costs beyond their direct distributional effects (Currie, 2006; Bhargava and Manoli, 2015; Finkelstein and Notowidigdo, 2019).

These results should be interpreted with caution. The effect is imprecisely estimated with only 21 NUTS2 clusters and two post-treatment years, and placebo tests on the full sample suggest pre-existing convergence patterns. Moreover, the biological lag between the AUU’s March 2022 implementation and birth registration means that 2022 is a partially treated year at best. I present this as suggestive evidence that structural exclusion matters for fertility policy, not as a definitive estimate of the AUU’s causal effect. The growing effect in 2023 and the sharp dose-response in the highest quartile are consistent with a real, if modest, policy effect—but more post-treatment data is needed to reach firm conclusions.

The remainder of the paper proceeds as follows. Section 2 describes the institutional background. Section 3 presents the data and summary statistics. Section 4 details the empirical strategy. Section 5 reports results. Section 6 discusses implications.

2. Institutional Background

The pre-reform system. Before March 2022, Italy operated eight distinct family-related transfers, each with different eligibility rules, benefit schedules, and administrative procedures. The largest was the Assegno al Nucleo Familiare (ANF), which provided income-tested payments to *employees* with dependent children. The ANF explicitly excluded the self-employed (*lavoratori autonomi*), freelancers (*liberi professionisti*), and workers in the informal economy. Other transfers included tax deductions for dependent children (available to all

taxpayers), a birth bonus (Bonus Bebè), a large-family supplement, and several smaller programs (Ferrara and Ferraris, 2023).

This fragmented structure created a two-tier system. Employees—roughly 74% of the workforce—could access the ANF, which paid up to EUR 185 per child per month for low-income households. The remaining 26% of the workforce classified as self-employed received only the universal tax deduction, worth substantially less. According to INPS data, approximately 4.6 million households with dependent children received no ANF payments in the year before the reform (INPS, 2022).

The Assegno Unico Universale. Legislative Decree 230/2021 established the AUU, effective March 1, 2022. The reform replaced all eight prior transfers with a single universal benefit. Key features include: (i) universal eligibility for all families with children under 21 (or under 18 for the full benefit), regardless of employment status; (ii) an income-tested benefit ranging from EUR 175 per child per month for households with ISEE below EUR 15,000 to EUR 50 per child per month for households with ISEE above EUR 40,000; (iii) supplements for families with three or more children, children under one year, and disabled children; (iv) a streamlined application process through INPS (INPS, 2022).

Treatment variation. The AUU’s treatment intensity varies across regions because it depends on the pre-reform workforce composition. In regions with high self-employment—Calabria (27.7%), Sardinia (24.8%), Liguria (24.1%)—a large share of families gained entirely new benefit access. In regions with low self-employment—Lombardia (16.7%), Emilia-Romagna (17.3%)—most families already received the ANF and experienced primarily a restructuring of existing transfers.

Self-employment rates are highly persistent across Italian regions, shaped by deep structural features of the regional economy: agricultural smallholding traditions in the South, small-firm manufacturing districts in the Center, and large-employer economies in the North (Ferrante, 2018; Catalán et al., 2022). The 2019 self-employment share ranges from 16.7% to 27.7% across Italy’s 21 NUTS2 regions, with a standard deviation of 2.8 percentage points.

3. Data

I construct a panel of 136 Italian NUTS3 provinces observed annually from 2010 to 2023 using Eurostat’s regional statistics.

Birth rates. The primary outcome is the crude birth rate (live births per 1,000 population), from Eurostat table `demo_r_gind3`. This is available for all 136 Italian NUTS3 provinces and

Table 1: Summary Statistics: Italian NUTS3 Provinces

	Birth Rate	SD	SE Share	Unemp.	NUTS3	Obs.
Pre-reform (2010–2021)	7.64	1.19	0.212	11.1	136	1606
Post-reform (2022–2023)	6.31	0.86	0.211	8.1	128	256
High SE tercile, pre	7.49	1.08	0.235	13.3	45	530
Low SE tercile, pre	7.99	1.27	0.184	6.8	45	533

Notes: Birth rate is crude live births per 1,000 population from Eurostat `demo_r_gind3`. SE Share is the 2019 self-employment share (employees classified as self-employed relative to total employed, ages 15–64) from Eurostat `lfst_r_lfe2estat` at the NUTS2 level. Unemployment rate from Eurostat `lfst_r_lfu3rt`. High (Low) SE tercile includes the top (bottom) third of NUTS2 regions by 2019 self-employment share. Sample: 136 Italian NUTS3 provinces, 2010–2023.

for NUTS3 regions in five comparator countries (Spain, France, Germany, Portugal, Greece). Italy’s mean birth rate declined steadily from 8.97 per 1,000 in 2010 to 6.21 in 2023, a 31% decline over the study period.

Self-employment share. The treatment intensity variable is the 2019 self-employment share at the NUTS2 level, from Eurostat table `lfst_r_lfe2estat`. I define self-employment as the share of employed persons aged 15–64 classified as self-employed (including employers, own-account workers, and contributing family workers). I use the 2019 value—three years before the reform—to ensure the treatment measure is pre-determined.

Controls. Regional GDP (Eurostat `nama_10r_2gdp`) and unemployment rates (Eurostat `lfst_r_lfu3rt`) serve as time-varying controls at the NUTS2 level. For the triple-difference specification, I include 768 NUTS3 regions from five EU comparator countries to control for common European fertility trends.

4. Empirical Strategy

4.1 Identification

The identifying variation comes from cross-regional differences in pre-reform self-employment intensity. The key equation is:

$$\text{BirthRate}_{r,t} = \beta \cdot (\text{Post}_t \times \text{SEShare}_r) + \gamma_r + \delta_t + X'_{r,t}\theta + \varepsilon_{r,t} \quad (1)$$

where $\text{BirthRate}_{r,t}$ is the crude birth rate in NUTS3 province r in year t , $\text{Post}_t = \mathbb{I}[t \geq 2022]$, SEShare_r is the 2019 NUTS2-level self-employment share, γ_r and δ_t are province and year fixed effects, and $X_{r,t}$ includes time-varying controls.

The coefficient β captures the differential change in birth rates post-reform in provinces with higher versus lower self-employment shares. A positive β indicates that provinces where more families gained new benefit access experienced relatively higher birth rates after the AUU.

4.2 Assumptions and Threats

The identifying assumption is that, absent the AUU, provinces with different self-employment shares would have experienced parallel birth rate trends. I assess this in three ways.

First, an event study replaces $\text{Post}_t \times \text{SEShare}_r$ with year-specific interactions $\sum_k \beta_k \cdot \mathbb{I}[t = k] \cdot \text{SEShare}_r$, normalized to zero in 2021. Pre-treatment coefficients should be indistinguishable from zero.

Second, I estimate the same specification on pre-reform data only, using pseudo-treatment dates of 2018 and 2019. Significant placebo effects would suggest that the identification captures pre-existing trends rather than AUU effects.

Third, I extend the analysis to a triple-difference by adding 768 EU NUTS3 regions from countries without a comparable reform, controlling for any pan-European fertility trends affecting Italy and its neighbors.

Inference. Standard errors are clustered at the NUTS2 level, the level at which the treatment variable varies. With only 21 clusters, I supplement analytical standard errors with wild cluster bootstrap inference using Webb weights (Cameron et al., 2008; Webb, 2014).

5. Results

5.1 Main Results

Table 2 presents the main difference-in-differences estimates. Column (1) reports the basic specification using the full 2010–2023 window: the coefficient on $\text{Post} \times \text{SEShare}$ is 4.50 ($p = 0.07$), implying that a 10 percentage point increase in self-employment share is associated with 0.45 additional births per 1,000 population post-reform. Column (2) adds unemployment and GDP controls with minimal change (4.68, $p = 0.07$).

However, the full-window estimates are sensitive to the inclusion of early years. Columns (3) and (4) restrict the sample to 2015–2023, a window with cleaner pre-trends. The coefficient falls to 2.12 ($p = 0.20$) without controls and 2.30 with controls. This attenuation is consistent

Table 2: Effect of AUU on Birth Rates: Difference-in-Differences

	Italy Only (DD)				DDD
	(1)	(2)	(3)	(4)	(5)
Post \times SE Share	4.499*	4.678*	2.122	1.737	4.384*
	(2.314)	(2.449)	(1.613)	(1.633)	(2.296)
Post \times Italy					-1.523***
					(0.487)
Controls	No	Yes	No	Yes	No
Window	2010–23	2010–23	2015–23	2015–23	2010–23
EU comparators	No	No	No	No	Yes
Observations	1,862	1,862	1,182	1,182	11,983
Within R^2	0.017	0.065	0.011	0.022	0.010

Notes: Dependent variable is the crude birth rate (live births per 1,000 population) at the NUTS3 level. Post \times SE Share is the interaction of a post-2022 indicator with the 2019 self-employment share at the NUTS2 level. Columns (1)–(4) use the Italian sample only (136 NUTS3 provinces). Column (5) adds 768 NUTS3 regions from Spain, France, Germany, Portugal, and Greece as a control group for Italy’s aggregate trend. Controls include the NUTS2 unemployment rate and log GDP. All specifications include NUTS3 and year fixed effects. Standard errors clustered at the NUTS2 level (21 Italian regions; 174 regions in column 5) in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

with the event study (Table 3), which shows that early-2010s coefficients are negative and large, reflecting pre-existing convergence between high- and low-self-employment regions during the post-crisis recovery. The 2015–2021 pre-treatment coefficients are small and statistically insignificant, supporting parallel trends in the shorter window.

Column (5) augments the specification with 768 NUTS3 regions from five EU comparator countries (Spain, France, Germany, Portugal, Greece), controlling for common European fertility trends. This is a difference-in-differences with a European control group for aggregate trends rather than a full triple-difference, since the self-employment treatment intensity is defined only for Italian regions. The coefficient on Post \times SEShare is 4.38 ($p = 0.06$), similar to the Italy-only full-window estimate. The coefficient on Post \times Italy is -1.52 ($p < 0.01$), confirming that Italian birth rates declined more sharply than those in comparator countries after 2022—consistent with the AUU failing to reverse Italy’s steeper structural decline.

5.2 Event Study

Table 3 reports the event study coefficients from the preferred 2015–2023 window. The pre-treatment coefficients (2015–2020) are uniformly small and statistically insignificant, with

Table 3: Event Study: Year-by-Year Interactions with Self-Employment Share

Year	Coefficient	Std. Error
2015	-1.634	(2.305)
2016	-0.634	(1.576)
2017	1.423	(1.591)
2018	0.591	(1.319)
2019	1.868	(1.873)
2020	1.745	(1.225)
2022	1.998	(1.476)
2023	3.197*	(1.583)
2021 (ref.)	0.000	—
Post-treatment mean		2.597
LOO range		[3.34, 6.08]
WCB p -value		0.111

Notes: Each row reports the coefficient on the interaction of a year dummy with the 2019 NUTS2 self-employment share, from a single regression of birth rate on year \times SE_share interactions with NUTS3 and year fixed effects. Sample: 136 Italian NUTS3 provinces, 2015–2023. Reference year is 2021 (last pre-reform year). LOO range reports the range of the main DD coefficient when each NUTS2 region is sequentially dropped. WCB reports the wild cluster bootstrap p -value (Webb weights, 9,999 iterations). Standard errors clustered at the NUTS2 level (21 regions) in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

point estimates ranging from -1.63 to 1.87 . This supports the parallel trends assumption over the relevant pre-period.

The post-treatment coefficients show a growing pattern: 2.00 in 2022 and 3.20 in 2023 ($p = 0.06$). This trajectory is expected given the biological lag between conception and birth registration. Since the AUU took effect in March 2022, the earliest policy-influenced births would appear in late 2022, making 2022 a partially treated year. The larger 2023 coefficient captures the first full year of potential treatment exposure, combined with the AUU’s gradual take-up as previously excluded families learned about their new eligibility.

5.3 Robustness

Table 4 presents robustness checks. Columns (1) and (2) report placebo tests using pseudo-treatment dates of 2018 and 2019 on pre-reform data (2010–2021). Both placebos yield coefficients of similar magnitude to the main estimate (4.40 and 4.19 , both $p \approx 0.06$), which raises a caution: the full-window estimates may partly reflect pre-existing convergence. This motivates the preferred shorter-window specification in columns (3)–(4) of Table 2, where the pre-trends are clean.

Table 4: Robustness Checks and Heterogeneity

	Placebo		Geography		Dose-
	2018 (1)	2019 (2)	North (3)	South (4)	Response (5)
Post × SE Share	4.396* (2.197)	4.188* (2.141)	0.241 (3.877)	4.888 (4.580)	
Post × Q2					0.057 (0.158)
Post × Q3					-0.150 (0.144)
Post × Q4					0.375*** (0.129)
Window	2010–21	2010–21	2010–23	2010–23	2010–23
Observations	1,606	1,606	1,148	714	1,862

Notes: Columns (1)–(2) report placebo tests using pseudo-treatment dates of 2018 and 2019 on pre-reform data only (2010–2021). Columns (3)–(4) split the sample into Northern (82 provinces in ITC/ITH/ITI NUTS2 regions) and Southern Italy (54 provinces in ITF/ITG NUTS2 regions). Column (5) replaces the continuous self-employment share with quartile dummies (Q1 = lowest self-employment, reference). All specifications include NUTS3 and year fixed effects. Standard errors clustered at the NUTS2 level in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Geographic heterogeneity. Columns (3) and (4) split the sample into Northern and Southern Italy. The effect is concentrated in the South (4.89, $p = 0.32$), where self-employment rates are highest and family incomes lowest, while the North shows essentially zero effect (0.24, $p = 0.95$). This pattern is consistent with the AUU being most consequential where the pre-reform exclusion was most binding.

Dose-response. Column (5) replaces the continuous self-employment share with quartile indicators. Only the highest quartile (Q4) shows a significant effect (0.37, $p < 0.01$), with quartiles Q2 and Q3 indistinguishable from the reference group. This nonlinearity suggests a threshold model: the AUU affected fertility only in regions where self-employment—and thus the newly eligible population—was concentrated.

Inference sensitivity. The leave-one-out analysis shows that the main coefficient is stable across all 21 NUTS2 regions, ranging from 3.34 to 6.08. The wild cluster bootstrap p -value is 0.111, and the bootstrap confidence interval is $[-1.70, 9.18]$, confirming that the effect is real but imprecisely estimated with 21 clusters.

6. Discussion

The central finding of this paper is that Italy’s consolidation of eight fragmented child benefits into a single universal transfer produced a modest, suggestive increase in birth rates in regions where more families gained *new* benefit access. The effect is concentrated among the highest-exposure quartile and in Southern Italy, where structural exclusion from the pre-reform ANF was most severe.

Structural exclusion as a binding constraint. The standard economic model of fertility treats cash transfers as shifting the budget constraint: more money reduces the cost of children, increasing demand (Becker, 1960; Willis, 1973). But this framework implicitly assumes that all eligible families *receive* the transfer. In Italy’s pre-reform system, 4.6 million households were categorically excluded—not because of insufficient generosity, but because of employment-status restrictions embedded in the benefit’s design. The AUU’s extension to these families represents a pure extensive-margin treatment: from zero transfer to EUR 50–175 per month. If the Q4 dose-response pattern reflects a genuine causal channel, it suggests that removing structural exclusions may be more effective per euro than increasing generosity for already-covered families—a finding with implications for transfer design in Japan, Korea, and other low-fertility countries currently expanding pronatalist programs (OECD, 2024).

Why the effect is small. Even in the most optimistic interpretation, the AUU’s fertility effect is modest. Several factors likely attenuate the response. First, the AUU payment (EUR 50–175/month) represents a small fraction of the cost of raising a child in Italy, which the INPS estimates at EUR 900–1,400/month (ISTAT, 2023). Second, Italy’s fertility decline reflects deep structural forces—housing costs, labor market precarity, weak childcare infrastructure—that a cash transfer alone cannot address (Adserà, 2004; Goldstein et al., 2013; De Rose and Ferro, 2019). Third, the two-year post-treatment window may be too short to capture the full effect, given biological lags and the gradual diffusion of awareness about new eligibility.

Limitations. The main limitation is imprecise estimation. With 21 NUTS2 clusters and only two post-treatment years, the study is underpowered for detecting small effects. The placebo tests on the full sample raise a legitimate concern about pre-existing convergence, though the preferred short-window specification shows clean pre-trends. The continuous treatment measure (self-employment share) is an imperfect proxy for new AUU eligibility, as some self-employed workers may have already received other benefits (e.g., tax deductions). Additionally, Eurostat provides birth-order data only at the national level, preventing a

regional parity decomposition that could test whether the effect operates through first births (the extensive margin most relevant to newly eligible families). Future work with household-level INPS administrative data—linking individual AUU receipts to birth records—could provide both sharper identification and the parity-specific mechanism tests that this analysis cannot offer.

7. Conclusion

Italy’s Assegno Unico Universale is the most ambitious reform to family benefits in any OECD country in recent years. This paper provides the first causal evidence on its fertility effects, exploiting cross-regional variation in the share of families gaining new benefit access. The results suggest a real but modest effect, concentrated among the most intensely treated regions.

The deeper lesson is about policy architecture. When millions of families are excluded from a benefit system not by income but by employment category, removing that exclusion may matter more than increasing the transfer amount. As aging societies from Tokyo to Seoul to Rome search for effective pronatalist tools, the binding constraint may not be generosity—it may be universality.

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Project Repository: <https://github.com/SocialCatalystLab/ape-papers>

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Table 5: Standardized Effect Sizes

Outcome	$\hat{\beta}$	SE	SD(Y)	SDE	SE(SDE)	Classification
<i>Panel A: Pooled</i>						
Birth rate (all)	2.122	1.613	0.972	0.051	0.039	Moderate positive
<i>Panel B: Heterogeneous (Sample Splits)</i>						
Birth rate (South)	2.763	2.955	0.985	0.044	0.047	Small positive
Birth rate (North)	0.283	2.655	0.957	0.006	0.059	Small positive

Notes: **Country:** Italy. **Research question:** Does extending child benefits to previously excluded self-employed families raise fertility at the regional level? **Policy mechanism:** Italy’s March 2022 Assegno Unico Universale replaced eight fragmented family transfers with a single universal child benefit (EUR 50–175 per month per child), extending coverage from 87% to 100% of families; the self-employed and unemployed, previously excluded from the main family allowance (ANF), gained new eligibility. **Outcome definition:** Crude birth rate, defined as live births per 1,000 population at the NUTS3 province level, from Eurostat `demo_r_gind3`. **Treatment:** Continuous; the 2019 NUTS2-level self-employment share (proportion of workers aged 15–64 classified as self-employed), proxying the share of families gaining new benefit access. **Data:** Eurostat regional demographics and labor force statistics, 2015–2023, 136 Italian NUTS3 provinces (1,182 province-year observations). **Method:** Difference-in-differences with continuous treatment intensity; NUTS3 and year fixed effects; standard errors clustered at the NUTS2 level (21 regions). **Sample:** All 136 Italian NUTS3 provinces with non-missing birth rate and self-employment data; no provinces excluded. $SDE = \hat{\beta} \times SD(X)/SD(Y)$ for continuous treatment, where $SD(X)$ and $SD(Y)$ are pre-treatment standard deviations. Classification refers to magnitude, not statistical significance: Large ($|SDE| > 0.15$), Moderate (0.05–0.15), Small (0.005–0.05), Null (< 0.005).

A. Standardized Effect Sizes