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Perceptions Matter:

Quasi-Experimental Evidence on the Effects of Spain's New Minimum Income on Households' Financial Wellbeing

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Perceptions Matter: Quasi-Experimental Evidence on the Effects of Spain's New Minimum Income on Households' Financial Wellbeing

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Abstract

This paper examines Spain's minimum income scheme (MIS) introduced in 2020 and its impact on households' objective and subjective financial wellbeing. The study addresses two key motivations. First, there is no consensus on the effectiveness of MISs in improving households' financial wellbeing despite the renewed interest prompted by the Covid-19 pandemic, ecological transition and cost-of-living crisis. Second, existing literature primarily focuses on objective measures of financial wellbeing like monetary poverty, but it is crucial to understand how income improvements through MISs are perceived by households. These subjective perceptions play a significant role in people's health, productivity and decision-making and provide insights into adaptation mechanisms and spillover effects on non-recipients. The study uses Eurostat survey data aggregated at the national level from 2010 to 2022, employing a Synthetic Control Method analysis. Results show that during the initial year and a half of implementation, the policy had no statistically significant effect on households' material conditions (e.g. poverty rate, poverty gap and mean income). However, after two and a half years, it did considerably improve how households perceive the evolution of their finances. The paper discusses mechanisms explaining this differential impact, including the policy's phased implementation, benefit enhancements from 2022 onwards as well as anticipation, placebo and positive spillover effects of the MIS. The findings highlight the importance for practitioners to consider subjective financial wellbeing when assessing MISs.

Key words

Financial Wellbeing; Subjective Wellbeing; Minimum Income; Poverty; Quasi-Experiment; Synthetic Control Method

1 INTRODUCTION

This paper examines how Spain's new minimum income scheme affects households' financial wellbeing and whether this effect differs across objective material conditions and households' subjective perceptions. Minimum income schemes (MISs) are last-resort cash payments available to both working and non-working households who have insufficient financial means and are not entitled to contributory social insurance. These schemes are becoming increasingly relevant in the context of the Covid-19 pandemic, the ecological transition and the cost-of-living crisis as they can be used to support people who are either temporarily unable to work, who need time to learn new skills or whose wages are insufficient to cover living expenses (Cantillon *et al.,* 2019). Today, most countries have some form of MIS in place, although schemes differ in terms of how well they support beneficiaries. Countries like Denmark, Ireland or Slovakia have comprehensive MISs covering most households in need while others like Romania or Spain have weaker schemes with insufficient coverage (Almeida, Poli and Hernández, 2022). As a result, the Council of the European Union adopted in January 2023 a recommendation on common standards for adequate minimum incomes and now some practitioners are calling for a binding directive (Council of the European Union, 2023).

Despite the widespread use and relevance of MISs, a consensus does not exist among researchers and policymakers on the effectiveness of these schemes in improving the financial situation of households. In theory, giving cash to households should support them financially. However, the extent to which a MIS helps households depends on its various design elements, namely the generosity level and the coverage of people in need given its eligibility criteria, as authors such as Figari, Matsaganis and Sutherland (2013) or Almeida, Poli and Hernández (2022) have explained. The extent to which a MIS supports households also depends on behavioural responses such as the take-up of the benefit (e.g. Kleven and Kopczuk, 2011; Frazer and Marlier, 2016 in the EU) or the labour supply reactions of beneficiaries who might be disincentivised to work (e.g. Lemieux and Milligan, 2008 in Quebec; Bargain and Doorley, 2011 in France; Moffitt, 2016 in the US). Therefore, due to the complexity of predicting the overall impact of a particular MIS based on theory alone, this paper aims to conduct an impact evaluation of the newly implemented Spanish MIS.

However, empirically settling the debate on the effects of minimum income schemes (MISs) has proven challenging due to the non-random allocation of these schemes, which results in a lack of valid counterfactuals. The individuals benefiting from MISs and the countries

implementing comprehensive MISs possess certain characteristics that inherently impact financial wellbeing. This self-selection into the policy creates difficulties in isolating the true effects of a MIS. Academics have attempted to overcome this issue by employing ex-ante simulation models to analyse the impact of MISs on households' finances. However, these models rely on strong assumptions about the behavioural responses of beneficiaries. To address this gap, I conduct an ex-post analysis using a causal inference method, specifically the synthetic control approach. This approach allows me to avoid relying on behavioural assumptions and solves for self-selection issues.

When evaluating MISs, researchers as well as national and international policymakers focus on so-called 'objective measures of financial wellbeing'. They look at how income support affects households' income and, more specifically, poverty levels since these schemes are targeted at the lower end of the income distribution (Fleche *et al.*, 2012; Xiao, 2013; Cantillon, Goedemé and Hills, 2019). Yet, while these objective measures are indeed central to households' financial wellbeing, they do not provide a complete picture of their experiences. 'Subjective financial wellbeing', which measures how households perceive their financial situation, can be more instrumental than objective material conditions in affecting overall financial wellbeing, health, educational attainment, productivity and decision-making (Layard and De Neve, 2023). Moreover, improvements in households' objective material conditions might not translate to improvements in subjective perceptions, revealing important information about adaptation mechanisms or spillovers to non-recipients (e.g. Seghieri, Desantis and Tanturri, 2006 in Europe; Jenkins, Sacker and Taylor, 2011 in Britain; Attah *et al.*, 2016 in Ghana, Zimbabwe and Lesotho). In this paper, I analyse and further the understanding of MISs while giving subjective financial wellbeing the central place it merits as a key goal for researchers, policymakers and society as a whole.

The paper examines the case of Spain, a country that introduced a new MIS in 2020 (the *Ingreso Mínimo Vital* or IMV). The IMV is an anti-poverty household-level measure available to Spanish residents above 23 years old with low income and wealth. It is a policy of great significance being the first non-contributory and non-categorical social benefit available at national level in the history of a country with persistently high levels of poverty and large regional differences. Up until the IMV introduction, the minimum income system in Spain was made up of 19 different regional MISs, which international institutions and academics assessed as having limited poverty alleviation capacity because of inadequate generosity, restrictive

eligibility criteria and low take-up (Arriba and Moreno, 2005; AIReF, 2019; European Commission, 2019; and Ayala *et al.*, 2021). The goal of the IMV is to homogenise this minimum income system, allowing beneficiaries to receive both the existing regional MISs and the common national-level IMV, which has more generous amounts and coverage than most regional schemes (see Figure 1 in Section 2.2). The policy aims to reach around 850,000 households in which 2.3 million individuals live.

The paper uses Eurostat survey data aggregated at the national level for the 2010-2022 period in a Synthetic Control Method (SCM) analysis as proposed by Abadie and Gardeazabal (2003) and Abadie, Diamond and Hainmueller (2010) as well as a Ridge Augmented SCM (RASCM) developed by Ben-Michael, Feller and Rothstein (2021), which is an extended version of the SCM that corrects for bias present in the SCM. The SCM has been coined as *'the most important innovation in the policy evaluation literature in the last fifteen years'* by Athey and Imbens (2017: 9). It has the potential to present causal effects of policy interventions by effectively addressing challenges related to self-selection and to the need for behavioural assumptions. It achieves this by constructing a counterfactual made of a combination of control units.

The results show that, while the policy had no statistically significant effect on households' material conditions (i.e. the poverty rate, the poverty gap and mean income) for its first year and a half of existence, it did considerably improve how households perceive the evolution of their finances after two years and a half. The policy increased the balance between those saying their financial situation improved and those saying it deteriorated by a magnitude of between 10.1 and 14.6 points. Spain's new MIS acted as a lifeline in times of economic uncertainty during the Covid-19 and cost-of-living crises. The paper discusses several mechanisms explaining this differentiated impact of the policy, such as the lagged rollout of the IMV, the effectiveness of the adjustments made to the policy from 2022 as well as anticipation, placebo and positive spillover effects of the benefit. The findings stress the importance for practitioners to consider subjective measures when assessing MISs.

The paper makes two key contributions to the literature. First, this paper is the first to use innovative supervised machine learning in the form of a synthetic control method to evaluate the causal effect of an income support measure, thus addressing methodological issues of the existing literature. It is also the first to find a causal effect of the new Spanish IMV. Results could not only be useful to the Spanish administration but to countries with similar socio-

economic conditions (e.g. South and Eastern Europe and Latin America) (Castles *et al.*, 2010) and, more broadly, to any policy context sharing the specific IMV design elements. Second, this paper goes beyond the narrow emphasis on income measures found in the existing literature and examines the impact of a MIS on households' subjective financial wellbeing, which is key to comprehending the full impact of MISs like adaptation and spillover effects.

The remainder of the paper is structured as follows. Section 2 provides background information on the effects that minimum income schemes have on households' financial wellbeing. Section 3 outlines the methodology. Section 4 details the data. Section 5 presents the main results and robustness checks. Section 6 discusses the implications of the analyses and Section 7 concludes.

2 BACKGROUND

2.1 HOW CAN MINIMUM INCOME SCHEMES IMPROVE FINANCIAL WELLBEING?

Policymakers and researchers have traditionally focused on objective material conditions, looking at how household income changes with minimum income support. Income is indeed central to shaping financial wellbeing, as those who report higher levels of household income also report higher levels of overall financial wellbeing, even after accounting for differences in financial capability, personality characteristics and other influencers (e.g. Porter and Garman, 1990 in the US; Joo and Grable, 2004 in the US; Muir *et al.*, 2017 in Australia; West, Cull and Johnson, 2021 in Australia and Iramani and Lutfi, 2021 in Indonesia). Since MISs are targeted to households on the lower end of the income distribution, the financial status of households is typically assessed by comparing their income with the national average or median income, labelling households as 'poor' if their income is below a certain proportion of the median (Iramani and Lutfi, 2021).

Whether MISs improve households' income depends on various factors. In theory, giving cash to households should support them financially, improving their income and reducing poverty at the national level. However, the extent of this support depends on (i) the generosity of benefit amounts, which should lift recipients out of poverty; (ii) the capacity of the eligibility criteria to cover all those in need and (iii) the level of take-up by entitled individuals (Figari, Matsaganis and Sutherland, 2013 in the EU and Almeida, Poli and Hernández, 2022 in the EU).

Moreover, MISs can fail to improve households' real material conditions because of adverse labour supply effects. The classic economic model foresees that giving households cash based on their low means could incentivise the unemployed to remain unemployed, the working poor to stay in low-intensity and low-paid jobs as well as other workers (initially above the minimum income threshold) to reduce their labour supply to qualify for the benefit (e.g. Murray, 1984; Portney and Mead, 1990; Moffitt, 2016). This traps households in poverty rather than lift them out of precarious situations.

Several studies analyse how MISs affect households' objective financial wellbeing. Studies point to a reduction in poverty from MISs (e.g. Rodrigues, 2004; Canova, Piccoli and Spadaro, 2015; Frazer and Marlier, 2016; Notten and Guio, 2016 in Germany, Greece, Poland, United Kingdom; Gallo, 2021). Although these studies find effects that are larger on reducing more severe levels of poverty, such as poverty measured as the proportion of people who have a net income below 40% of the national median household income (e.g. Gorjón and Villar, 2019 in the Basque Country; Gallo, 2021 in Italy; Almeida, Poli and Hernández, 2022 in the EU) as well as on reducing the poverty gap, i.e. the average distance of those defined as poor to the poverty line (e.g. Behrendt, 2000 in Germany, Sweden and the UK; Brunori, Chiuri and Peragine, 2010 in Southern Italy; and Frazer and Marlier, 2016 in the EU).

However, the above-mentioned studies use ex-ante simulation models, which, as noted by Sutherland (2017), have strong assumptions about behavioural responses of beneficiaries, namely high levels of take-up and a preference for leisure over labour. These assumptions are contested empirically. Non-take-up of minimum income benefits by entitled individuals is a widespread issue in the European Union (EU) with a recent comparative study establishing that in Germany, Belgium, Finland and the Netherlands between 30% and 50% of the eligible population does not access the benefits (European Commission, 2022b). Moreover, individuals often prefer working to being jobless as they derive non-monetary gains from employment (e.g. social interactions, self-realisation or a sense of citizenship) (Lister, 2004) and as prolonged spells of unemployment are associated with mental and physical health problems (Jefferis *et al.*, 2011).

Moreover, these studies do not look at the effect on mean household income, which provides important complementary information to poverty measures. The latter are subject to changes in median income that can influence the interpretation of financial wellbeing. During an economic downturn like the Covid-19 pandemic, it might be that the median income falls so

that the poverty threshold becomes lower. As a result, the number of people falling below this lower threshold is smaller and thus the poverty rate might be reduced or stay put even though the financial wellbeing of households has worsened due to the crisis. The mean disposable income can account for these changes in households' objective financial wellbeing. Hence, it is key to study the Spanish MIS in an ex-post analysis using a causal inference method and looking at different objective financial wellbeing indicators, namely the poverty rate, the poverty gap and mean income.

So far, I have discussed the centrality of household income to financial wellbeing and how a MIS could affect income. However, objective material conditions do not tell the whole story about households' financial wellbeing. Households' perceptions about their income matter too. Perceived changes in financial circumstances can be a stronger predictor of financial wellbeing than actual income changes as found by Brown, Taylor and Wheatley Price (2005) in Britain and by Winter *et al.* (1999) in Poland. It is thus important to also understand how MISs affect subjective financial wellbeing.

In theory, actual income changes through a MIS should be reflected in corresponding changes in households' perceived financial situation. Income support should improve subjective financial wellbeing via four main mechanisms: by allowing households to (i) improve their basic standards of living and expand choices in terms of consumption (including healthcare); (ii) improve their sense of control over finances as well as security and flexibility; and (iii) acquire goods, services and participate in activities that increase status within society (Lundberg *et al.*, 2010; Milligan and Stabile, 2011; Frijters and Krekel, 2021; and Simpson *et al.*, 2021).

However, it might also be that households' perceived change in their finances differs from their real situation, as their experiences are influenced by a range of factors (Dolan, Peasgood and White, 2008). First, improvements in objective living conditions can lead to short-lived and/or small improvements in subjective wellbeing because households' conception of the minimum satisfactory level of income increases over time depending on their new income or on that of others around them. To explain why countries increase their national income without corresponding improvements in happiness, Easterlin (1974) posited that people care about their income position relative to that of others.

Second, MISs can fail to improve subjective financial wellbeing despite material gains due to the stigma and shame attached to being poor and claiming social assistance. Since social assistance entitlements do not depend on contributions made in the past, many in society consider such benefits unfair and regard recipients as non-deserving (Moffitt, 1983; Currie, 2004). In this sense, society's attitudes towards social assistance in general and MISs in particular also matter for how income support affects subjective financial wellbeing.

Third, it might also be that the more stringent the conditionality measures attached to the receipt of social assistance (i.e. stricter job search requirements and harsher sanctions if conditions are breached), the lower the subjective financial wellbeing derived from such benefit (Haushofer and Shapiro, 2016 in Kenya; Lundberg, 2016 in the European Union; Davis, 2019 in the US; Wickham *et al.*, 2020 in the UK; Simpson *et al.*, 2021 in a review of studies in high-income countries). This is because greater conditionality reduces opportunities for recipients to pursue their own idea of a satisfying life and increases stress (Thornton and Iacoella, 2022).

Empirically, the literature on how MISs affect subjective financial wellbeing is very limited with only one Australian study looking at this explicit relation (Muir *et al.,* 2017) and finding that income support improves the perception of finances. However, while the literature has focused on how MISs affect the subjective wellbeing of recipients, the impact of MISs on households' perceived financial situation can go beyond direct beneficiaries in two main ways. First, following the idea that households' perception of their finances is affected by their relative rather than absolute income, the receipt of income support by some could degrade the relative income position of non-recipients causing jealousy and leading non-recipients to believe their financial situation has worsened through a mechanism of negative spillovers (Kassenböhmer and Haisken-DeNew, 2009 in Germany; and Kuhn *et al.*, 2011 in the Netherlands). It is worth noting that among small tight communities, the oppositive might take place: the higher income of some leads to more subjective wellbeing among neighbours because of empathy (e.g. Kingdon and Knight, 2007 in South Africa and Atsebi and Ferrer-i-Carbonell, 2022 in Tanzania).

Second, the mere announcement or introduction of an income support policy can lead to signalling effects and impact households' financial perceptions even before they have received the policy. There is a considerable body of literature noting how households regard policy announcements as a signal from the government and adjust their behaviours, expectations and confidence in economic conditions accordingly (OECD, 2010 in the UK; D'Acunto, Hoang

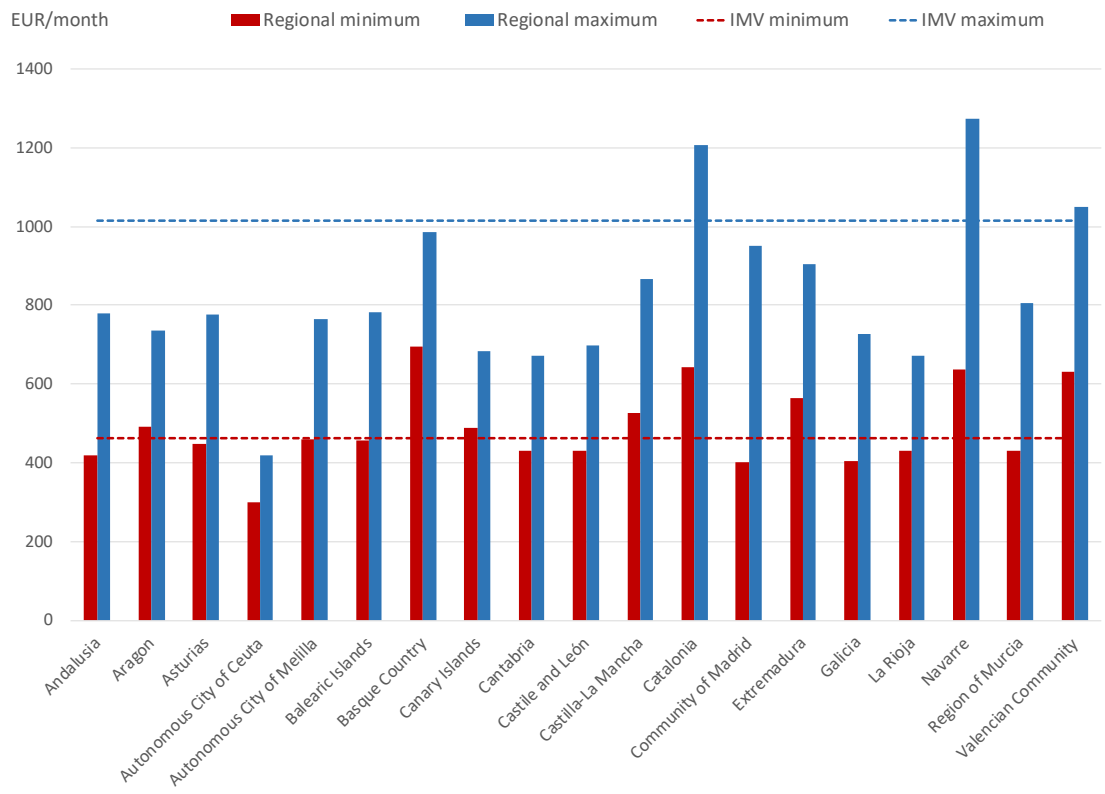
and Weber, 2019 in Germany; Lewis, Makridis and Mertens, 2019 in the US; Goldfayn-Frank, Kocharkov, and Weber, 2020 in Germany; and Melosi, Morita and Zanetti, 2022 in Japan). Hence, it is also key to study whether improvements in income through the Spanish MIS are reflected in perceived financial improvements, looking at this effect across the whole population.

2.2 HOW COULD THE SPANISH MIS IMPROVE FINANCIAL WELLBEING?

The theory points to different contradicting factors explaining how MISs affect households' actual income. Given these competing theories, I cannot predict the *overall* effect of the Spanish IMV on objective financial wellbeing indicators like the poverty rate, poverty gap and mean income, hence the need for an empirical analysis. On the one hand, the IMV has more generous amounts than most regional MISs (see Figure 1) and is expected to cover 247,000 more households than the regional MIS if fully implemented[1] (AIReF, 2022). As a result, the government expects to reduce the number of people living with less than 20% of the national median by 1.6 million (AIReF, 2019). Similarly, a microsimulation study estimated that the IMV would reduce the proportion of people living with less than 25% of the national median by 41% and that the corresponding poverty gap would be reduced by almost three quarters (a reduction from 4.6% to only 2.7% of the population) (Badenes Plá and Gambau-Suelves (2020). Thus, I could expect the IMV to reduce the poverty rate and gap and increase the average income in the country.

[1] This figure excludes the Basque Country and Navarre. The figure also does not account for the increased demand for income support during the Covid-19 pandemic context.

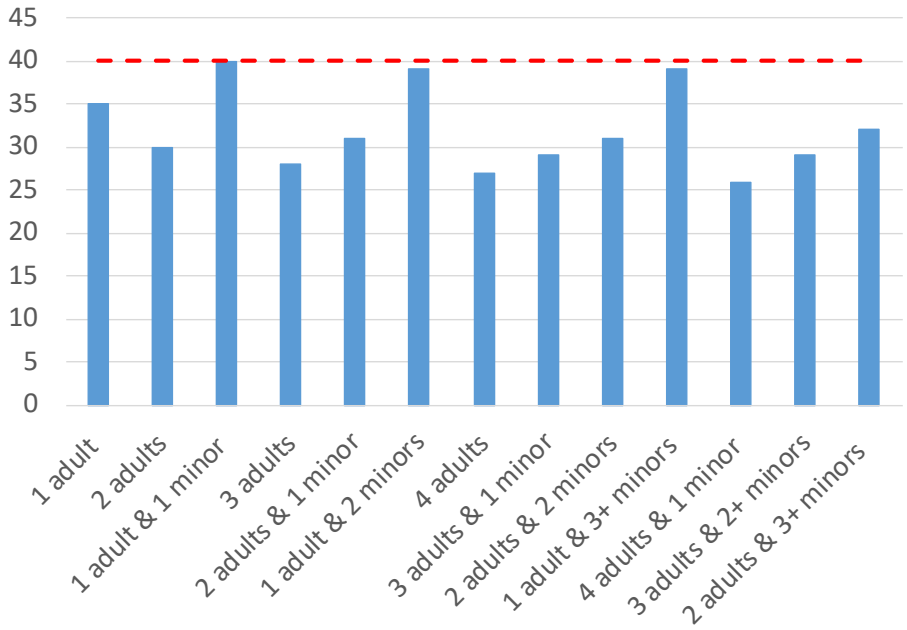
Figure 1 – Comparison of Benefit Amounts Between Regional MIS and the IMV in 2020



Source: Own construction from Ministry of Social Rights (2022)
Notes: Regional amounts are before the IMV introduction

Yet, on the other hand, the IMV amounts perform poorly when it comes to lifting people out of poverty measured at the 40% threshold, which is the indicator typically used to measure extreme poverty in high-income countries. Figure 2 shows the percentage of the national median household income that different types of households would reach if they benefitted from the IMV in 2020. Even if all types of households are brought closer to this threshold, only single-parent households manage to reach the 40% poverty threshold. Thus, even if the poverty gap is reduced and mean household income increased, it is less certain that the IMV will lower the poverty rate at the 40% threshold.

Figure 2 – Percentage of Median Household Income Guaranteed by IMV Amounts by Household Type in 2020



Source: AIReF (2022)

In addition, the low take-up of the IMV cast even more doubt on the policy's overall effect on the national poverty rate, poverty gap and mean income. As of December 2020, i.e. half a year after its introduction, the IMV had only reached 0.46 million individuals or 20% of its initial objective (La Moncloa, 2021; Ministerio de Inclusion, Seguridad Social y Migraciones, 2022a). As of December 2021, the IMV had reached 0.82 million individuals (36% of its objective) and as of December 2022, it had reached 1.54 million (67% of its objective).

Moreover, the policy might generate employment disincentives failing to improve households' financial situation. Before 2022, the benefit withdrawal rate was relatively large and recipients only had to register as job seekers with the regional public employment services within 6 months *after* their application had been approved. This obligation was suspended altogether in April 2022 as part of the government's response to the cost-of-living crisis. Moreover, the policy was introduced during the Covid-19 crisis when access to the labour market was limited. Thus, an empirical analysis of the Spanish IMV is needed to establish its overall effect on objective financial wellbeing.

Similarly, I cannot predict from the competing theories on how MISs affect households' subjective financial wellbeing whether income improvements through the Spanish IMV will be reflected in perceived improvements in households' financial situation across the whole

population. Hence the need for an empirical analysis. On the one hand, it might be that the IMV leads to perceived financial improvements since it represents a stable source of income that allows beneficiaries to plan expenses, bringing stability and reducing stress (EAPN, 2021). Moreover, conditionality measures and stigma might not reduce subjective financial wellbeing in the Spanish case. As mentioned above, the IMV did not include stringent employment conditionality measures and Spain is the third EU country with the highest approval of cash benefits for socially excluded people with 73% of Eurobarometer respondents agreeing that the government should spend more on this area, compared to an average of 59% in the EU-27 (European Commission, 2022a). The IMV in particular received broad social support, with 83.4% of Spanish people supporting the policy in May 2020 (CIS, 2020).

On the other hand, it might be that the IMV leads to no improvements in how households perceive the evolution of their finances. Recipient households might rapidly adjust their perceptions to their new financial situation and Spain is not a particularly small tight community, meaning negative spillovers and envy among non-recipients might apply. It could also be that in the Covid-19 crisis context, the government's hasty introduction of the IMV within less than two months after being announced signalled to Spanish households that the situation is worse than they initially thought, thus making households feel more pessimistic about the evolution of their finances.

Thus, I conduct an empirical analysis to establish the overall effect of the IMV on households' objective and subjective financial wellbeing. Before turning to the analysis, I detail the identification strategy and data.

3 IDENTIFICATION STRATEGY

For this study, I use the Synthetic Control Method (SCM), which is a data-driven approach that allows for the construction of a counterfactual for the treated unit in the absence of the intervention through a weighted combination of control units. The SCM is a supervised machine learning tool, whose algorithm is fed data, trained to find patterns and ultimately, is set to predict observations based on the found patterns. This method was first introduced by Abadie and Gardeazabal (2003) in a study of the economic impact of terrorism in the Spanish Basque Country region and was further developed by Abadie, Diamond and Hainmueller (2010) in an analysis of the effect of a tobacco control programme in California.

The SCM is very fitting to estimate the effect of the IMV given that the method aims at estimating the impacts of interventions implemented at the aggregate level affecting a small number of large units. One notable advantage of the SCM, particularly when compared to a Difference-in-Differences (DiD) design, is its ability to circumvent the assumption that, in the absence of the intervention, the outcomes of interest in the treated unit would have followed the same trajectory as a single control country. Given the unique circumstances surrounding the Covid-19 pandemic and the cost-of-living crises, it is unlikely that countries have experienced similar trends in financial wellbeing since the implementation of the IMV in June 2020. The SCM allows for differences in the evolution of the outcomes of interests across countries since the control does not depend on a single country. Moreover, using a combination of control units has the potential to reproduce the characteristics of a treated unit better than a single comparison unit.

With the SCM, I create a 'Synthetic Spain without the IMV' made of different control countries selected for their similarity with Spain in terms of variables that predict objective and subjective wellbeing measures. I am then able to compare what would have happened to financial wellbeing in Spain in the absence of the IMV with the real changes in financial wellbeing in Spain with the IMV and attribute the effect to the policy intervention. The identifying assumption underlying the SCM is that the financial wellbeing of Spain without the IMV would have trended similarly to Synthetic Spain after June 2020. The only difference between real and Synthetic Spain must be the IMV.

Formally, in my SCM model, there is a sample of $C + 1$ countries so that $c = 1, 2, \dots, C + 1$. The first country $c = 1$ is the treated unit (i.e. Spain) and $c = 2, \dots, C + 1$ is a collection of untreated units not affected by the intervention (i.e. the donor pool of countries). In my analysis, I consider 11 EU countries as my donor pool. I choose EU countries since they have similar socio-economic and cultural characteristics to Spain and since Eurostat provides standardised and comparable data for these nations. In Section 3.2 below, I explain why I focus on 11 specific EU countries.

There is also a number T of time periods where I observe these units. The IMV introduction occurs at time T_0 (i.e. June 2020) and is in place for the full post-treatment period starting with $T_0 + 1$ where $1 < T_0 + 1 < T$. I perform a yearly analysis, where I study the period 2010-2021. I start the pre-intervention period in 2010 as this is the earliest date for which suitable data are available for all control countries and I end the study in 2021 since this is the latest

date for which income data is available for all countries. I also conduct a more fine-grained monthly analysis, which allows me to use more pre- and post-intervention data points, where I study the period December 2019 – December 2022 (see Section 4 for more data information and Section 5.1.4.2 for the rationale behind the monthly analysis).

There is no consensus in the literature as to a suitable number of pre-intervention periods, the only rule being that the longer the pre-intervention period, the more credible the model. While authors like Peri and Yasenov (2015), Adhikari and Alm (2016) and Tomasi (2022) use a relatively low number of pre-intervention periods (i.e. 4, 6 and 3 years, respectively), others such as Abadie, Diamond and Hainmueller (2010), Pang, Liu and Xu (2021) and Gilchrist *et al.* (2022) use larger periods (i.e. 19, 29 and 50 years, respectively). In my analyses, I have an 11-year and a 6-months pre-intervention period, which falls in line with the literature.

There are also several outcomes of interest Y_{ct} for each country, *c* and time, *t*. In my analyses, the major variables of interest are objective financial wellbeing measures (i.e. the poverty rate, the poverty gap and mean income) and a subjective wellbeing measure (i.e. households' perceived change in their financial situation) (see Section 4 for outcome definitions). Let the outcome of interest for country *c* at time *t* in the absence of the IMV be Y_{ct}^{0} and let Y_{1t}^{1} represent the outcome if the *c*-th country is exposed to the IMV so that Spain is represented as $c = 1$. I assume the intervention has no impact on the outcome before the IMV introduction such that $Y_{1t}^{1} = Y_{ct}^{0}$ for $t < T_0 + 1$.

The IMV's effect is described by δ_{ct} and captures the difference between the observed and counterfactual financial wellbeing outcomes, which implies that $\delta_{ct} = Y_{ct}^{1} - Y_{ct}^{0} = Y_{1t}^{Observed} - Y_{1t}^{Counterfactual}$. Of these 2 outcomes, only one is observed. With the synthetic control estimator, I can model the other counterfactual outcome of Spain without the IMV. The synthetic control method uses an optimally chosen linear combination of the control countries that did not implement the IMV as a synthetic control unit.

To construct this control unit, the SCM sets weights for the countries in the donor pool and predictor variables. Let $C \times 1$ be a vector of weights $W = (w_2, \ldots, w_{C+1})'$ for each of the control countries. $w_2, \ldots, w_{C+1}$ are non-negative $w_c \geq 0$ and sum to one $\sum_{c=2}^{C+1} w_c = 1$. Thus, there is no extrapolation, meaning no country is given negative weights. Let $K \times 1$ be a vector of weights $V = (v_1, \ldots, v_k)$' for each of the k predictors X_{1c}, ..., X_{kc} of financial wellbeing (see Section 4 for more information on predictors).

Country weights W are chosen so that the resulting Synthetic Spain best resembles real Spain's pre-intervention values of financial wellbeing predictors. Optimal country weights $W^* = (w_2^*, \dots, w_{C+1}^*)'$ minimise:

$$\|X_1 - X_0 W\| = \sum_{k=1}^{k} v_k \left(X_{k1} - \sum_{c=2}^{C+1} w_c X_{kc} \right)^2 \quad (1)$$

where v_k is a weight reflecting the importance given to the k_{th} predictor when measuring the discrepancy between predictors for real and Synthetic Spain and where X_{kc} is the value of the k_{th} predictor for country c.

As seen in Equation 1, the choice of country weights W depends on the choice of predictor weights V. Weights V are chosen to minimise the mean squared prediction error with respect to Y_{1t}, i.e. weights V are chosen so that the resulting Synthetic Spain best resembles Spain's pre-intervention financial wellbeing trends, which in turn informs the choice of country weights W:

$$\sum_{t=1}^{T_0} \left(Y_{1t} - \sum_{c=2}^{C+1} w_c^* (V) Y_{ct} \right)^2 \quad (2)$$

To assess whether the estimated synthetic control accurately fits the path of the actual outcome for the treated unit in the pre-treatment period, I look at the mean squared prediction error (MSPE) between actual and Synthetic Spain's financial wellbeing outcomes during the pre-treatment period. The MSPE should be small, especially when compared to the dispersion of the outcome variables, which I measure with the range. I also perform a visual inspection of the fit.

Subsequently, the difference between the real and synthetic unit, i.e. the average treatment effect on the treated unit (ATT) $c = 1$ (i.e. Spain) in period $t = T_0 + 1, \dots, T$ can then be estimated as:

$$\delta_{ct} = Y_{1t}^{1} - \sum_{c=2}^{C+1} w_c^* Y_{ct}^{0} \quad (3)$$

where Y_{1t}^{1} is financial wellbeing in Spain, Y_{ct}^{0} is financial wellbeing in the countries in the control group, and w_c^* is the optimally chosen weights for every country in the control group.

3.1 THE RIDGE AUGMENTED SYNTHETIC CONTROL METHOD

To test the robustness of the SCM results, I use a Ridge Augmented Synthetic Control Method (RASCM), which is an extension of SCM recently developed by Ben-Michael, Feller and Rothstein (2021). Abadie, Diamond and Hainmueller (2010) show that the SCM estimator is unbiased under the assumption that an exact balance, i.e. an excellent fit on pre-treatment outcomes, can be achieved. Exact balancing can only happen if the treated unit is in the convex hull of the control units, i.e. if the treated unit's pre-treatment values of outcome and predictor variables are within the set of control units' values. However, this probability decreases as the number of pre-intervention periods grows (Ferman and Pinto, 2021). For exact balancing weights to exist, the number of control units N must therefore be exponentially larger than the number of pre-intervention periods T_0. In most SCM settings this is not the case as usually N $\sim T_0$. My setting is no exception with N = 11 and T_0 = 11 & 6, thus leading to potential bias and the need to corroborate results with a RASCM.

As a solution, Ben-Michael, Feller and Rothstein (2021) developed the Ridge Augmented Synthetic Control Method, which combines synthetic control weights with a regression adjustment for improved accuracy. The RASCM augments the SCM by using a different matching technique: it uses an outcome model to estimate bias in the SCM estimate when the pre-treatment match is not excellent and then uses this to de-bias the estimate. Ben-Michael, Feller and Rothstein (2021) propose the use of a ridge-regularised linear regression model as the outcome model. This approach can improve the pre-treatment fit by allowing for negative weights on some control units. Negative weights extrapolate outside of the convex hull, ensuring a much closer balance but resting more heavily on the assumption that the expected value of the outcome is approximately linear in the control outcomes. To minimise the extrapolation from the convex hull, the RASCM directly penalises the distance from non-negative SCM weights.

Formally, the RASCM estimator is: $\hat{Y}_{1T}^{aug}(0) = \sum_{i=2}^{N} \hat{\gamma}_i^{aug} Y_{iT}$, where the weights $\hat{\gamma}^{aug}$ are a solution to:

$$\min_{\gamma} \frac{1}{2\lambda^{ridge}} \| \left(Y_{1T_0} - Y_{iT_0}'\gamma\right) \|_2^2 + \frac{1}{2} \| (\gamma - \hat{\gamma}^{scm}) \|_2^2 \qquad (4)$$

$$\text{Subject to } \sum_{i=2}^{N} \gamma_i = 1$$

Where $\hat{\gamma}^{scm}$ are the SCM weights and λ^{ridge} is the hyperparameter which determines the amount of extrapolation (with the level of imbalance). Also, $\| \left(Y_{1T_0} - Y_{iT_0}'\gamma\right) \|_2^2 \equiv \left(Y_{1T_0} - Y_{iT_0}'\gamma\right)'\left(Y_{1T_0} - Y_{iT_0}'\gamma\right)$ and $\| (\gamma - \hat{\gamma}^{scm}) \|_2^2 \equiv (\gamma - \hat{\gamma}^{scm})'(\gamma - \hat{\gamma}^{scm})$ are the 2-norm on $\mathbb{R}^{T_0}$ and $\mathbb{R}^{N-1}$, respectively.

Following other studies using RASCM (e.g. Bouvet, Bower and Jones, 2022; Charotti, Palma and Santos, 2022; Esaka and Fujii, 2022; McGinty *et al.*, 2022; and Thom, 2022), I do not include covariates other than the pre-treatment outcome variable.

3.2 CONSTRUCTION OF SYNTHETIC SPAIN

To respect the identifying assumption underlying the SCM, namely that the financial wellbeing of Spain without the IMV would have trended similarly to that of Synthetic Spain after June 2020, I need to carefully select countries in the donor pool.

The first threat to this identifying assumption comes from control units adopting similar interventions around the same time as the IMV introduction. Including any country in the donor pool that was treated in the period under investigation implies that the synthetic unit is not reproducing the potential outcome in the absence of treatment. If the synthetic control was made of these control units, the difference in post-treatment financial wellbeing between real and Synthetic Spain would be biased towards zero. Thus, my results would give a lower bound on the magnitude of the IMV effect.

Belgium, Finland, Italy, Latvia, Luxembourg and Portugal implemented policies comparable to the IMV, so I exclude these countries from the donor pool. I regard a measure implemented in another EU country as comparable to the IMV introduction if it either constitutes (i) an increase in the MIS amount or (ii) an increase in coverage by making eligibility rules less

restrictive and if (iii) the changes are not a one-off measure and (iv) they happened around the same time as the IMV (March 2020-March 2021) (See Appendix 1 for a table summarising the policy changes implemented by the six excluded countries).

Since I study the Covid-19 crisis period, I also need to account for the fact that certain countries implemented considerably less (or more) income support measures than Spain at this time. Hale *et al.* (2021) developed an 'Economic Support Index', which measures countries' Covid-19-related income support and debt relief policies targeted at citizens[2]. I exclude countries that have an index consistently smaller (or larger) than Spain between March 2020 and March 2021 because were such countries to be part of Synthetic Spain, financial wellbeing would likely be smaller (larger) than it would have been in Spain in the absence of the IMV. This excludes Cyprus, Germany, Finland, Malta, Poland, Portugal, Slovenia and Sweden.

Another important threat to identification is the fact EU countries in the donor pool could have experienced the shock of Covid-19 very differently from Spain. If the donor countries that make up Synthetic Spain were less affected by Covid-19 and implemented less stringent lockdowns and regulations than in Spain, then post-intervention financial wellbeing would be greater than it would have been in Spain in the absence of the IMV, and vice-versa if countries were more affected than Spain. Hale *et al.* (2021) also developed a 'Stringency Index' measuring the strictness of lockdown policies by considering information on containment and closure policies[3] as well as public information campaigns. I exclude countries with a Stringency Index consistently below that for Spain between March 2020 and March 2021. This excludes Bulgaria, Denmark, Estonia, Finland, Latvia, Luxembourg and Sweden.

Finally, the presence of spillovers, i.e. the IMV affecting control countries, is another factor threatening the validity of the SCM assumption since it would mean Synthetic Spain trends differently than Spain without the IMV, leading to an under or overestimation of the policy effect. The IMV could affect other countries' financial wellbeing through changes in Spain's purchasing power and demand for foreign products. However, the indirect effect of the IMV

[2] These policies include direct cash payments to people who lose their jobs or cannot work (only including payments to firms if explicitly linked to payroll/salaries), freezing of financial obligations for households (e.g. stopping loan repayments, preventing services like water stopping or banning evictions), economic stimulus spending and Covid-19 related aid spending to other countries.

[3] These policies include closings of schools and universities, closings of workplaces, cancelling of public events, setting limits on gatherings, closing of public transport, orders to confine in the house, restrictions on internal movement between cities/regions and restrictions on international travel.

on other countries' financial wellbeing through imports/exports is likely to be very small. The IMV could also impact other EU countries' financial wellbeing by attracting EU residents in search of social benefits. Yet, there is limited evidence on the existence of 'welfare tourism' in the EU (Dustmann, Frattini and Halls, 2010; European Commission, ICF GHK and Milieu Ltd, 2013).

I end up with a donor pool of 11 EU countries to construct Synthetic Spain made of Austria, Croatia, Czech Republic, France, Greece, Hungary, Ireland, Lithuania, the Netherlands, Romania and Slovakia. This is in line with Abadie, Diamond and Hainmueller's (2015) recommendation of limiting the donor pool to countries similar to the one affected by the intervention to avoid the risk of overfitting and thus artificially matching the characteristics of the treated unit by combining idiosyncratic variations in a large sample of unaffected units.

4 DATA

I use national-level panel data from Eurostat for the period 2010 – 2022. The panel data is unbalanced.

4.1 OUTCOME VARIABLES

4.1.1 Objective Financial Wellbeing Measures

I investigate the *poverty rate,* i.e. the proportion of people who have a net income below 40% of the national after-tax and transfers median household income. This is a yearly variable constructed from Eurostat's EU statistics on income and living conditions (EU-SILC) survey. I use a relative rather than absolute poverty measure this is the most common understanding of poverty in European policymaking and academia. I take the 40% rather than the 60% poverty threshold since the IMV amounts are closer to the 40% threshold (See Figure 2) and the literature has found bigger effects on this measure, as explained in Section 2. This is the lowest poverty threshold provided by Eurostat.

I also include the *poverty gap*, i.e. the difference between the median equivalised disposable income of people below the 40% poverty threshold and the poverty threshold, expressed as a percentage of the poverty threshold. This is a yearly variable constructed from Eurostat's EU-SILC survey. I focus on this measure since the literature has found bigger effects on this

measure and the IMV amounts are more likely to bring people closer to the 40% threshold rather than take them above that, as explained in Section 2.

I also look at *mean disposable household income*, which is the sum of all the disposable income of all households divided by the number of households in the country. Disposable household income includes all income from work (employee wages and self-employment earnings), private income from investment and property, transfers between households and all social transfers received in cash, including old-age pensions. I look at mean disposable income on top of poverty measures since the latter are subject to changes in median income that can influence the interpretation of financial wellbeing.

4.1.2 Subjective Financial Wellbeing Measure

I examine the *perceived change in households' financial situation*. This is a monthly variable from Eurostat's Consumer Survey, which asks respondents how the financial situation of their household has changed over the past 12 months. Respondents can either answer (i) got a lot better; (ii) got a little better; (iii) stayed the same; (iv) got a little worse; (v) got a lot worse; or (vi) don't know. The variable is a balance, i.e. the difference between the percentage of respondents giving positive and negative answers. A negative balance means more people are saying their financial situation deteriorated than people saying it improved and vice-versa.

There are two potential caveats with this measure. First, while the question asks about the evolution of the financial situation of the whole household, the response is given by one household member alone. Yet, the opinion of one household member might differ from that of other members depending on (i) asymmetries in the allocation of resources within the household or in the information about household finances that different members possess; (ii) the personalities of different members, with women being on average more pessimists than men when it comes to their economic situation (Jacobsen, Lee and Marquering, 2008 in Europe and the USA); and (iii) different amounts of pressure households members feel to answer in a way that conforms with societal demands to succeed or that would please the interviewer (Bertrand and Mullainathan, 2001 and Bryman, 2016).

However, in my analysis, I assume that the answer given by the survey respondent reflects the perception of the entire household since the measure I study is not *cardinal,* asking respondents by how much the financial situation of the household has changed, but rather *ordinal,* merely asking whether their situation has changed. An ordinal measure leaves less room for

interpretations of the evolution of household finances and thus is less likely that significant differences will emerge among household members. Moreover, Eurostat's Consumer Survey targets respondents to achieve a representative sample of the population in terms of sex, age, education, income and occupation so that when the measure is aggregated across the whole national population, different approaches to the question across the survey respondents can be expected to cancel out.

Second, perception measures could be subject to the difficulty of inter-household comparisons of mental states (Bertrand and Mullainathan, 2001): for the same increase in household income, one household might perceive it as a big improvement, while another might consider its situation has only improved a little[4]. However, the specific measure I study limits this concern as it adds all positive responses and subtracts them from all negative ones. Moreover, numerous academics such as Winter *et al.* (1999), Di Tella and MacCulloch (2006) or Kahneman and Krueger (2006) have evidenced that self-reported subjective wellbeing is a stable concept that can be measured reliably across people.

4.2 PREDICTOR VARIABLES

I choose fourteen predictors based on what the literature has found to explain financial wellbeing in a country. Predictors are:

(i) *pre-intervention values of the poverty rate* (Kaul *et al.*, 2021);
(ii) *pre-intervention values of the poverty gap* (*ibid*)*;*
(iii) *pre-intervention values of the mean disposable income* (*ibid*)*;*
(iv) *pre-intervention values of the perceived change in households' financial situation* (*ibid*)*;*
(v) *difficulty making ends meet,* i.e. percentage of households reporting having great difficulty making ends meet (Salignac *et al.*, 2020);
(vi) *Gross Domestic Product per capita*, i.e. the ratio of the value of total final output of goods and services produced by an economy to the average population in a given year (Blank *et al.*, 1993);
(vii) *Gini coefficient* measuring the dispersion of income within a country and thus inequality (Hoynes, Page and Stevens, 2005);

[4] A household could also consider a certain income increase an improvement while another household would regard the same increase as a worsening. However, such a situation seems highly unlikely.

(viii) *low educational attainment,* i.e the population share with less than primary or just primary and low secondary education (ISCED 0-2) (Andriopoulou and Tsakloglou, 2011);

(ix) *high educational attainment*, i.e. population share with tertiary education (ISCED 5-8) (*ibid*);

(x) *social protection spending*, i.e. total government general expenditure on sickness and disability, old age, survivors, family and children, unemployment, housing, social exclusion and social protection related research and innovation, as a share of GDP (Danziger and Gottschalk, 1995)*;*

(xi) *health spending*, i.e. total government general expenditure on medical products, appliances and equipment, outpatient services, hospital services, public health services and health-related research and innovation, as a share of GDP (*ibid*);

(xii) *single-parent households,* i.e. the share of households with one adult and dependent children (Hoynes, Page and Stevens, 2005);

(xiii) *childcare use*, measured by the percentage of children aged between 3 years old and the minimum compulsory school age, who spend 30 hours or more per week in formal childcare (Grigoli, Koczan and Topalova, 2018); and

(xiv) *unemployment rate*, i.e. the share of people aged 15 to 74 who are not employed, currently available for work and actively seeking work as a percentage of the labour force (*ibid*).

In the monthly analysis, I only include the *pre-intervention values of the perceived change in households' financial situation* and the *unemployment rate* as the only predictors because of the limited availability of monthly data for countries in the donor pool.

5 RESULTS[5]

5.1 YEARLY ANALYSIS

5.1.1 Composition of Synthetic Spain

In the first step, the SCM algorithm assigns weights to each of the predictors that can range from 0 to 1 but must add up to 1, such that the variables that can most accurately predict the trend in financial wellbeing of Spain before the treatment receive the highest weights. Table 1

[5] All analyses are performed using the 'synth' and 'augsynth' packages in R.

displays the weights assigned to the predictor variables used to construct Synthetic Spain for each of the models. Each of the four models corresponds to a different outcome variable.

Looking at the poverty rate, the most important predictors are the pre-treatment average of the poverty rate and of the poverty gap as well as the Gini coefficient, which together account for 71.6% of all weights. Looking at the poverty gap, the pre-treatment averages of the poverty gap and poverty rate as well as the population share reporting having great difficulty making ends meet are most important, accounting for 65% of weights. In terms of mean household income, weights are more spread across all predictors. In the perceived change in financial situation model, it is the pre-treatment average of the perceived change in households' financial situation and the population share with high educational attainment, which are the most important predictors, accounting for 73.9% of weights.

Table 1 – Weights (in Percentages) Assigned to Predictor Variables Used to Construct Synthetic Spain

	Model 1 – Poverty rate	Model 2 – Poverty gap	Model 3 – Mean income	Model 4 – Perceived change in financial situation
Poverty rate	34.9	15	0.4	0.1
Poverty gap	20.9	18.8	1.3	3.8
Mean income	0	8	10.3	0
Perceived change in financial situation	7.4	14.6	0.1	30.1
Difficulty making ends meets	3.5	31.2	14.8	1.7
GDP per capita	0.3	6.9	0.7	0.2
Gini coefficient	15.8	1.6	6.6	0.5
Social protection spending	4.8	0	1.8	12.5
Health spending	0	0.8	9.5	5.2
Low education attainment ISCED 0-2	3.3	0.2	3.6	1.7
High education attainment ISCED 5-8	0	1.3	19	43.8
Single-parent household	6.7	1.5	2.3	0.2
Childcare use	2	0	16.3	0.1
Unemployment rate	0.2	0	13.3	0.1
MSPE	0.01	1.43	366	7.75
Range (max-min)	12.8	50.5	30,522	89.26

Note: Although some predictors are presented as having zero weight, the real value is not exactly zero but close to zero (e.g. 10^{-5}).

Next, the algorithm finds Synthetic Spain as a linear combination of countries in the donor pool, such that Synthetic Spain matches the values of the predictor variables with the highest predictive power for real Spain as closely as possible and the Mean Squared Prediction Error (MSPE) of the outcome variables before the intervention is minimised. Table 2 displays the

weights assigned to each control country for each model. Greece, the Netherlands, Lithuania and Romania, play an important role in the construction of Synthetic Spain.

Table 2 - Weights (in Percentages) Assigned to Countries Used to Construct Synthetic Spain

	Model 1 – Poverty rate	Model 2 – Poverty gap	Model 3 – Mean income	Model 4 – Perceived change in financial situation
Austria	0	15.3	0	0
Croatia	0	0	0	0
Czech Republic	0	0	0	0
France	12.4	0	26.6	0
Greece	21.9	15.7	42.8	24.4
Hungary	0	0	0	0
Ireland	0	0	9.3	22.9
Lithuania	0.1	15.5	12.2	1
Netherlands	5.9	16.8	9.1	52.7
Romania	59.7	36.7	0	N/A
Slovakia	0	0	0	0

Note: Although some predictors are presented as having zero weight, the real value is not exactly zero but close to zero (e.g. 10^{-5}). These countries receive such small weights because their similarity in predictors to Spain is smaller than for countries with larger weights.

Table 3 presents the pre-treatment sample means of predictors for Spain, Synthetic Spain and the countries in the control group. The differences in the averages between Spain and Synthetic Spain are mostly minor for all predictors and all models. Notable exceptions include the population share with low education attainment (in all models) and high attainment (Models 1 and 2), the unemployment rate (Models 1, 2 and 4), childcare use (Model 1, 2 and 4), the poverty rate (Model 3 and 4), mean income (Model 1 and 4), the population share having difficulties to make ends meet (Model 1 and 3), GDP per capita (Model 1 and 4), the perceived change in financial situation (Model 3), the poverty gap (Model 3) and the Gini coefficient (Model 4).

However, where these variables are different from the average value in Spain, the predictors have weights under 5% in their corresponding models, except for the population share having difficulties making ends meet in Model 3 with a weight under 15%. Thus, these different predictors do not considerably impact the construction of the synthetic control.

Table 3 – Descriptive Statistics (Means) for Predictor Variables Before the Intervention

	Spain	Synthetic Spain Model 1	Synthetic Spain Model 2	Synthetic Spain Model 3	Synthetic Spain Model 4[a]	Average of 11 Control Countries
Poverty rate	9.88	9.84	8.32	6.17	4.68	5.71
Poverty gap	34.42	33.32	33.61	27.12	31.26	28.55
Mean income	16,502	8,727	12,295	16,702	21,885	14,046
Perceived change in financial situation	-20.90	-20.83	-17	-30	-21.69	-17.27
Difficulty making ends meets	13.20	19.72	15	19.93	13.35	13.05
GDP per capita	25,280	20,065	24,088	27,246	34,568	26,092
Gini coefficient	33.90	33.14	32.04	31.60	28.90	29.58
Social protection spending	17.72	15.76	15.80	19.40	16.60	16.28
Health spending	6.35	5.33	5.80	6.33	6.87	6.45
Low education attainment ISCED 0-2	43.46	28.73	23.71	25.48	28.18	22.17
High education attainment ISCED 5-8	32.13	19.81	23.91	30.50	31.30	25
Single-parent household	3.05	2.60	3.81	3.85	4.06	3.79
Childcare use	42.40	22.50	28.37	42.53	21.84	42
Unemployment rate	20.05	9.68	7.52	14.30	10.34	9.37

Notes: The table presents the predictor variable mean values for real Spain, the synthetic control unit and the average of 11 control countries between 2010 and 2020

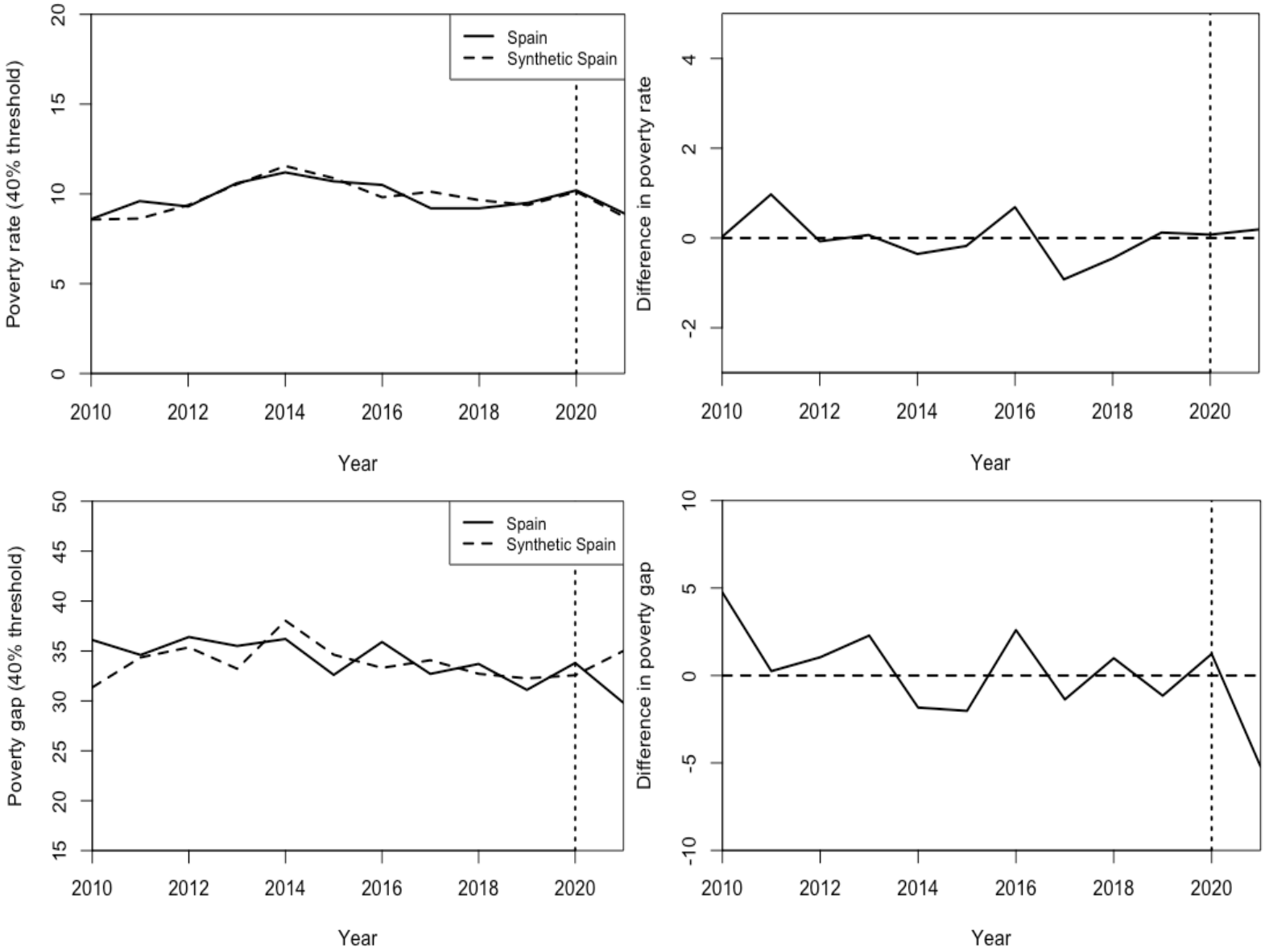
I consider 2020 a pre-intervention period because this allows me to account for the shock caused by the Covid-19 crisis in the synthetic control construction

[a]: The model excludes Romania from the donor pool as data for the outcome variable is unavailable for the full post-intervention period

The similarity in most predictors' means before the intervention points to a good pre-treatment fit between Spain and Synthetic Spain across the different models. Moreover, as shown in Table 1, the MSPE of all models is low when compared to the ranges of the outcome variables. The good fit of financial wellbeing measures before the IMV was introduced is also corroborated by a visual inspection of Figure 3 below.

5.1.2 Main Results on the IMV Effect on Financial Wellbeing

Figure 3 – Evolution of Financial Wellbeing Outcomes & Differences in Outcomes between Spain and Synthetic Spain



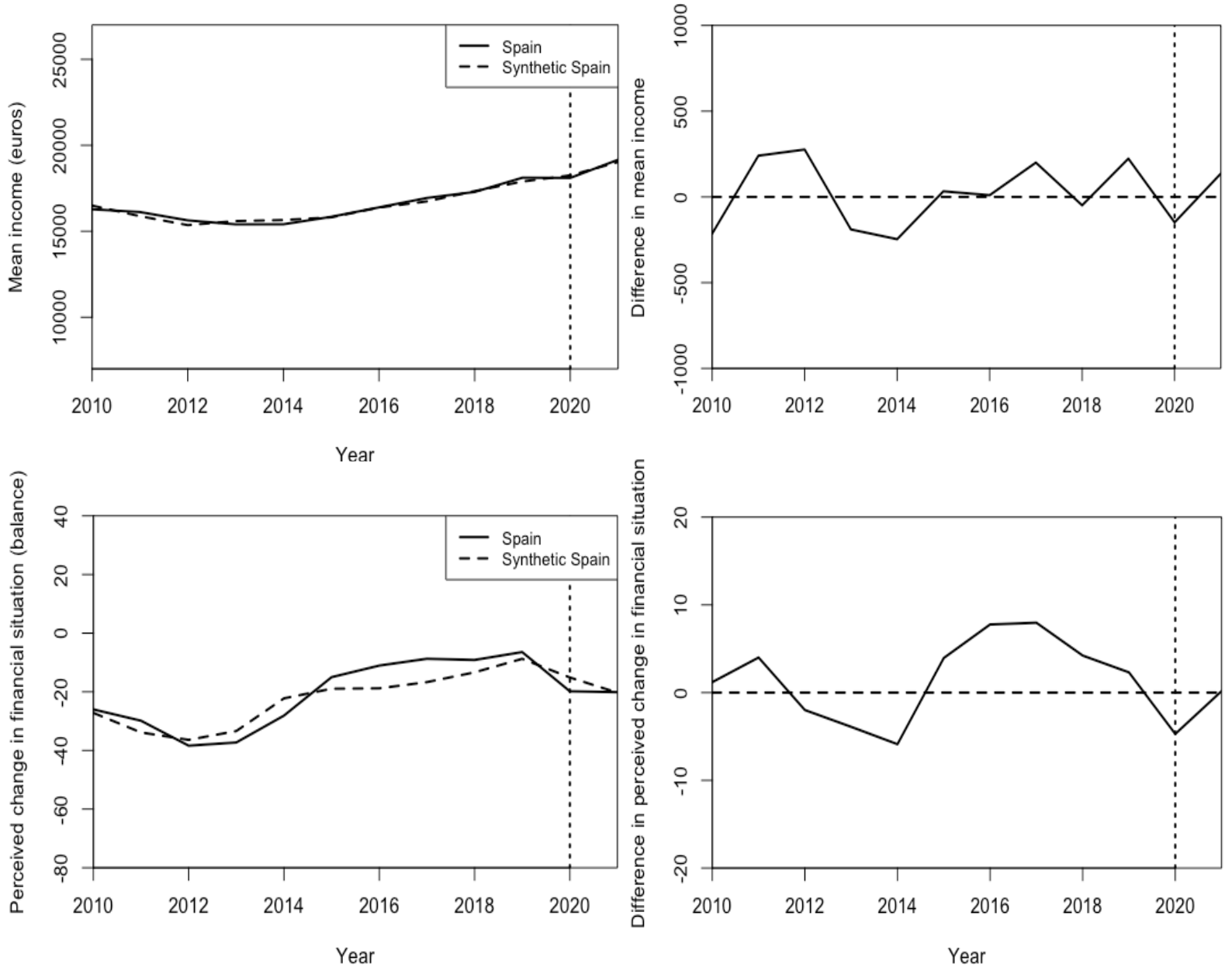


Figure 3 displays the trends in financial wellbeing outcomes for Spain and Synthetic Spain (left-hand panel) as well as the difference in these outcomes between Spain and Synthetic Spain (right-hand panel). All financial wellbeing measures in Spain follow approximately the same trend: a deterioration or stagnation during the Great Recession years, followed by a recovery until the Covid-19 pandemic hit. Financial wellbeing worsened in 2020 to then rebound in 2021. In this analysis, I am interested in investigating whether financial wellbeing in 2021 improved thanks to the IMV, i.e. whether financial wellbeing is higher in real Spain than in Synthetic Spain in the absence of the minimum income support.

Between 2010 and 2014, the poverty rate increased steadily, peaking at 11.2% of the population in 2014. Since then, the poverty rate declined until 2019, reaching 9.5%. In 2020, this rate increased again as could be expected in the context of the Covid-19 pandemic, when people either lost their jobs or saw their incomes decrease. However, by 2021, the poverty rate in Spain had decreased again and stood at 8.9%. The poverty rate of Synthetic Spain in the same year was 8.85%, indicating that the IMV could have increased the poverty rate by 0.05 percentage points. In section 5.1.3. below, I test whether the results are statistically significant.

The poverty gap follows a more erratic path, continuously increasing and decreasing between 2010 and 2020. Nonetheless, the overall trend shows an increase in the gap from 2010, peaking at 36.2% in 2014, followed by a decrease, reaching 31.1% in 2019. Similar to the poverty rate results, the poverty gap increased during the Covid-19 crisis and then decreased again, standing at 29.8% in 2021. The poverty gap in Synthetic Spain in 2021 was 35%. Thus, it would seem that the IMV reduced the poverty gap in Spain by 5.2 percentage points.

The mean household income in Spain decreased between 2010 and 2013, as can be expected during the Great Recession years. The Spanish mean income reached a minimum of 15,405 euros in 2013 to then recover and keep increasing until 2019. Mean income decreased slightly in 2020 to then pick up again at 19,160 euros in 2021. The mean household income in Synthetic Spain in 2021 was 19,024. It would seem that the IMV increased mean income in Spain by 136 euros.

Finally, the perceived change in the financial situation of households follows a similar pattern. The difference between those households saying their financial situation improved over the past 12 months and those saying it deteriorated, decreased during the crisis years to reach a minimum balance of -37.30 in 2013. The balance then picked up to reach -6.45 in 2019. Likely because of the Covid-19 pandemic, Spanish households became more pessimistic about the evolution of their finances with an increasing proportion of respondents saying their situation worsened compared to those saying it improved. By 2021, the financial situation change balance stood at -20.13. The balance for Synthetic Spain in the same year was -20.30, indicating that the IMV could have increased the balance by 0.17 points.

In sum, it appears that while the Covid-19 crisis in 2020 reduced financial wellbeing, both objective and subjective measures, by 2021, objective financial wellbeing indicators had recovered to pre-crisis levels. On the contrary, subjective financial wellbeing took longer to

cover and was still deteriorating in 2021. The more persistent deterioration in the perceived financial situation might be influenced by the uncertainty caused by the pandemic, which could have contributed to a sense of stress and lack of control over finances. The results seem to lend support for the literature positing that objective and subjective financial wellbeing measures move in different directions.

In terms of the effect of the IMV, while it seems that the policy slightly increased the poverty rate, it also seems to have had more virtuous effects on the other financial wellbeing indicators: the IMV could have reduced the poverty gap, increased the mean household income and made household feel less pessimistic about the evolution of their finances. I now turn to establish whether these results are statistically significant or have been achieved by chance.

5.1.3 Statistical Significance of Main Results

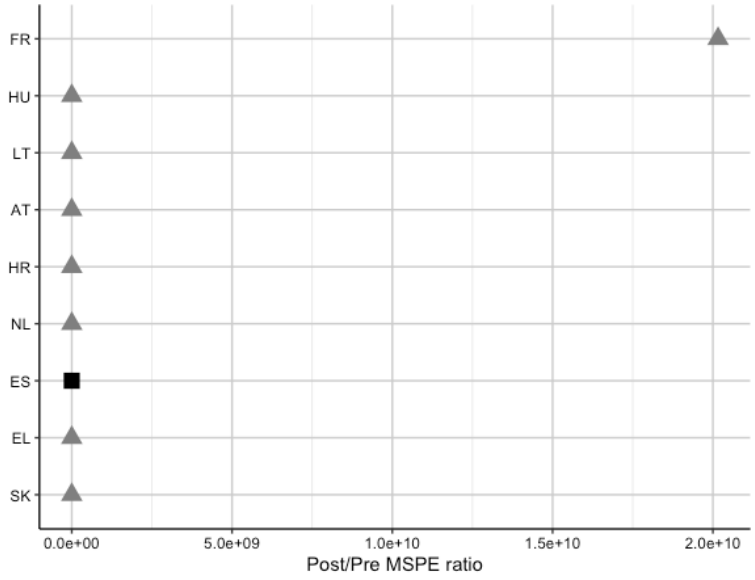
In a SCM, commonly used large-sample inferential techniques cannot be used to assess the statistical significance of the results since the number of control groups is small. The standard way to assess the significance of effects in a SCM is by calculating pseudo *P*-values obtained through permutation-based placebo experiments. These placebo experiments iteratively estimate the placebo treatment effect for each unit in the donor pool by falsely assuming that these units introduced the IMV. This tests whether any post-intervention difference in financial wellbeing between the synthetic unit and actual Spain could be driven entirely by chance or by a failure to accurately reproduce the counterfactual development of financial wellbeing. If this difference is large for real Spain compared to the placebos, this could be suggestive of a significant policy effect. Although pseudo *P*-values should be treated as suggestive of an effect rather than as a traditional null hypothesis-based inference, Firpo and Possebom (2018) found that this method performs well compared to other test-statistics in terms of size, power and robustness.

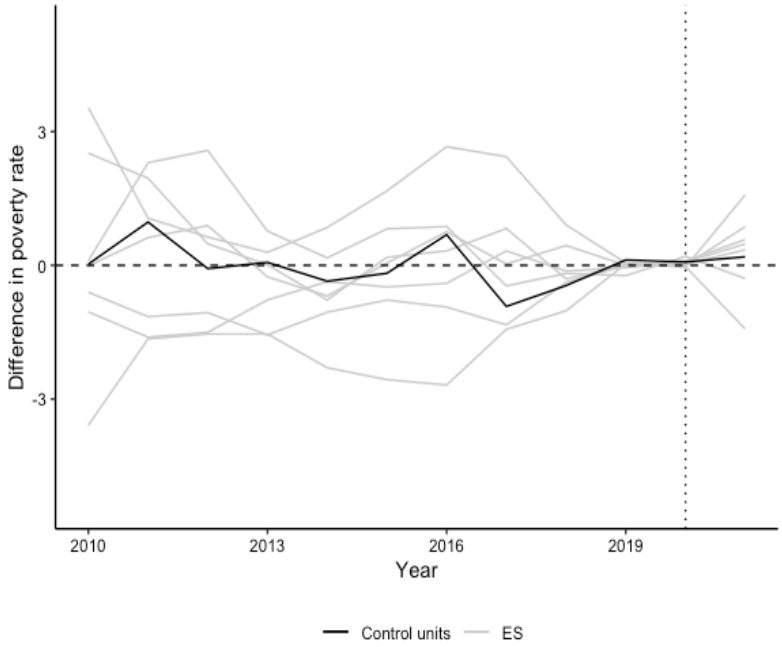
To obtain the pseudo-P-values, I repeat the analysis for the 11 countries that did not implement the IMV. I then calculate the post/pre mean squared prediction error (MSPE) ratio, that is the ratio of the root MSPE after and before 2020. The ratio gives the difference between the financial wellbeing of a unit and its synthetic control before and after treatment. A higher ratio means a small pre-treatment prediction error (a ‘good’ synthetic control) and a high post-treatment MSPE (a large difference between the unit and its synthetic control after the intervention).

Figure 4 displays the ratios for each of the countries in the donor pool and Spain in each of the four models (left-hand panel). I exclude all placebo cases with a pre-period MSPE exceeding two times the treated unit's pre-period MSPE, i.e. all those countries with a 'bad' synthetic control. Figure 4 also shows a 'spaghetti plot' displaying the difference in financial wellbeing outcomes of each country in the donor pool and in Spain, which is represented by the bold line (right-hand panel).

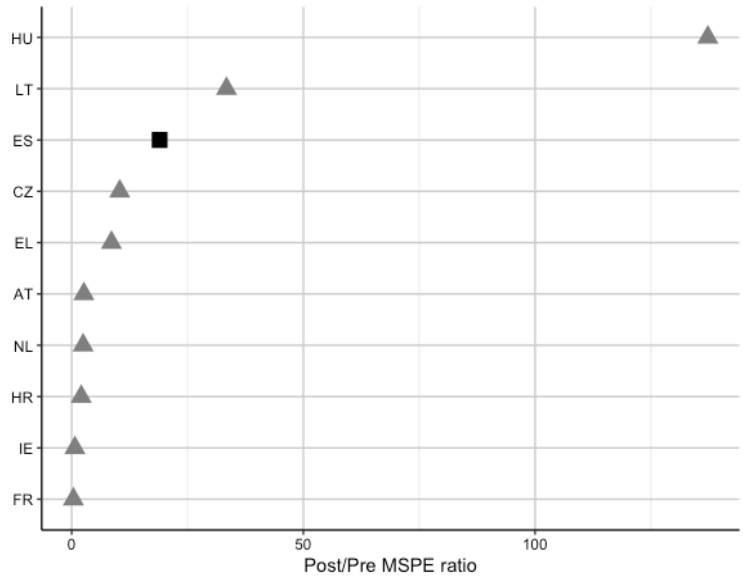
Figure 4 – Post/Pre-intervention Mean Squared Prediction Error for Spain and Control Countries & Spaghetti Plots

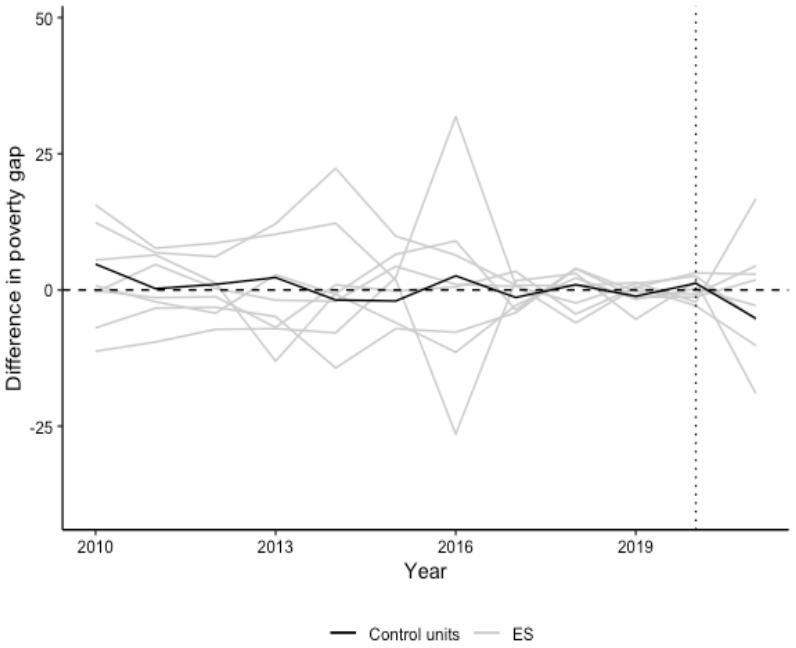
Model 1 – Poverty rate



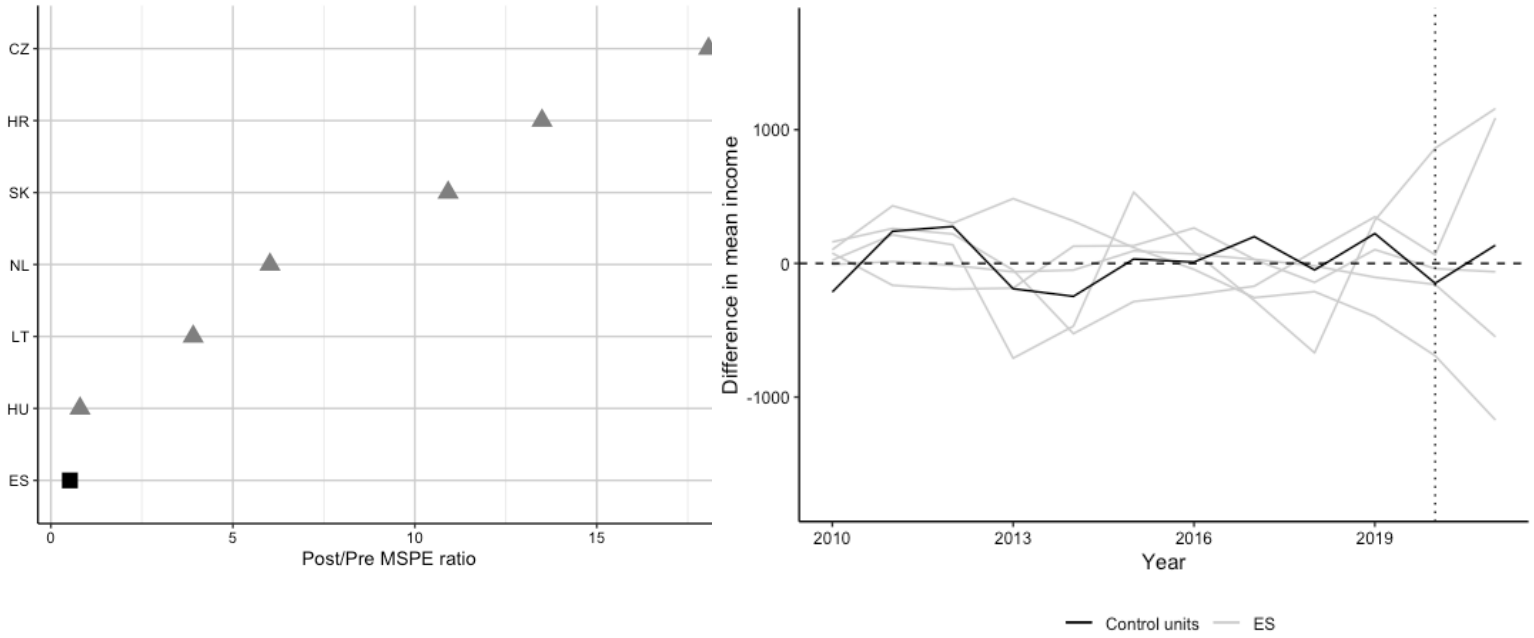


Model 2 – Poverty gap

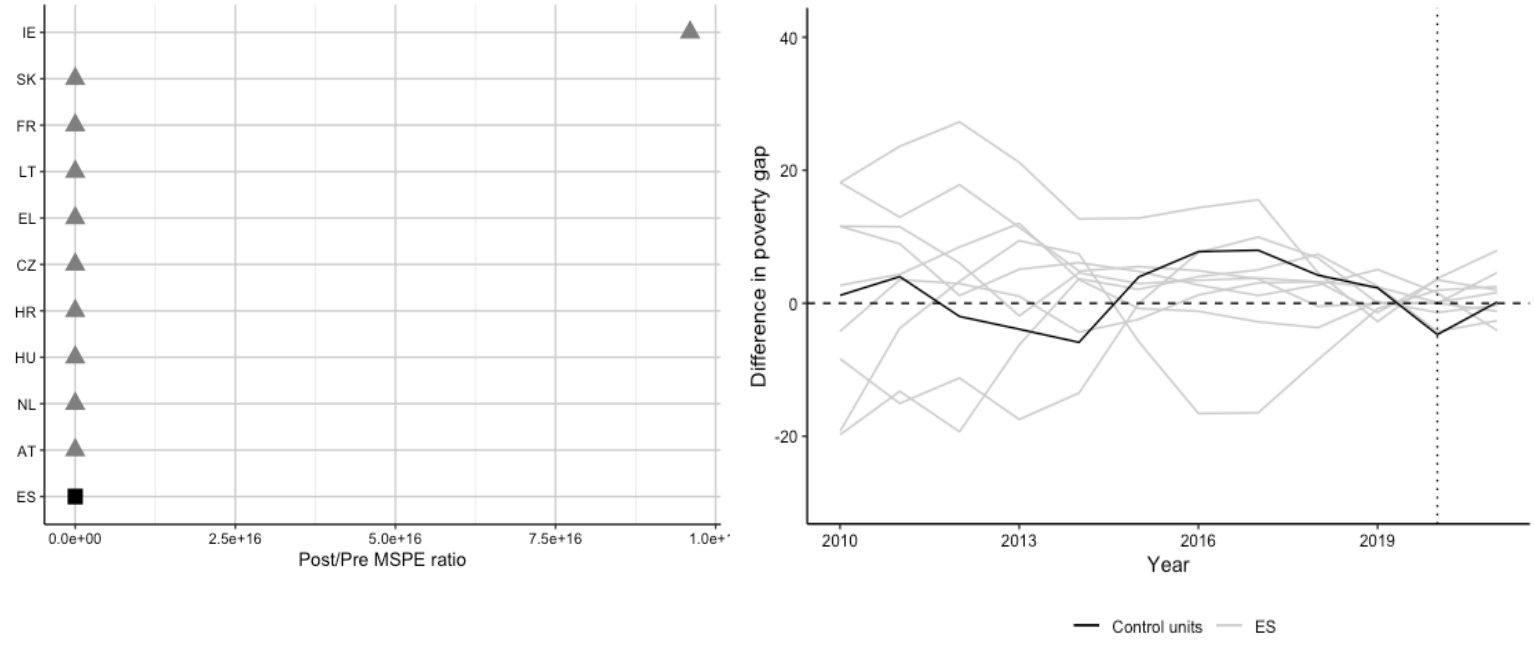




Model 3 – Mean income



Model 4 – Perceived change in household financial situation



The pseudo *P*-values is given by the fraction of the estimated post/pre MSPE ratios that are as large as the one estimated for Spain. The ratios are 7/9, 3/10, 7/7 and 11/11 for Models 1, 2, 3 and 4, respectively. Thus, the probability of obtaining an estimated effect on financial wellbeing at least as great as Spain was 77.8%, 30%, 100% and 100% in Models 1, 2, 3 and 4, respectively if the intervention was reassigned at random to the other countries. Adhikari

(2022) notes that if the placebo experiments create placebo treatment effects of magnitude greater than the one estimated for the treated unit in more than 10% of the placebo experiments (i.e. if the corresponding pseudo-P-value is greater than 0.1), then one can conclude that there is no evidence of an effect of the policy in the treated unit. Thus, I cannot conclude any statistically significant effect of the IMV in 2021 on either objective or subjective financial wellbeing measures in Spain.

5.1.4 Robustness Checks

I perform three different types of tests to check that the SCM analysis has been able to correctly reproduce the financial wellbeing trends in Spain in the absence of the IMV. I perform a Ridge Augmented Synthetic Control Analysis, 'leave-one-out' tests and in-time placebo tests.

5.1.4.1 Ridge Augmented Synthetic Control Analysis

As explained in Section 3.2, the validity of the SCM results depends on the assumption that an excellent pre-treatment fit can be achieved. Otherwise, results might be biased. However, a visual inspection of Figure 3 determines that there are some gaps in the pre-treatment fit of outcome variables between Spain and Synthetic Spain. Thus, I conduct the same analysis using the RASCM with no covariates. The method corroborates the insignificance of results found with the SCM.

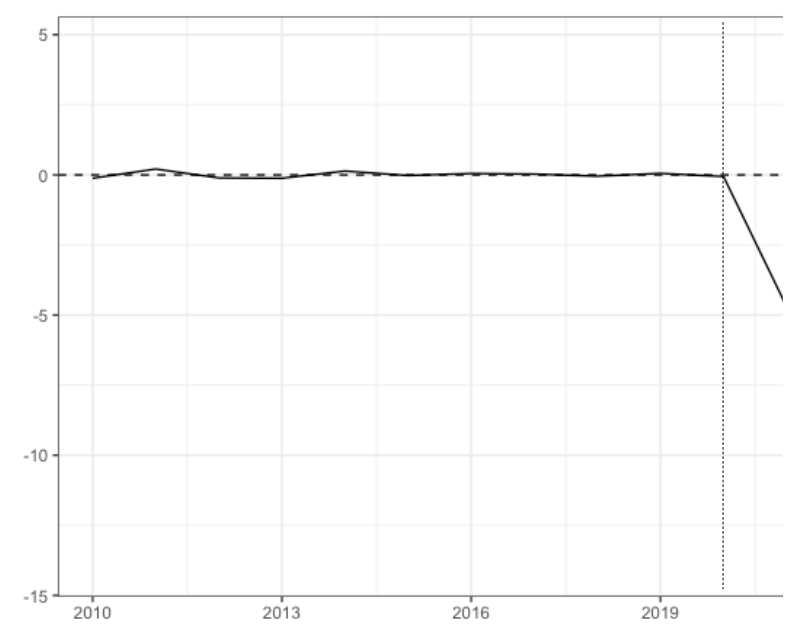
Figure 5 shows how the pre-treatment fit has improved considerably in all models with the RASCM compared to the SCM. Differences in outcomes between Spain and Synthetic Spain are mostly similar to those obtained with the SCM, except that the magnitude is now greater. It appears that the IMV decreased the poverty rate and gap as well as increased mean income and improved how households perceive the evolution of their finances.

Table 4 shows the magnitude of the differences in financial wellbeing outcomes between Spain and Synthetic Spain after the IMV introduction, i.e. the estimated average treatment effects of the IMV. The Spanish poverty rate and poverty gap seem to be 4.7 and 7.25 percentage points lower, respectively, than they would have been without the IMV. The mean income and the perceived change in the financial situation are also 459.75 euros and 6.29 points higher than they would have been with no IMV.

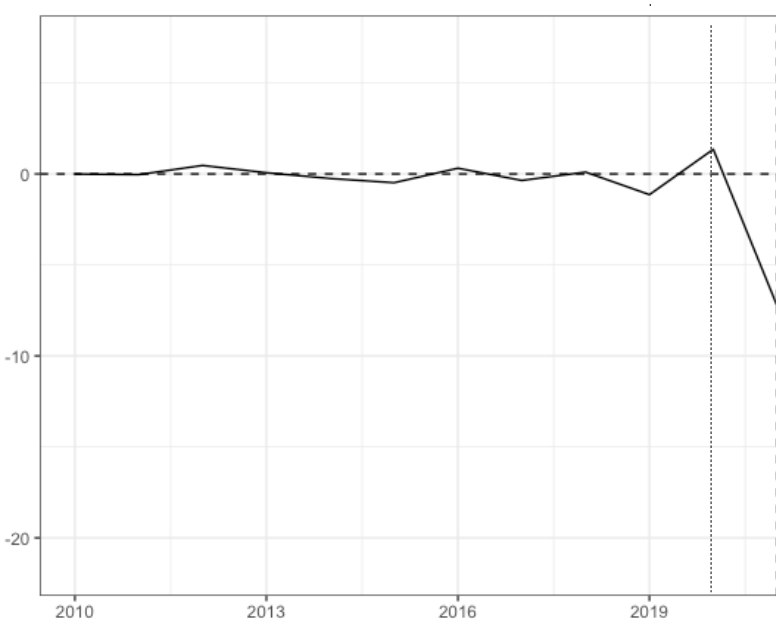
However, Table 4 shows how none of these effects are statistically significant at conventional levels since the corresponding P-values of these estimates are all above 0.1. It can be concluded that, in 2021, the IMV had no statistically significant effect on either objective or subjective financial wellbeing. Table 5 presents the weights given to the donor countries used to construct Synthetic Spain with the RASCM.

Figure 5 - Evolution of Differences in Financial Wellbeing Outcomes between Spain and Synthetic Spain

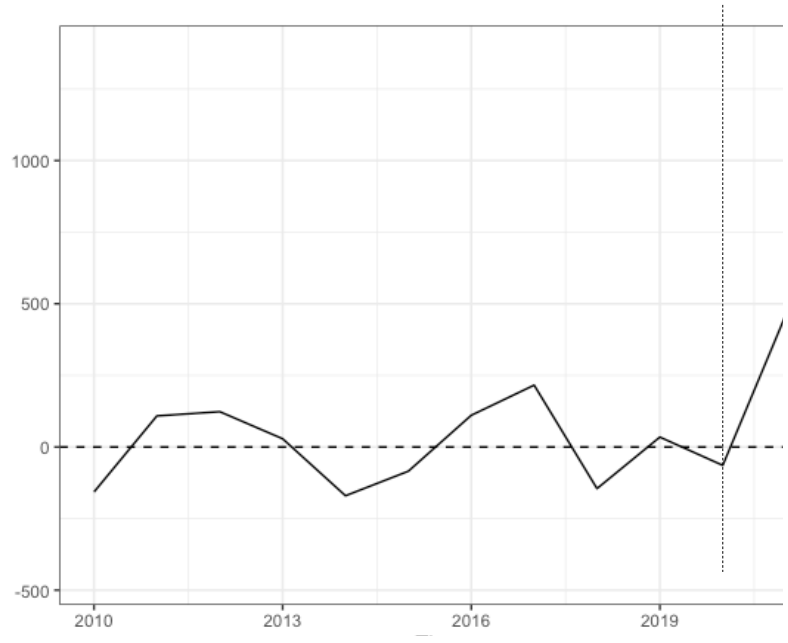
Model 1 – Poverty rate



Model 2 – Poverty gap



Model 3 – Mean income



Model 4 – Perceived change in financial situation

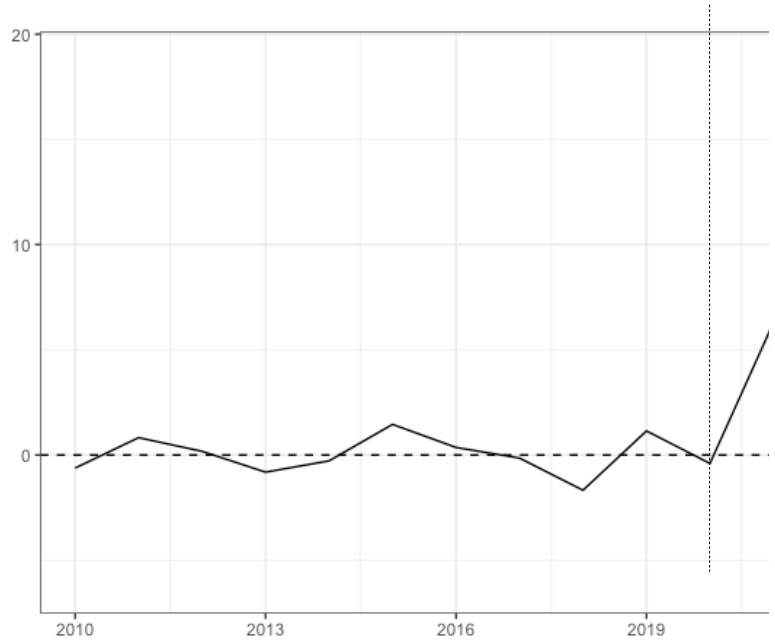


Table 4- Estimated ATT for Post-intervention Years & Corresponding P-values

Estimate Model 1 – Poverty rate	P-Value Model 1 – Poverty rate	Estimate Model 2 – Poverty gap	P-Value Model 2 – Poverty gap	Estimate Model 3 – Mean income	P-Value Model 3 – Mean income	Estimate Model 4 – Perceived change in financial situation	P-Value Model 4 – Perceived change in financial situation
-4.70	0.69	-7.25	0.52	459.75	0.42	6.29	0.25

Table 5 - Weights Assigned to Countries Used to Construct Synthetic Spain Using the RASCM

	Model 1 – Poverty rate	Model 2 – Poverty gap	Model 3 – Mean income	Model 4 – Perceived change in financial situation
Austria	-3.76	0.02	-0.06	-0.57
Croatia	-0.86	0.28	0.21	0.63
Czech Republic	-0.33	-0.25	-0.1	0.94
France	0.20	0.47	0.13	0.15
Greece	1.78	0.10	0.44	-0.14
Hungary	-0.35	0.06	-0.05	-0.11
Ireland	-0.43	0.04	0.27	-0.44
Lithuania	-0.27	0.23	0.17	-0.21
Netherlands	5.53	0.02	0	0
Romania	-1.44	0.02	-0.65	0
Slovakia	0.92	0	0.64	0.76

5.1.4.2 Other robustness checks

The ability of Synthetic Spain to correctly reproduce financial wellbeing in real Spain without the IMV depends on the choice of units in the donor pool and the choice of predictors of the outcome variables. If removing a donor country or predictor leads to a good pre-treatment fit but to different results post-intervention, my results could be driven by a post-intervention shock to a donor country or a predictor variable so that, in the absence of the IMV, Spain would not have trended as Synthetic Spain. This is a nonnegligible possibility in my analysis since I study the Covid-19 crisis period.

To test for the assumption that results are not driven by the choice of control countries or predictors, I conduct 'leave-one-out' tests. The tests consist in taking out from the sample each of the control countries and predictors one at a time (Gilchrist *et al.*, 2022). If the exclusion of control units or predictors leads to estimates before and after the intervention that are close to those using all donor pool countries or all predictors, then results can be considered robust

(Abadie, 2021; McClelland and Mucciolo, 2022). The 'leave-one-out' test for predictors has no impact on the direction and (in)significance of the effects found. In the 'leave-one-out' test for countries, the exclusion of Romania in the poverty rate and gap analyses and of the Netherlands in the perceived financial situation, do affect the direction and size of the estimates (See Appendix 9.2 for graphs). This is expected as these are the countries that are given large weights in my analysis. However, the insignificance of the 'leave-one-out' estimates are the same as when all countries are used. Moreover, the pre-treatment fit when excluding these countries is worsened significantly implying the difference in estimates is not driven by a shock to the excluded countries, which would confound my results when including this country, but rather by the fact that Synthetic Spain cannot be accurately constructed without those countries.

The validity of my SCM results also rests on the assumption that the only treatment effect found happened after the IMV intervention. If an effect is found before the intervention, this would call the model's predictive power into question, implying my post-intervention results could be biased. I thus need to check that there are no unusually large and statistically significant treatment effects before 2021 when the treatment was not implemented relative to the effect found for 2021 (Pang, Liu and Xu, 2021). I perform a time placebo test by reassigning the treatment status to each other year in the pre-intervention period. I also test for the statistical significance of these results. No placebo intervention yields any effect, except for a few results having effects larger than those found for 2021 and having a relatively good pre-treatment fit, but which turned out to be insignificant (See Appendix 9.3 for graphs).

From the SCM and RASCM analyses, I conclude that the IMV had no statistically significant effect on households' real and perceived financial situation. However, it might be that the results are insignificant because I am not accounting for the full effect of the IMV. First, I use the whole of 2020 as a pre-intervention period. This allowed me to account for the Covid-19 effect in the creation of the synthetic control, which is important to accurately construct Synthetic Spain to mimic as closely as possible real Spain. However, it means I might be losing some of the shorter-term effects of the IMV between June and December 2020. To solve for this potential underestimation of the IMV effect, I would need monthly data that includes June-December 2020 in the post-intervention period.

Second, I only study one post-intervention period (i.e. 2021). This might be too little time to be able to see any effect of the IMV on national financial wellbeing outcomes, especially considering the lagged rollout of the policy. If, as of December 2021, only 0.82 million

individuals had benefited from the IMV out of the 2,3 million the government hoped to reach, by December 2022, the IMV had reached 1.54 million individuals (La Moncloa, 2021; Ministerio de Inclusion, Seguridad Social y Migraciones, 2022a). To analyse the full impact of the IMV, I would need data that goes beyond 2021.

In the next section, I perform the same analysis but using monthly data between December 2019 and December 2022, which allows me to have 31 post-intervention points as well as to analyse the effect of the IMV during its first few months of implementation whilst accounting for the Covid-19 shock. Since monthly income data from surveys is not available, I can only conduct this monthly analysis for the subjective financial wellbeing measure.

5.2 MONTHLY ANALYSIS

5.2.1 Composition of Synthetic Spain

Table 6 presents the pre-intervention sample means of predictor variables for Spain, Synthetic Spain and the 10 countries in the control group. The similarity of both predictors means before the intervention shows a good pre-treatment fit between Spain and Synthetic Spain. Moreover, as can be seen in Table 7, the MSPE is low when compared to the range of the outcome variable showing that the fit of the perceived change in households' financial situation before June 2020 is good. This is also corroborated by a visual inspection of the pre-treatment fit in Figure 6 below.

Table 6 – Descriptive Statistics (Means) for Predictor Variables Used to Construct Synthetic Spain

	Spain	Synthetic Spain – Perceived change in financial situation	Average of 10 Control Countries [a]
Perceived financial situation	-13.39	-13.36	-4
Unemployment rate	14.63	14.63	6.74

Notes: The table presents the predictor variable mean values for real Spain, the synthetic control unit and the average of 10 control countries between December 2019 and May 2020.

[a]: The model excludes Romania from the donor pool as data for the outcome variable is unavailable for the full post-intervention period.

Table 7 – Weights (in Percentages) Assigned to Predictor Variables Used to Construct Synthetic Spain

	Perceived change in financial situation
Perceived financial situation	0.40
Unemployment rate	99.6
MSPE	8.90
Range (max-min)	70.6

Surprisingly, Table 7 reveals that the unemployment rate is given almost all the weight in the construction of Synthetic Spain. However, the almost identical value of the pre-treatment perceived change in households' financial situation for Spain and Synthetic Spain shown in Table 6 implies that the constructed Synthetic Spain would be able to mimic well the perceived change in the financial situation of households after the IMV is introduced. In Section 5.2.2., I prove that excluding the unemployment predictor does not affect results.

The resulting Synthetic Spain is a weighted average of all countries with Greece and Hungary playing the greatest roles. Table 8 displays the weights assigned to each control country.

Table 8 - Weights (in Percentages) Assigned to Countries Used to Construct Synthetic Spain

	Perceived change in financial situation
Austria	1.3
Croatia	1.5
Czech Republic	0.9
France	1.6
Greece	75.1
Hungary	14.9
Ireland	1.2
Lithuania	1.6
Netherlands	1.1
Slovakia	1

5.2.2 Main Results on the IMV Effect on Financial Wellbeing

Figure 6 – Evolution of Subjective Financial Wellbeing & Differences in Outcomes between Spain and Synthetic Spain

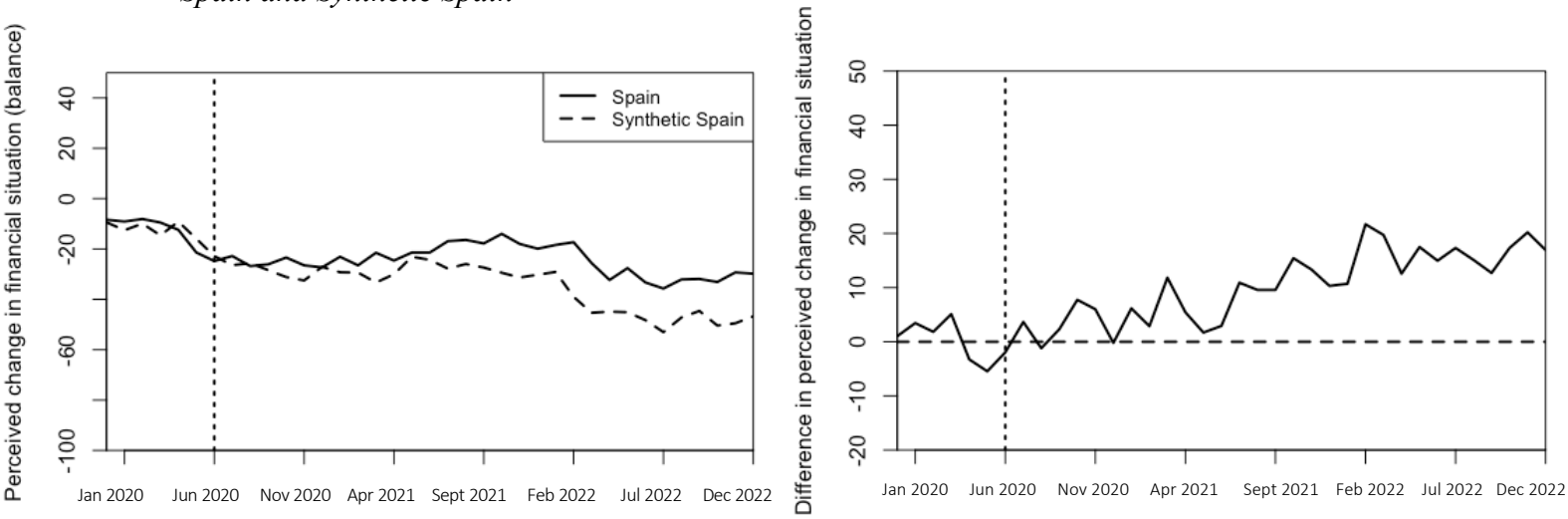


Figure 6 displays the trend in the perceived change in financial situation for Spain and Synthetic Spain. From March 2020, as the Covid-19 crisis triggered strict lockdowns, an increasing number of households became more pessimistic about the evolution of their financial situation. The perceived change in financial situation balance reached -24.6 in June 2020. From then onwards, the situation seemed to stabilise and even improved, peaking at a balance of -14 in October 2021. This improvement in the subjective financial situation change of households is likely because of the governments and the EU's support packages to households, workers and businesses. Since then, the subjective evolution of financial wellbeing of households started to deteriorate again and the balance reached a new low of -35.7 in July 2022. This corresponds to the start of the cost-of-living crisis as supply disruptions given ongoing Covid restrictions in large exporting countries, increased global demand after the lifting of restrictions in most economies and, later from February 2022, the disruption to the supply of gas and animal feed following Russian's invasion of Ukraine, meant prices rose for households, decreasing their purchasing power and sense of control over finances.

In terms of how Spain with the IMV fared compared to Synthetic Spain without the IMV, the IMV seems to have softened the blow to households' perceived change in their financial situation during the Covid-19 and cost-of-living crises. The evolution of the financial situation of households in Spain with the IMV outperforms that of Synthetic Spain, especially from July 2021. This can be seen from the departing curves in the left-hand panel of Figure 6 and from

the increasingly positive differences in the perceived change in finances between Spain and Synthetic Spain shown in Table 9 below. The subjective financial wellbeing measure presented here gathers information on how households perceive that their finances have changed *over the past 12 months*. As such, the large IMV effect observed from July 2021 reflects any perceived changes to household finances having occurred between July 2020 and July 2021, which coincides with the introduction of the IMV in June 2020.

The average total IMV effect between the post-intervention period of June 2020 and December 2022 is an increase in the difference between respondents perceiving an improvement in their finances and those perceiving a deterioration of 10.1 points. The size of this policy effect over two and a half years is non-negligible since it corresponds to over a fifth of the improvement in the perceived change in financial situation balance that took place during the economic recovery of the financial and debt crises over a six-and-a-half-year period between November 2012 and June 2019[6]. In Section 5.2.1. below, I investigate if this result is statistically significant.

[6] In November 2012, the perceived change in financial situation balance reached a record low of -45.7. It took over six and a half years for household financial confidence to reach pre-crisis levels, when the balance peaked at -0.7 in June 2029. This corresponds to an improvement in the balance between those saying their financial situation improved and those saying it deteriorated of 45 points.

Table 9 – Differences in Subjective Financial Wellbeing Between Spain and Synthetic Spain

	Time period	Spain	Synthetic Spain	Difference
Pre-intervention period	2019-12	-8.4	-9.4	1.0
	2020-01	-9.1	-12.6	3.5
	2020-02	-8.1	-9.9	1.8
	2020-03	-9.5	-14.6	5.1
	2020-04	-12.4	-9.1	-3.3
	2020-05	-21.4	-15.9	-5.5
Post-intervention period	2020-06	-24.8	-22.8	-2.0
	2020-07	-22.8	-26.5	3.7
	2020-08	-26.8	-25.6	-1.2
	2020-09	-26.1	-28.4	2.3
	2020-10	-23.4	-31.1	7.7
	2020-11	-26.5	-32.5	6.0
	2020-12	-27.3	-27.1	-0.2
	2021-01	-23.1	-29.3	6.2
	2021-02	-26.5	-29.4	2.9
	2021-03	-21.5	-33.3	11.8
	2021-04	-24.6	-30.0	5.4
	2021-05	-21.4	-23.1	1.7
	2021-06	-21.4	-24.3	2.9
	2021-07	-16.9	-27.8	10.9
	2021-08	-16.4	-26.0	9.6
	2021-09	-17.8	-27.4	9.6
	2021-10	-14	-29.4	15.4
	2021-11	-18	-31.3	13.3
	2021-12	-19.9	-30.2	10.3
	2022-01	-18.4	-29.1	10.7
	2022-02	-17.3	-39.0	21.7
	2022-03	-25.6	-45.3	19.7
	2022-04	-32.3	-44.9	12.6
	2022-05	-27.6	-45.1	17.5
	2022-06	-33.3	-48.3	15.0
	2022-07	-35.7	-53.0	17.3
	2022-08	-32.1	-47.2	15.1
	2022-09	-31.9	-44.6	12.7
	2022-10	-33.1	-50.4	17.3
	2022-11	-29.3	-49.5	20.2
	2022-12	-29.8	-46.7	16.9

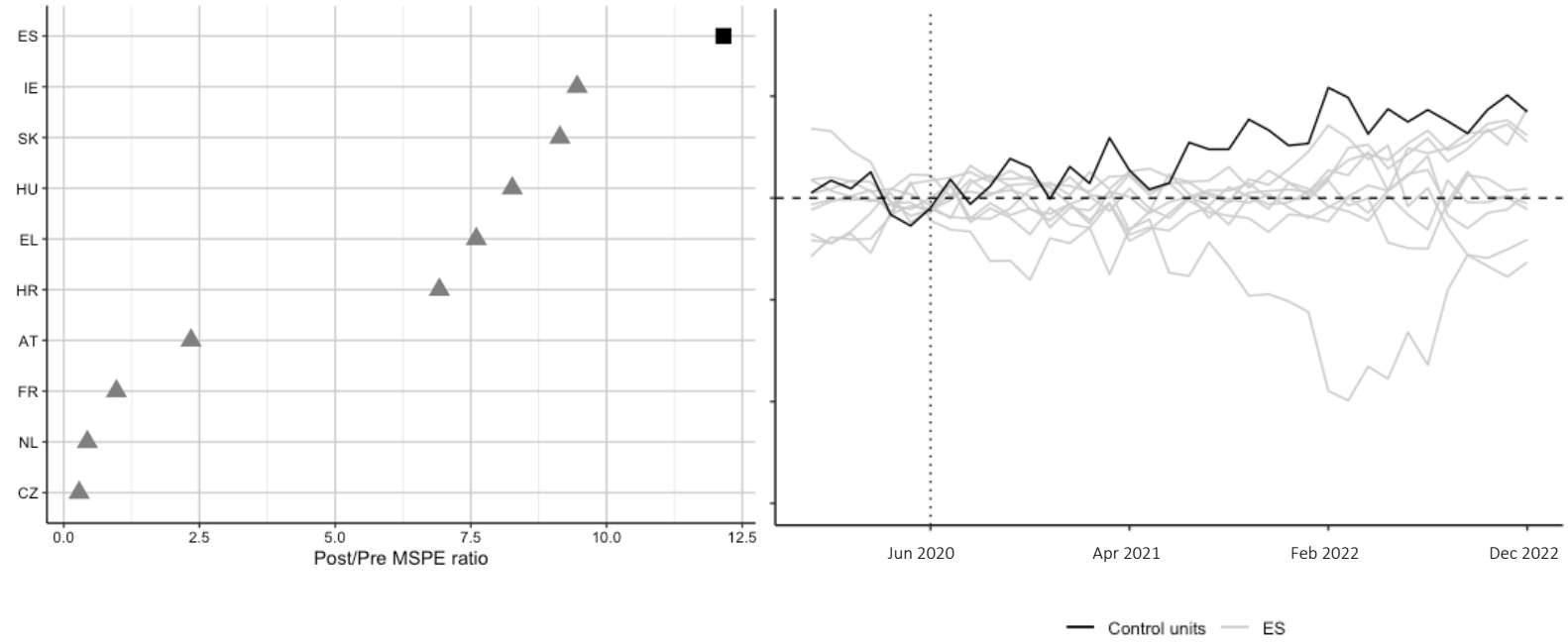
5.2.3 Statistical Significance of Main Results

To assess the statistical significance of the results, I conduct placebo tests and calculate the post/pre MSPE ratios for each country in the control group to compare it to Spain's ratio. The ratios are displayed in Figure 7. The left-hand panel shows the ratio excluding all placebo cases with a pre-period MSPE exceeding two times the treated unit's pre-period MSPE. The right-

hand panel shows a 'spaghetti plot' displaying the difference in the perceived change in households' financial situation for each country in the donor pool.

The pseudo-P-value is 1/10, meaning there is an 10% chance that the result is achieved at random. The result is statistically significant at conventional levels. I confirm the direction and significance of the results with the RASCM analysis in Section 5.2.4 below.

Figure 7 – Post/Pre-intervention Mean Squared Prediction Error for Spain and Control Countries



5.2.4 Robustness Checks

I perform the same three tests as in Section 5.1.4 to check the robustness of the treatment effect found by the SCM, i.e. that the analysis has been able to correctly reproduce the subjective financial wellbeing trends in Spain in the absence of the IMV.

5.2.4.1 Ridge Augmented Synthetic Control Analysis

To test for the assumption that results are unbiased given an excellent pre-treatment fit, I conduct the same analysis using the RASCM with no covariates. This robustness check is needed since a visual inspection of Figure 6 determines that there are some gaps in the pre-treatment fit of outcome variables between Spain and Synthetic Spain. The analysis corroborates the direction of the SCM results and confirms their statistical significance.

In the RASCM analysis, the pre-treatment fit is improved considerably as seen from the zero difference in the pre-treatment perceived evolution of households' finances between Spain and Synthetic Spain shown in Figure 8. The RASCM confirms the direction of the IMV effect, although this effect is larger in magnitude compared to that found with the SCM. Between June 2020 and December 2022, the IMV increased the balance between those saying their financial situation improved and those saying it deteriorated by 14.6 points. The size of this policy effect over two and a half years corresponds to almost a third of the improvement in the perceived change in financial situation balance that took place during the economic recovery of the financial and debt crises over the six-and-a-half-year period.

The RASCM also shows that this result is statistically significant at conventional levels. There is only a 4.2% chance that the result is found at random. Table 10 presents the weights given to the donor countries used to construct Synthetic Spain with the RASCM.

It is worth noting that the pattern of the IMV effect over time is slightly different compared to that found with the SCM. In the latter, the positive effect of the IMV in mitigating the drop in subjective financial wellbeing of households is sustained in time and keeps increasing while, with the RASCM, this effect seems to start to diminish from February 2022. This different pattern might be a closer reflection of the true IMV effect as the adaptation literature notes the relatively small and short-lived effect of changes in most life circumstances on subjective wellbeing as people adapt relatively fast to their new income situation and increase their aspirations (Brickman, Coates and Janoff-Bulman, 1978; Kahneman and Krueger, 2006; Clark, Frijters and Shields, 2008; Stutzer and Frey, 2010). It would be interesting to monitor if the IMV's improvement to households' perceived financial situation is sustained in time or disappears beyond 2022.

Figure 8 - Evolution of Differences in Perceived Changes in Financial Situation between Spain and Synthetic Spain

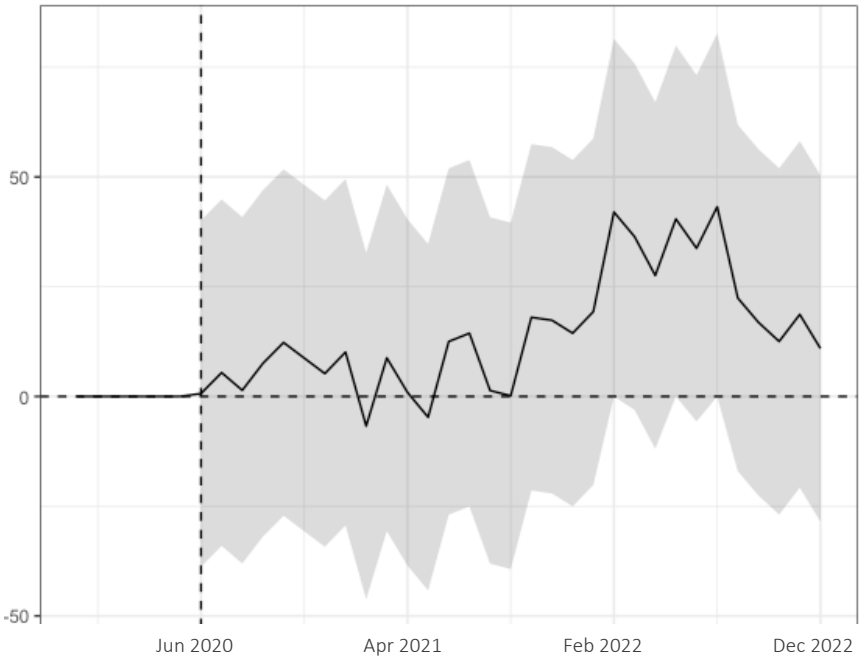


Table 10 - Weights Assigned to Countries Used to Construct Synthetic Spain Using the RASCM

	Perceived changes in financial situation
Austria	0.43
Croatia	1.31
Czech Republic	0.28
France	-0.81
Greece	0.77
Hungary	-1.14
Ireland	0.78
Lithuania	-0.40
Netherlands	-0.14
Slovakia	-0.08

5.2.4.2 Other robustness checks

I conduct the 'leave-one-out' test to ensure that results are not driven by the choice of control countries. The exclusion of control units leads to estimates before and after the intervention that are close to those using all donor pool countries, except when Greece is excluded. The magnitude and direction of the IMV effect change as shown in Figure 9. However, the pre-treatment fit also worsens considerably: there is a sixfold increase in the MSPE, which now reaches 50.7. This indicates that the change in results comes not so much from the fact that there are other interventions or large idiosyncratic shocks on the excluded untreated unit, which

would confound my results when including this country, but from the fact that Synthetic Spain cannot accurately track subjective financial wellbeing in real Spain without Greece. Greece and Spain have very similar pre-intervention values of the outcome variable (i.e. an average balance of -14 and -11, respectively) and of the predictor (i.e. an average unemployment rate of 18 and 14, respectively). Excluding the unemployment predictor does not impact results (see Figure 10).

Figure 9 - Evolution of Subjective Financial Wellbeing for Spain and Synthetic Spain After Excluding Greece from Donor Pool

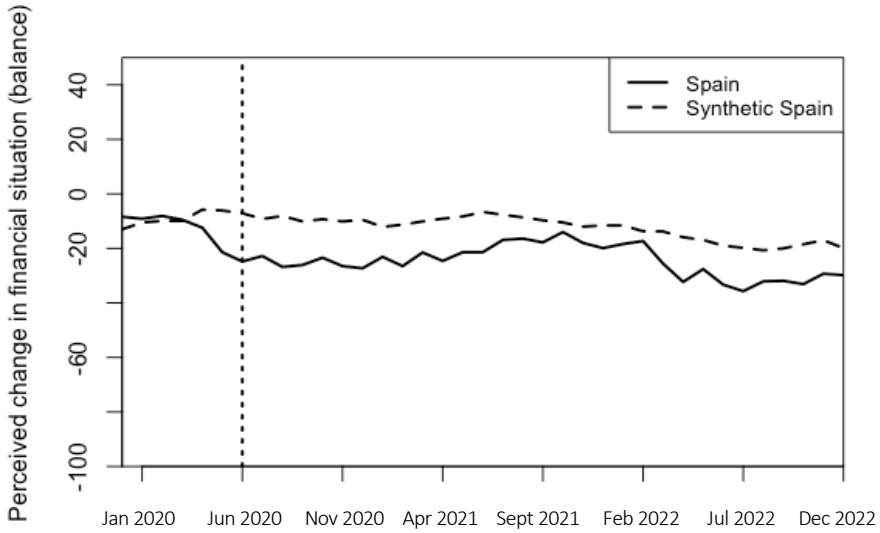
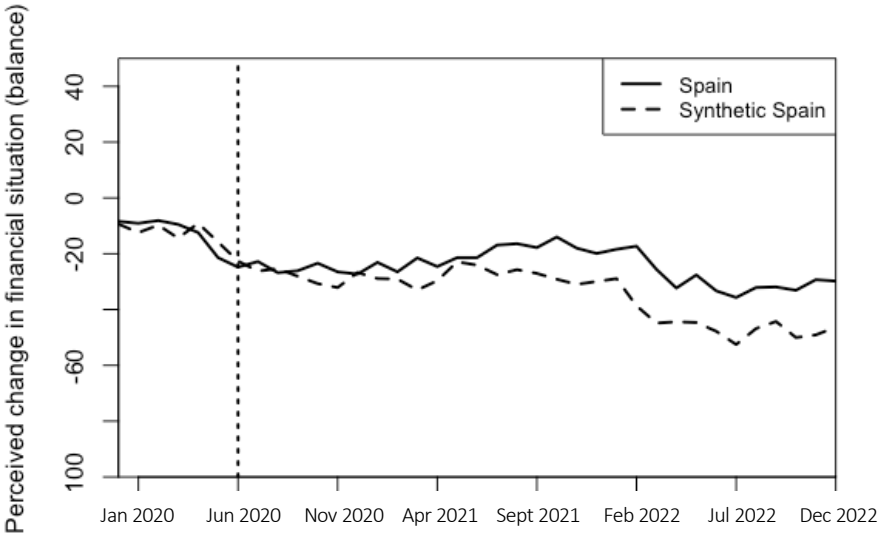


Figure 10 - Evolution of Subjective Financial Wellbeing for Spain and Synthetic Spain After Excluding Unemployment as a Predictor



I perform a time placebo test to check for any changes in behaviour among Spanish people before the IMV was introduced. It could be that households adjust their behaviour after the

government announced the IMV in April 2020, meaning its effects could start before its effective implementation in June 2020. I would thus be underestimating the impact of the IMV. I conduct the test by reassigning the treatment status to the months in the pre-intervention period. I also test for the statistical significance of these results. The placebo tests show that the IMV effect on subjective financial wellbeing estimated from June 2020 is larger than the effect found for the months where the treatment was not implemented, which provides significant evidence of an effect of the IMV from June 2020 (Pang, Liu and Xu, 2021). Moreover, none of the placebo interventions yield significant effects.

6 DISCUSSION

Both the SCM and RASCM yearly analyses show that, in 2021, the IMV had no statistically significant effect on objective measures of households' financial wellbeing (i.e. poverty rate, poverty gap, mean income). However, the more nuanced monthly analysis, which accounts for the initial IMV effect from its introduction in June 2020 and allows me to study its effect after 2021, reveals that the IMV helped households feel less pessimistic about the evolution of their finances during the Covid-19 and cost-of-living crises. Between June 2020 and December 2022, the IMV increased the balance between those saying their financial situation improved and those saying it deteriorated by a magnitude of between 10.1 (SCM) and 14.6 (RASCM) points.

While the research approach does not enable me to determine which of the mechanisms presented in Section 2 are behind the results obtained, I offer a few conjectures. In terms of the insignificant results obtained on objective financial wellbeing measures in 2021, it seems that a combination of low levels of adequacy, low take-up, work disincentives and the strategic behaviour of some regions might have been at play. As outlined in Section 2, the IMV benefit levels in 2020 and 2021 were not enough for most household types to surpass the poverty threshold. Additionally, since the policy lacked employment incentive measures and was implemented during a period of limited labour market access, it may have unintentionally disincentivised employment and trapped beneficiaries in poverty. In future research, I assess the work disincentives hypothesis since I study the labour supply effects of the IMV on beneficiaries themselves.

The issue of non-take-up appears to be particularly relevant, especially for explaining the insignificant results on the poverty gap and mean income. Estimates of non-take-up lie at 57%

in Spain for the IMV (Marc *et al.*, 2022). The government (Ministerio de Inclusion, Seguridad Social y Migraciones, 2022b), AIReF (2022) and academics Ayala, Jurado and Perez (2022) have identified several reasons for non-take-up: potential beneficiaries (i) lack information about the existence of the policy; (ii) believe they would not qualify it; (iii) are put off by the complexity of the application process; or (iv) do not find it worth applying given the amount they would receive, especially when they have other support means.

The high non-take-up of the IMV in 2021 might also be due to the slow processing of applications by the administration. As of December 2021, the administration had received 1.5 million submissions, most of them issued in the first three months. The limited administrative capacity meant that during the first few months, the average application processing time was 150 days. Over 40% of applications took more than three months to be resolved. However, the situation has since improved and towards the end of 2021, 80% of applications were now being resolved within 3 months, including a majority being resolved within 1 month (AIReF, 2022).

Another factor explaining the insignificant results obtained on objective financial wellbeing measures that has not been addressed in the literature could be the strategic behaviour of some regions. The introduction of the IMV appears to have incentivised regions to decrease the generosity and coverage of their regional schemes to make savings in their regional budgets. Thus, despite some households receiving the national IMV, current regional MISs beneficiaries might have seen their disposable income decrease, meaning overall national financial wellbeing remains unchanged. According to the State Association of Directors and Managers of Social Services (Asociacion Estatal de Directoras y Gerentes en Servicios Sociales, 2022), evidence suggests that at least five out of seventeen regions, namely Castilla-La-Mancha, Aragón, Extremadura, Madrid and Castilla y León, have reduced the budget allocated to regional MISs by almost 50% in 2021. A further thirteen regions have decreased the amounts of their regional MISs and twelve regions have decreased their coverage. There were 150,000 less beneficiaries of regional MISs in 2021 compared to 2020 despite the Covid-19 crisis (Ministerio de Derechos Sociales y Agenda 2030, 2022). It is key for the central government to better coordinate the integration of the national IMV with the existent regional MISs.

In terms of the significant IMV effect on subjective financial wellbeing, this might be due to various reasons. On the one hand, as foreseen in Section 2, the provision of a stable source of income through the IMV could have allowed beneficiaries to better plan their expenses, bringing financial stability and reducing stress. The absence of conditionality measures and the

broad public support for the policy may have also contributed to reducing the negative impact of stress and stigma on the subjective financial wellbeing of beneficiaries. Given the positive effect of the IMV, it does not seem to be the case that, as posited in Section 2, beneficiaries have adapted quickly to their new financial situation.

However, it is important to note that these hypotheses assume that individuals are actually receiving the benefit and therefore that the observed effect on subjective financial wellbeing reflects improvements in objective financial wellbeing after 2021. In this sense, the more extensive monthly analysis could be capturing better the lagged rollout of the policy or the effect of the initiatives that the government implemented from 2022 to improve the IMV's take-up, amounts, coverage and to address potential labour supply disincentives. If this is the case, once income data for 2022 becomes available, I should see that the IMV improved objective financial wellbeing indicators.

On the other hand, if this effect of the IMV on objective financial wellbeing after 2021 does not materialise, it would indicate a discrepancy between households' financial status and their perception of their situation. As discussed in Section 2, I anticipated that an improvement in material conditions may not necessarily translate into a perceived improvement in finances given envy among non-recipients and the signalling effect of the IMV's introduction, which may have triggered feelings of economic pessimism among Spanish households. However, the results point to the opposite type of discrepancy, where households perceive that their situation has improved without a corresponding real increase in income.

This mismatch could be explained by the presence of more positive spillover and signalling effects than those found in the literature so far. The government's hasty introduction of the policy during the Covid-19 crisis could have signalled adverse economic conditions to the population, leading them to perceive that they are not faring as poorly as the target population of the IMV. Such findings would contribute to the existing literature on spillover and signalling effects on non-recipients, albeit shedding light on a more empathetic and optimistic view of social relations, challenging previous findings that non-recipients become envious of the perceived gains of others and that emergency policies trigger pessimism among populations.

The discrepancy between households' real financial status and their perception of their situation could also mean that there is an 'anticipation effect' of the policy by which poor households that have already started an application process but whose application has not been processed,

feel their financial situation has improved even though their material conditions remain unchanged. This could fit in a context where there were bottlenecks in the administrative processing of IMV applications. More broadly, the mismatch could also reflect a 'placebo effect' by which households perceive the IMV as a safety net they could access in case of need, thus providing a sense of financial security and reducing uncertainty in a context of economic crisis.

7 CONCLUSION

In this paper, I used the case study of Spain and a Synthetic Control Method to examine how MISs affect households' financial wellbeing and whether this effect differs across objective material conditions and households' perceptions. The results show that, while the policy had no statistically significant effect on objective financial wellbeing measures (i.e. the poverty rate, the poverty gap and mean income) in 2021, it did considerably improve subjective financial wellbeing between June 2020 and December 2022, as it helped households feel less pessimistic about the evolution of their finances during the Covid-19 and cost-of-living crises. Between June 2020 and December 2022, the IMV increased the balance between those saying their financial situation improved and those saying it deteriorated by a magnitude of between 10.1 and 14.6 points. Spain's new MIS acted as a lifeline in times of economic uncertainty. Two main questions remain that I will be able test once data becomes available: (i) whether the policy effect on households' perceptions will be sustained over time after December 2022 and (ii) whether it reflects improvements in objective measures beyond 2021.

I have tried to explain the results putting forward several hypotheses that will need to be tested in future research. The insignificant effects of the Spanish minimum income scheme on objective measures in 2021 might be due to the policy's small reach given low levels of take-up, to its low amounts as well as to labour supply reactions of the target population and to the strategic behaviour of regions, which might have offset any positive effect of the policy on national-level financial wellbeing. The relatively large and significant effect of the Spanish MIS on households' perceived financial improvements might reflect the lagged rollout of the policy and the impact of the government's initiatives to improve the policy's adequacy, coverage, take-up and compatibility with work from 2022. These significant results might also reflect disparities between objective and subjective wellbeing, which could be explained by anticipation effects among IMV applicants, placebo effects among potential beneficiaries and/or positive spillover effects among non-recipients.

The findings of this paper are relevant to Spanish policymakers as they provide an overview of the achievements and limitations of this new national-level MIS, which has come to be seen as a turning point in the fight against poverty in the country. More generally, the results add empirical causal evidence to the debate on the effects of MISs on financial wellbeing and on the different design elements that make these policies successful. The paper also highlights the importance for practitioners to consider subjective measures of financial wellbeing when assessing income support schemes. Subjective financial wellbeing indicators can reveal important information we might otherwise overlook. In addition, while income data from surveys is available with a two-year lag, some subjective financial wellbeing measures like the one used in this paper can be accessed with only a couple of months' delay, meaning subjective indicators can also be particularly relevant if we are interested in the timely monitoring of minimum income schemes.

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9 APPENDIX

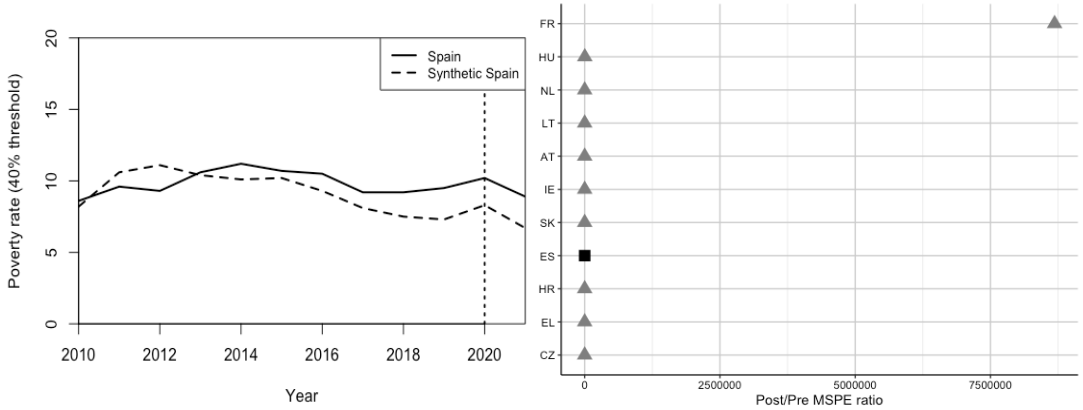
9.1 EU Countries with Policies Similar to the Spanish IMV

Country	Measure	Timing	Target Population
Belgium	Extra allowance to social assistance beneficiaries	Jul 2020 – Jun 2021	Beneficiaries of social assistance including the minimum income benefit
	Annual raise of social security and social assistance benefits in the direction of the at-risk-of-poverty threshold	Jan 2021 – Present	Beneficiaries of social security and assistance including the minimum income benefit
Finland	Top-up in social assistance benefits	Sept – Dec 2020	Beneficiaries of basic social assistance
Italy	Introduction of an emergency income (RdE) that can be received for a maximum of 5 months	May 2020 – Present	Poor households not covered by other ordinary or extraordinary benefits
Latvia	Increase in guaranteed minimum income	Jan – Dec 2021	Beneficiaries of guaranteed minimum income
Luxembourg	Doubling of the high-cost-of-living allowance	Jan – Dec 2020	Beneficiaries of high-cost- of-living allowance
Portugal	Change in reference period for the calculation of the social insertion income	Jul – Dec 2020	Recipients and potential recipients of social insertion income

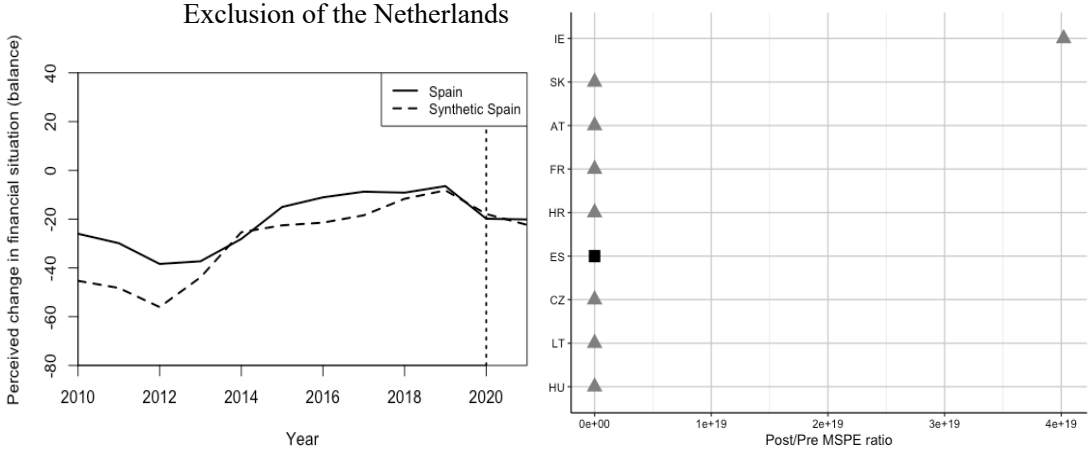
Source: Own construction from Baptista *et al.* (2021), OECD (2020), ILO (2022) and MISSOC (2022)

9.2 'LEAVE-ONE-OUT' TESTS WITH ESTIMATE CHANGES & CORRESPONDING (IN)SIGNIFICANCE OF RESULTS

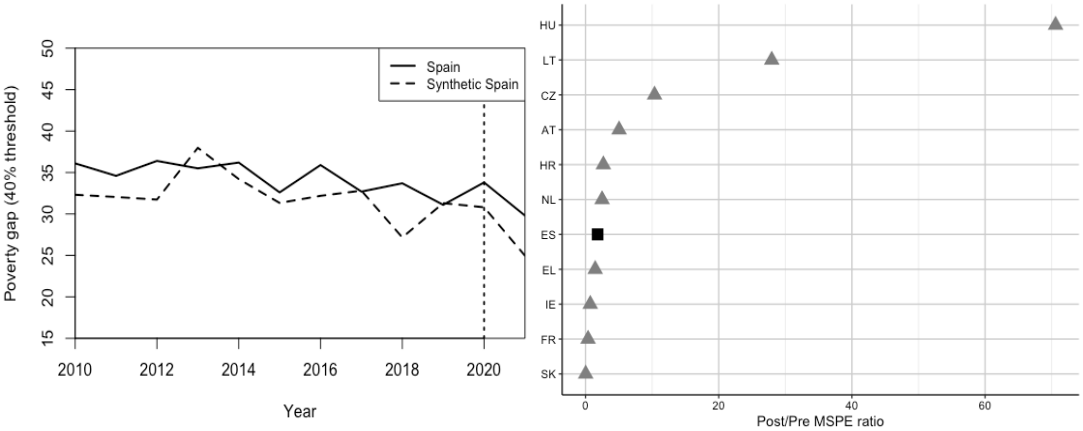
Exclusion of Romania



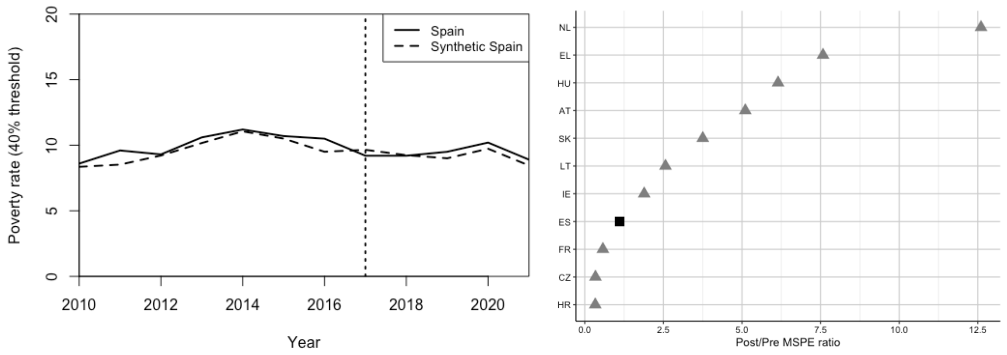
Exclusion of the Netherlands

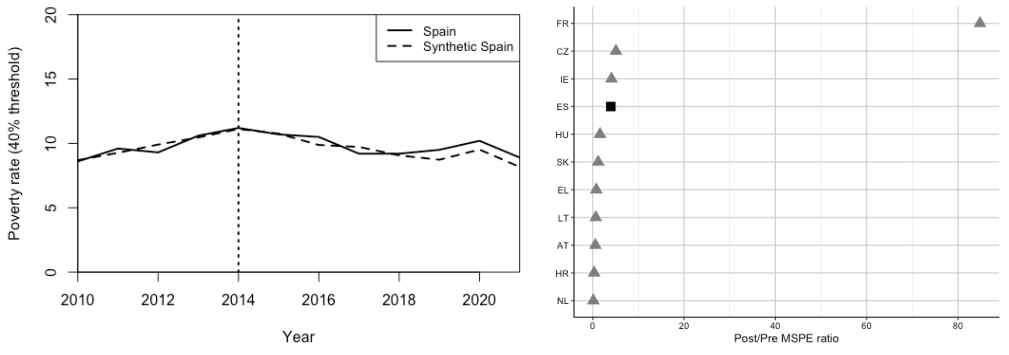


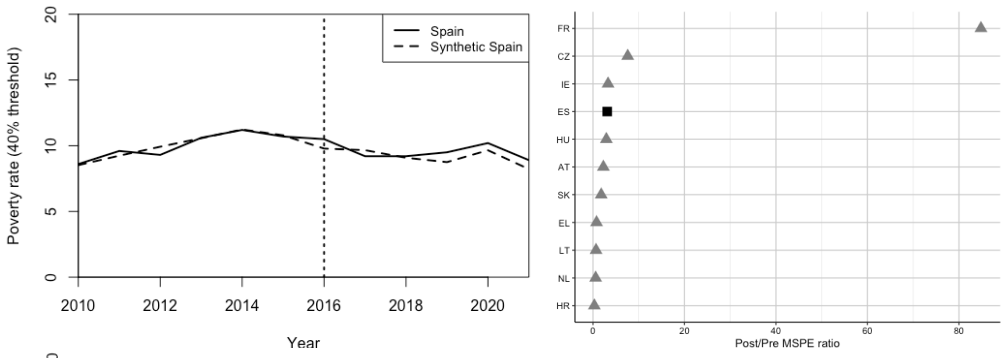
Exclusion of Romania

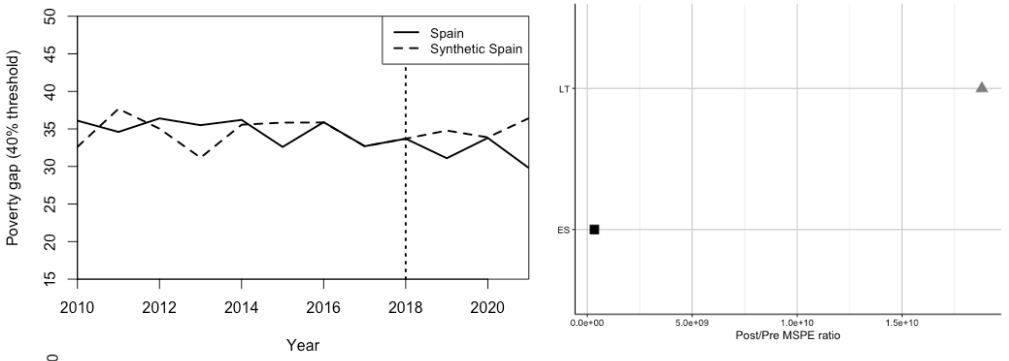


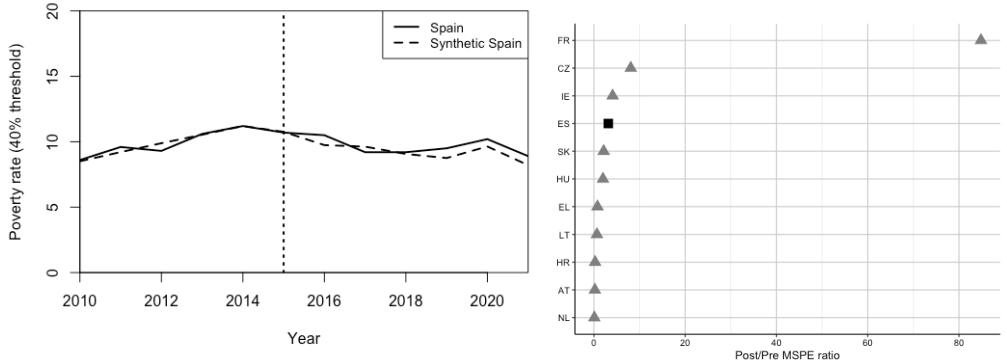
9.3 IN-TIME PLACEBO TESTS WITH POSITIVE RESULTS & CORRESPONDING (IN)SIGNIFICANCE OF RESULTS

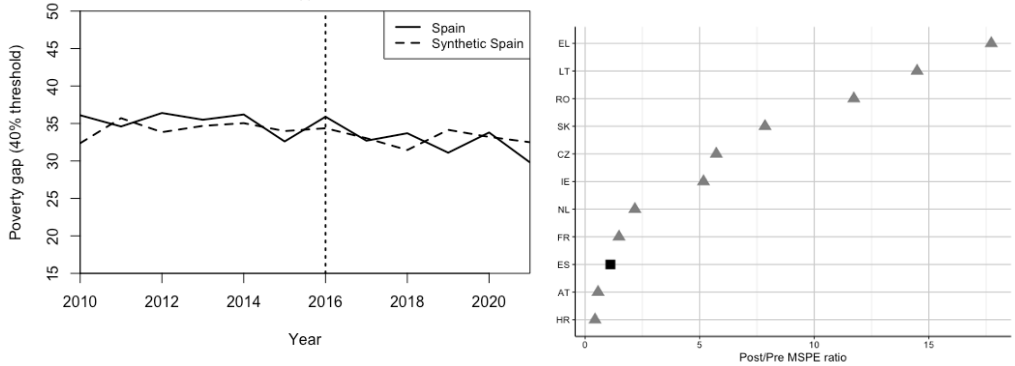


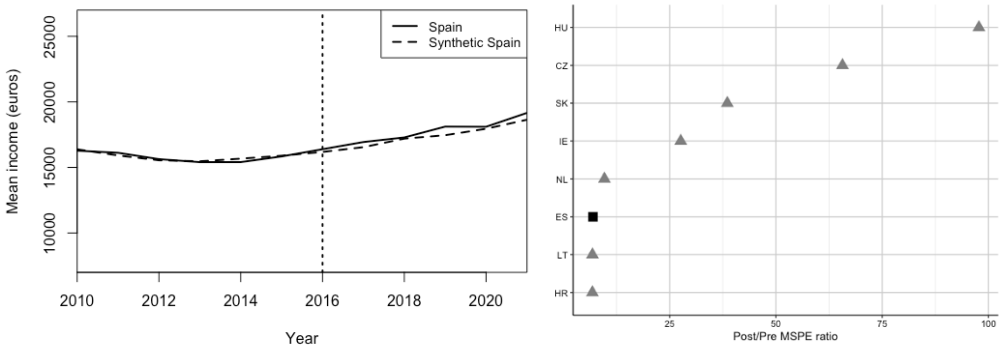




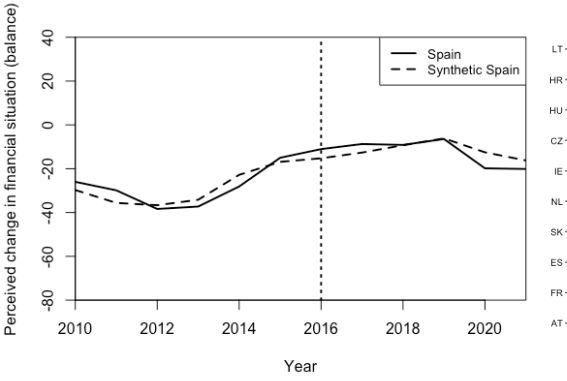


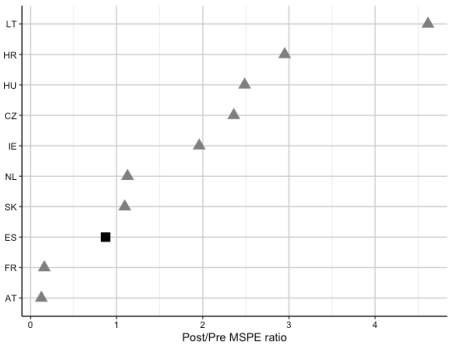


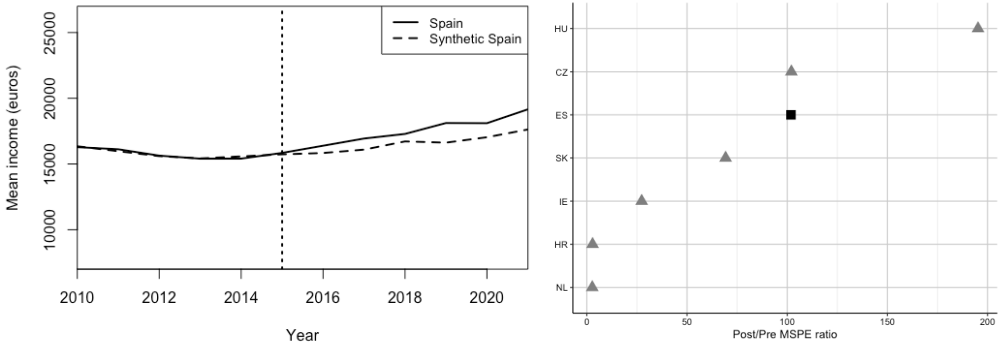



Spain
Synthetic Spain
Mean income (euros)
10000
15000
20000
25000
2010
2012
2014
2016
2018
2020
Year

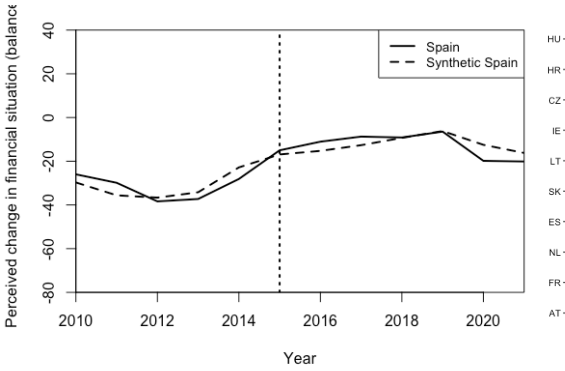
HU
CZ
SK
IE
NL
ES
LT
HR
25
50
75
100
Post/Pre MSPE ratio


Spain
Synthetic Spain
Perceived change in financial situation (balance)
-80
-60
-40
-20
0
20
40
2010
2012
2014
2016
2018
2020
Year


LT
HR
HU
CZ
IE
NL
SK
ES
FR
AT
0
1
2
3
4
Post/Pre MSPE ratio


Spain
Synthetic Spain
Mean income (euros)
10000
15000
20000
25000
2010
2012
2014
2016
2018
2020
Year

HU
CZ
ES
SK
IE
HR
NL
0
50
100
150
200
Post/Pre MSPE ratio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Synthetic Spain
Perceived change in financial situation (balance)
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0
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2010
2012
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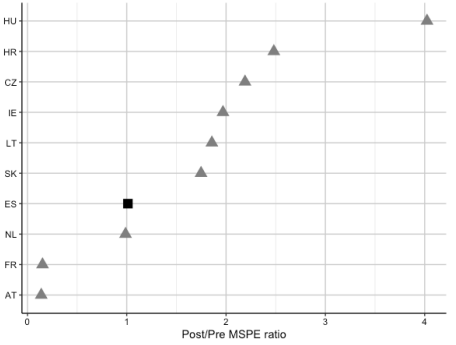
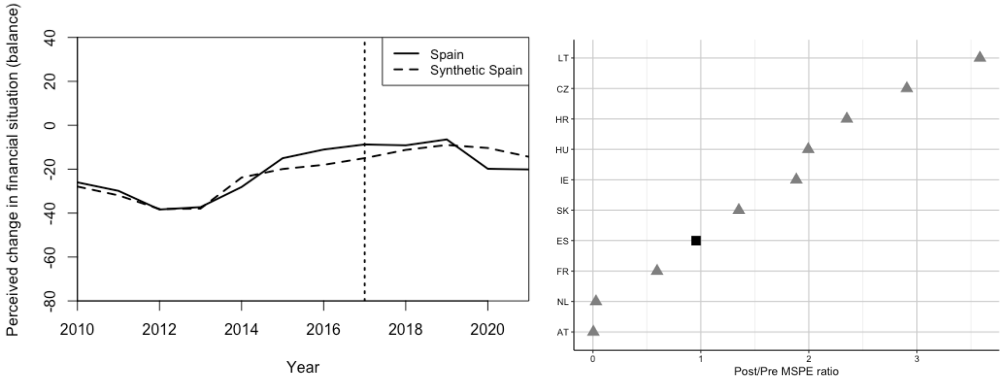
2016
2018
2020
Year


HU
HR
CZ
IE
LT
SK
ES
NL
FR
AT
0
1
2
3
4
Post/Pre MSPE ratio


Spain
Synthetic Spain
Perceived change in financial situation (balance)
-80
-60
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-20
0
20
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2010
2012
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LT
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HR
HU
IE
SK
ES
FR
NL
AT
0
1
2
3
Post/Pre MSPE ratio