Charles University

Faculty of Social Sciences
Institute of Economic Studies

BACHELOR'S THESIS

Economic Impact of Margaret Thatcher Revisited

Author: **Jakub Stuchlík**

Supervisor: **PhDr. Jaromír Baxa Ph.D.**

Academic Year: **2018/2019**

Declaration of Authorship

I hereby proclaim that I wrote my bachelor thesis on my own under the leadership of my supervisor and that the references include all resources and literature I have used.

I grant a permission to reproduce and to distribute copies of this thesis document in whole or in part.

Prague, May 10, 2019

Signature

Acknowledgments

The author is grateful to his family and friends for persistent support and love during entire bachelor studies and to PhDr. Jaromír Baxa Ph.D. for his valuable comments and suggestions.

Abstract

Forty years after Margaret Thatcher became the first woman prime minister of the UK, her past actions and reforms remain highly polarizing and influential. Nevertheless, there is general agreement that her government was a game-changing one in many aspects. In this thesis we test whether and to what extent her deconstruction of the Post-war consensus affected the UK's economic performance. We apply the synthetic control method in order to observe the overall economic impact of Thatcher's policies. We find significant evidence that M. Thatcher exploited the output-inflation trade-off, and the decrease of inflation was very much at the costs of a significant increase of unemployment. We have calculated that in case of continuation of Post-war consensus policies the inflation would be on average approximately 2.2% higher and unemployment 2.8% lower in time period 1980-1990.

JEL Classification	C54, N14, O47
Keywords	Thatcherism, synthetic control method, real GDP, unemployment, inflation

Author's e-mail	43336682@fsv.cuni.cz
Supervisor's e-mail	jaromir.baxa@fsv.cuni.cz

Abstrakt

Aj po štyridsiatich rokoch potom, čo sa Margaret Thatcherová stala prvou premiérkou Veľkej Británie, sa jej činy a reformy javia veľmi kontroverznými. V každom prípade existuje všeobecná zhoda v tom, že priniesla zmeny veľkého rozsahu vo viacerých sférach. V tejto práci skúmame aký vplyv malo Thatcherovej rozloženie povojnového konsenzu na Britskú ekonomiku. Ako nástroj na objasnenie tohto dopadu používame syntetickú kontrolnú metódu. Našli sme významné dôkazy, že zníženie inflácie, výsledok Thatcherovej reforiem, zodpovedalo za nezanedbateľný nárast nezamestnanosti. Vypočítali sme, že v prípade ak by sa politická situácia v Británii nezmenila, tak od roku 1980 do 1990 by inflácia bola v priemere vyššia o 2,2 % a nezamestnanosť naopak nižšia o 2,8 %.

Klasifikace JEL	C54, N14, O47
Klíčvá slova	syntetická kontrolná metóda, Thatcherizmus, reálne HDP, nezamestnanosť, inflácia

E-mail autora	43336682@fsv.cuni.cz
E-mail vedoucího práce	jaromir.baxa@fsv.cuni.cz

Contents

List of Tables

List of Figures

Acronyms

CBI Confederation of British Industry

GDP Gross Domestic Product

IMF International Monetary Fund

IRA Irish Republican Army

MSPE Mean squared prediction error

OECD Organisation for Economic Co-operation and Development

PM Prime Minister

SCM Synthetic control method

UK United Kingdom

USA United States

VAR Vector Autoregression

WB World Bank

Thesis Proposal

Author	Jakub Stuchlík
Supervisor	PhDr. Jaromír Baxa Ph.D.
Proposed topic	Economic Impact of Margaret Thatcher Revisited

Preliminary scope of work

Research question and motivation: Margaret Thatcher is a highly polarizing person even after almost 4 decades since her becoming first British woman Prime minister. However there is general consensus on her managing to significantly influence many aspects of public life not only in Britain forever. Some scholars even use the affected words as Thatcher revolution. The question remains, what was the impact of this revolution? We want to answer this question in exact sphere – the impact on GB economy.

Contribution: There are various empirical studies on Margaret Thatcher economic influence. They often contrast. Matthews, K. & P. Minford (1987) states that the improvement of British economic performance was caused significantly by Margaret Thatcher. On the other side Benati, L. (2008) provides other evidence that majority was depending on good luck. I shall provide challenging of both these results by usage of new method for comparative studies

Methodology: We will provide counterfactual study through application of recently developed method suitable for comparative studies – synthetic control method. This method, developed by Abadie et al. (2003) later expanded (Abadie et al. (2010),(2015) consists of constructing synthetic treated unit of weighted average of different unexposed units. The synthetic unit simulates how would this unit act without occurrence of intervention of interest. The comparison of counterfactual and reality then provides us estimation of the intervention impact – Thatcher impact in our case.

Outline: We will provide the historical background – what politics proceeded Thatcher government and how she diverged from it. It is important to find

specifically where and how these differences occurred. We will obviously give emphasis on economic policies. Then we will construct counterfactual model on GB economic performance. How would it perform under previous consensual politics. Then we can compare counterfactual to reality and conclude whether and how Thatcher government influenced the British economic performance.

Core bibliography

Abadie, A. and J. Gardeazabal (2003): "The economic costs of conflict: A case study of the basque country." The American Economic Review 93(1): pp. 113–132.

Abadie, A., A. Diamonda, J. Hainmuellera (2010): "Synthetic control methods for comparative case studies: Estimating the effect of california's tobacco control program." Journal of the American Statistical Association 105(490): pp. 493–505.

Abadie, A., A. Diamonda, J. Hainmuellera (2015): "Comparative politics and the synthetic control method." American Journal of Political Science 59(2): pp. 495–510.

Matthews, K. and P. Minford (1987): "Mrs thatcher's economic policies 1979-87." European economic review 17(2): pp. 253-270.

Benati, L. (2008): "The "great moderation" in the united kingdom." Journal of Money, Credit and Banking 40(1): pp. 121–147.

Chapter 1

Introduction

The United Kingdom experienced two long-term trends after the end of second World War simultaneously. The first one was relative economic decline. British economy grew significantly slower then other capitalist European countries during the Golden age of capitalism (1945-1973) and the 70s recession that followed only deepened the UK's economic troubles.

The other trend is the so-called Post-War consensus in British politics. It consisted of a few policy approaches that were respected by both the Tories (Conservatives) and Labour. The key features were a commitment to full employment, a mixed economy approach with interventions and wide state-ownership and the acceptance of a significant role of trade unions.

It is clear that Margaret Thatcher's election victory in 1979 and her subsequent policies directly precipitated the end of this consensus. However, how, or even whether those policies impacted the previous trend is still a matter for debate. The empirical case studies addressing this issue often agree that Thatcher exchanged higher unemployment for lower inflation but hugely differ in their conclusions and evaluation of her government. We see this as an opportunity to attempt to challenge an orthodoxy and also contribute to an unsettled debate.

Therefore, this thesis possess two ambitions; to detect how exactly Margaret Thatcher government altered the previous "Post-war consensus" ones with general emphasis on economic policies and to empirically evaluate the impact of Thatcher-era policies on the economy of the United Kingdom. We see the size of diversion with same importance as it's direction therefore we strongly focus not only on ideology but also on it's enforcement overhang to reality. To fulfil our empirical estimation objective we apply the synthetic control method (SCM) on real GDP, unemployment and inflation to observe the effect in its complex nature. SCM is a recently broadly popular method for comparative case studies developed by Abadie & Gardeazabal (2003) consisting of the creation of a synthetic unit (in our case the United Kingdom)

from a weighted average of different units (other countries), which were not exposed to intervention (the Thatcher government).

Even though it is suitable for our research question, as it has already been used on similar studies of policy effects[1], to our knowledge there has not been an application of SCM for this purpose. The opportunity to bring new insights to these issues by application of SCM serves as our key motivation.

Our results indicate that in case of the absence of Thatcher i. e. if UK would continue to be governed in old fashion the economic attributes would change on average as follows; the real GDP would be lower by 1394.33 $ per capita, inflation would be higher by 2.2 % and unemployment would decrease by 2.8 %. However the GDP outcome has to be taken with grain of salt as according synthetic unit fit in pre-treatment period is insufficient in contrast to unemployment and inflation synthetic units fits. Thus we conclude that Thatcher objective of

The thesis is structured as follows: In Chapter 2, we examine in detail how the Thatcher government differed from the others the previous ones, specifically last two - Heath's and Wilson-Callaghan's one. We give emphasis to its relationship with trade unions, approach toward market forces and ideological U-turns. In last part of the secion we look for pattern in empirical studies provided on Thatcher impact. In Chapter 3, we cover the methodology of the empirical analysis. We firstly focus on a general description of our model and its inference methods, and then discuss briefly a few previous SCM applications with matching outcome variables. In Chapter 4, we describe the selection of data for our SCM models with an emphasis on data-driven choices of the donor pool. In its last section, we redistribute covariates by for each outcome variable and make space for a second trinity of models. In Chapter 5, we present the outcomes of our SCM applications and corresponding inference methods. Finally, Chapter 6 is the conclusion.

[1] See section 3.3 Related applications

Chapter 2

Historical Background

At the start of Margaret Thatcher's government, the UK had been considered the *"Sick Man of Europe"* for more than a decade. This label was well earned as a consequence of its various issues, especially long-term British economic problems which appeared during the Golden age of European growth.This sententious term denotes the period between 1950-1973 in which Western European countries experienced a consistent, rapid economic rise. One of the key sources of this growth was the post-World War II economic disequilibrium, most apparent in the misallocation of resources caused by an absence of international trade (Temin 2003).
Despite how much the rate of growth varied across European economies, the UK's economic performance could hardly be called rapid growth. During this period, the UK was consistently losing its relative competitiveness to other developed economies. In Figure 2.1, we can observe the different development of the 4 biggest European industrial economies in real GDP per capita. There are two essential indications - the UK was leading by a serious margin at the start and had significantly less steep growth during the period. Such figures support the disequilibrium theory as UK , to some measures obviously as in the last five years UK is overtaken in absolute measures.

The relative loss in GDP outcomes eventually manifested in investment into manufacture. Therefore, the labour productivity growth was relatively slower than in other big industrial economies like Italy, West Germany or France[1]. /This productivity deficit completes the pattern for the decline in competitiveness, which was a key issue in UK politics since the late 60s and for the entirety of the 70s, when this growth period came to its end. The quadruplication of oil price within 6 months caused by sanctions after the Yom Kippur War only sealed long-term economic decay. In the

[1]In the period between 1955 and 1968, there was annual average growth of output per worker in the UK of 2.4% in France 5.1 % in Italy 6.0% in West Germany, this was 4.4% (Guttman 1976)

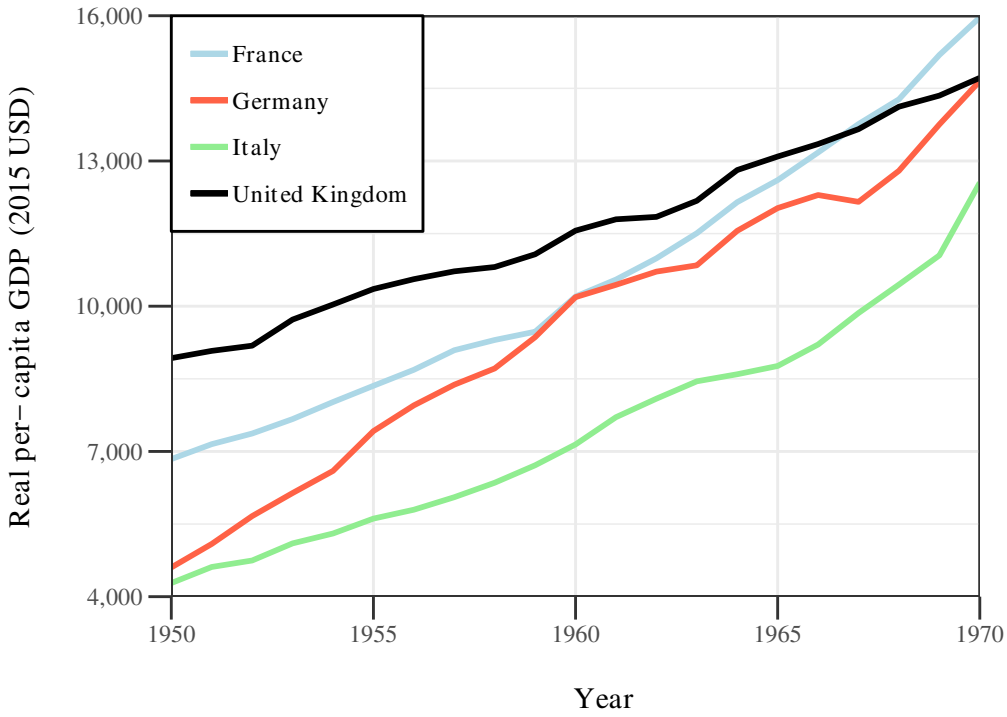


Figure 2.1: Golden age development

political dimension, these years have been called the Post-War Consensus. This consensus established by the 1945 Labour government consisted essentially of accepting Keynesian techniques of economic management, commitment to full employment, providing welfare state and social engineering with the aim of increasing equality, or the recognition of trade unions as an important force to cooperate with (Kavanagh 2011). In the following sections, we provide a more detailed view on internal UK issues, an explanations for the specifics of last 10 years of Post-war consensus and Thatcher as its decisive efficient deconstruction force.

2.1 Last Decade of the Post-war Consensus

2.1.1 Heath's Conservative government 1970-74

Neither a Labour nor a Conservative government succeeded at winning an election after being in office for a full 5 year term since 1957 and the 70s politic development did not break this trend. Thus decade started with another switch of power, a Conservative win. The new prime minister, Edward Heath, secured the election triumph, declaring a "quiet revolution" amounting to the right wing neo-liberal policies that are commonplace today, such as increasing economic productivity through free com-

petition and curbing the unions' power (Heath 1970). At the time, such a manifesto was strongly unconventional, built around solutions based on freer market policies like stopping subsidies, making tax cuts or deregulating labour policies to allow the private sector to manage work conditions only under the laws of the market.
On the other hand, the Heath government was still considered to be following a Keynesian approach (in contrast to the Thatcher Conservatives of the future), with an increased emphasis on controlling inflation, but still acknowledging full employment as an aim. The initial two years of Heath's administration followed the election manifesto. The Conservatives were fulfilling their promise by closing some interventionist institutions established by Labour, curbing the subsidies to unprofitable private companies and most importantly by increasing competition by getting UK into the common market - the predecessor of the European Union.(Cox 1982)
These governmental theses started to erode after its initiative to solve the other essential part of its manifest - the curbing of trade unions' power. The Industrial Relations Act legislated in 1971 made many commonly used union practices illegal and, most importantly, established compulsory strike ballots. This law invoked a large backlash from the unions; the largest official union protest movement since the 1926 General strike. See the rise of annually lost working days to industrial disputes in 1972 in Figure 2.2, even more striking relative to the previous decade; the average for the 1961-68 period is "only" 3210 thousand days. It needs to be noted that trade union power was enormous and wide; based on huge membership base, pro-unionist wing in Labour party and the stated Post-war Consensus. They had managed to deal with previous attempt to curb their power at an even earlier stage; the Labour Industrial Act in 1969 did not even pass. The membership base had risen steadily since almost 8 million in 1945 and peaking at more than 13 million members in 1979[2].
As a reaction to this failure and the rising unemployment (marginal figures from today's perspective, but not back then due Post-Wasr consensus feature - commitment to full employment(Kavanagh 2011)) in 1972, Heath's government executed the most famous U-turn in the history of British politics. It completely abandoned the Tory manifesto, abdicating on making any further labour reform, continuing in subsiding "lame duck" companies and returning to statutory control of prices and incomes which had been explicitly mentioned in the manifesto as a no-go. It was when such measures were in place that the aforementioned oil crisis took place. It was followed by a large scale strike of coal-miners in 1974 that resulted in a state of emergency, the unpopular 3-day week and eventually in new elections. The snap elections were called by Heath with the slogan *"Who Governs Britain?"* in an attempt to regain a mandate for its clash with the trade unions (Butler & Kavanagh 1974).

[2]Source: 1945-1973 - Department of Employment Statistics Division, 1974-1990 - Certification Office

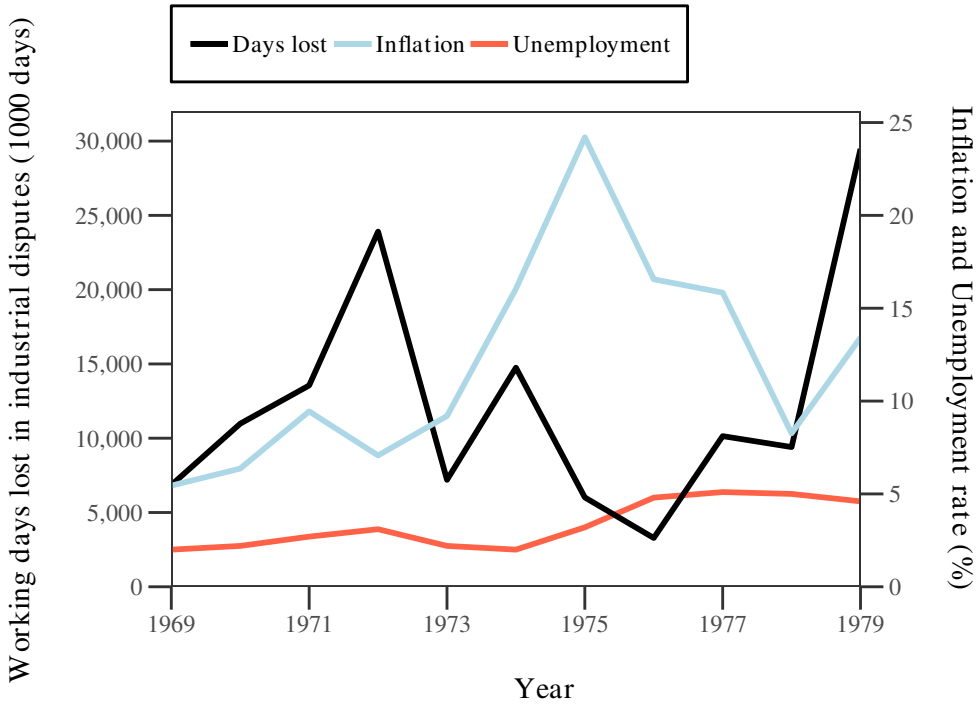


Figure 2.2: Inflation, Unemployment and Working days lost to industrial disputes 1969-79

2.1.2 Wilson's & Callaghan's Labour Governments 1974-79

After the Tories proceeded to lose two elections in one year (the 1974 election resulted in a hung parliament, thus another one was called), 5 years of Labour government came into being. Wilson's and Callaghan's Labour won with agenda strictly opposing Heath's original right-wing policies and promising to solve the industrial disputes through constructive dialogue with trade unions rather than legislative restrictions (Wilson 1974). Similarly to previous Heath's Conservatives, however, these main ideological points of the manifesto were followed diligently during the government's initial years in power. Its agenda of curbing free capitalistic market forces resulted in a renegotiation of EC terms (changes of a purely cosmetic nature) and the consequent successful referendum on staying in the EC under the new conditions. Labour further took steps towards an industrial democracy, such as expansion of public ownership in more industrial spheres, strategy negotiations with large private companies or rent freezing. Also, a new piece of union-friendly labour legislation named "Social

Contract" was passed promptly in 1974.
However, this ambitious socialist agenda started to slowly step back and eventually reverse. The aim to reach industrial democracy was repeatedly postponed due to the unwillingness of CBI[3], and the debate on planning with large private companies was simply canceled as their often multinational nature afforded them a significantly better negotiation position (Cox 1982).
The UK economy continued to perform poorly in 1976 as policies aimed at economic expansion and unemployment reduction further aggravated the trade balance trough calling in extra imports, and the inflation seemed completely unbearable, staying in the double digits for the third year in a row[4]. The Labour government led by new Prime minister Callaghan[5] reacted in a most unusual way - it started privatizing and setting monetary targets on public expenditure, which happen to be exemplary monetarism. This surprising diversion from the Post-war Consensus was confirmed also verbally by the Callaghan himself at the Labour party conference:

> We used to think that you could spend your way out of a recession, and increase employment by cutting taxes and boosting Government spending. I tell you in all candour that that option no longer exists... (Callaghan 1976)

These July cuts with stabilization as its their aim seemed satisfactory, but the autumn showed otherwise. The confidence of financial markets was not restored, and another fall of the sterling forced the UK into taking, at that time (1976), the biggest International Monetary Fund loan in history (Harmon 1997). The IMF required and was consequently granted more cuts in government expenditure in exchange for the loan. The policies were relatively successful in economic terms and stabilized the inflation as well as the overall situation by 1978. In this time of relative serenity, the key industrial social conflict flourished once again, greater then ever. See Figure 2.2; as inflation starts to relatively improve after 1976 the industrial disputes tend to increase, with the cherry on the cake being in 1979 - the Winter of Discontent. One of the policies pack aimed to curb the inflation prevented the wage rises in public sector to overcome 5% per year. The reaction of public sector workers and trade unions led to long-term strikes peaking in January 1979, with 1.5 million public employees not showing up. These strikes led the administration to flip some policies backwards, but it was too late, and the reputation of government competence was crushed. Unfortunately for Labour, they did not call an election in 1978 as was expected (as the economy was recovering and polls looked optimistic for them) and after such a winter they did not really stand a chance.

[3]Confederation of British Industry -UK business organisation
[4]Source:World Bank, World development indicators
[5]Wilson resigned on 16 March 1976, Callaghan became PM on 5 April

2.1.3 Summary

The final few governments of the Post-War Consensus had much in common. Both parties shared the opinion that there was something fundamentally wrong with the distribution forces between classes in UK, although each wanted to treat it differently (deregulation of market forces vs industrial democracy). They started fulfilling their initial plans initially, but both soon found themselves constrained by unions, inflation, oil crisis, financial markets or any number of other factors. Thus, they eventually both departed from their positions and made awkward U-turns to compromise with these forces. We would like emphasize the fact that as Labour so Conservative governments experimented with monetarist policies which indicated the end of consensus era.
All in all, Heath's and Callaghan's governments were not significantly distinguishable in anything beside their starting position, making policies that differed more in presentation then in reality and ending in a bizarrely similar "trade unions on strike" fashion.

2.2 Thatcherism

Biggest election swing since 1945 of 5.2% secured the Conservative party an election win and a comfortable majority in 1979 (BBC 1997) and gave the UK its first woman PM. The Thatcher election manifesto was of a very similar nature to Heath's in terms of direction, with an emphasis on competence and trade union control (Thatcher 1979).
The key visible difference appeared in the level of government dedication to the implementation of policies included in the manifesto. This increased determination to its free market solutions essence was fostered by a decreasing validity of the Keynesian approach thanks to it's inability to react on 70s recession and also by the fact that M. Thatcher had handily constructed her cabinet from the discontented authors of the 1974 manifesto (Cox 1982). Her first budget surprised many economists by its radical nature; cutting the top tax rate from 83% to 60%, standard tax from 33% to 30% and unified VAT rates from 8% and 12.5% to 15%. The overall economic situation only kept worsening in 1980, manufacturing output decreased by 16%, and as one can see in Figure 2.3, unemployment started rising again and inflation went up dramatically.
At this point, Thatcher faced the first serious pressure to lower the intensity her monetarist policies. Instead, the government produced another free market=fostering policy that was not even mentioned in its election manifesto - privatisation. The PM

further played the doubters and opponents in a very assertive (and later famous) way at the Conservative party conference with clear references to Heath's policies switch:

'U turn if you want to, the lady's not for turning' (Thatcher 1980)

A minor reshuffle of the government followed, getting rid of the "wets[6]". Paradoxically, in 1981, "the lady" made a bit of a U-turn of her own in a clash with miners' trade unions, as she calculated that the plan of shutting down uneconomic mines was too risky at the moment. However, in reference to her determination to monetarism

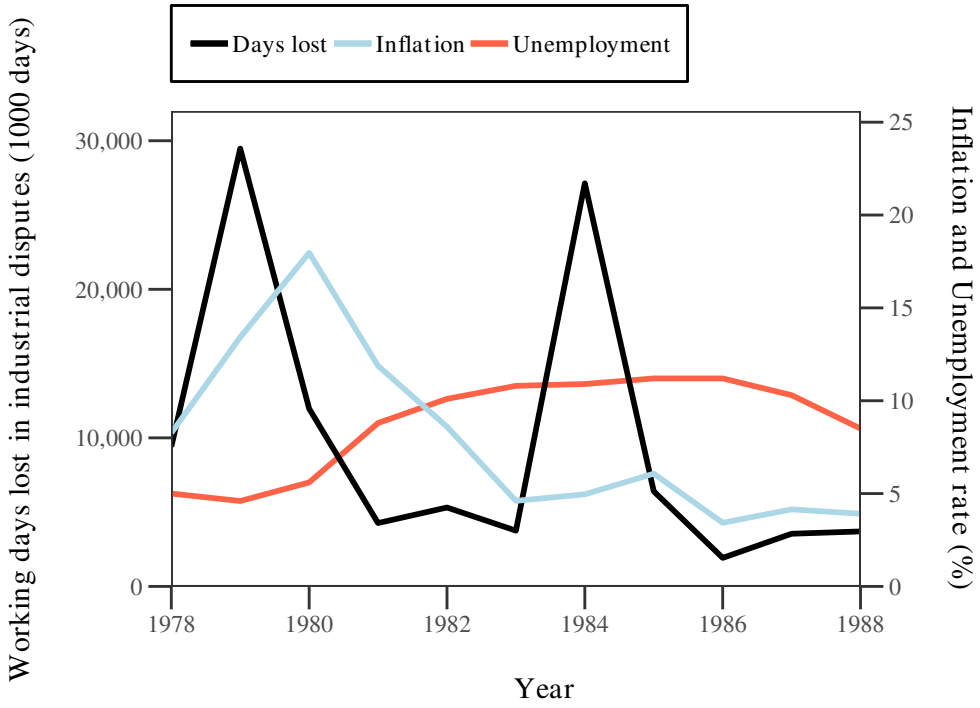


Figure 2.3: Inflation, Unemployment and Working days lost to the 1978-88 industrial dispute

, Thatcher's 1981 budget made the above quote quite convincing. Just one month following her loss to the trade unions, whilst experiencing the heart of the recession, she retained her original budget thanks to further raising taxes (to cut borrowing and therefore the interest rate) against the recommendation of 364 leading academic economists calling for a return to Keynesian policies, published by The Times (Neild & Hahn 1981). Thatcher, though, managed to avoid compromises in this sphere, pushed down unemployment-themed riots and by 1982, after one more reshuffle of "wets", found the economy approving of her monetarist approach and herself as a stable leader of the Conservatives (Seldon & Collings 1999).

[6]A term for Conservative MPs sceptical towards Thatcherite radicalism

However, Thatcher was not really favoured by the polls until the occurrence Falklands War. The number radically shifted after the Britain's victory. In combination with improving economic situation, splintering Labour and the specifics of the UK election system, it provided her with a massive majority of 144 to continue in the implementation of her reforms.
The key events of the second Thatcher government were, once again, clashes with trade unions. The conflict started by reopening the issue from 1981 - closing of uneconomical mines. As one can see in Figure 2.3, the number of working days lost came relatively close to the Winter of Discontent, but these miners were less concentrated. The strikes lasted for an entire year (starting March 1984) with varying intensity. One of the key events was that she managed to legislate the new Trade Union Bill 3 months into the strikes, which further reduced the unions' privileges and made secret ballots for their officers compulsory for legally starting a strike. This essential victory of Thatcher government closed the Age of Unions Periodically Overpowering Government.
We have chosen to omit a lot of other defining features of Thatcherism (such as dealing with the IRA or her foreign policy), as well as the rest of her second and her entire third term, because those were not so crucial in terms of economic performance with regard to our explored policies, approaches and challenges.

2.2.1 Summary

Thatcher was constrained by forces similar to the previous governments (poor UK economic performance, powerful and combative trade unions), but with significantly higher unemployment. Those had generated multiple points which could be identified as "U-turn" candidates, especially in the early years. Nevertheless, in huge contrast with her predecessors, she stepped back significantly from her ideology only once - in the conflict with trade unions in 1981, which she eventually managed to atone for in her second term.
The Thatcher administration managed to effectively dismantle the Post-war Consensus. The trade unions' influence was radically reduced due to increased restrictions. The government then shifted its priority from full employment to low inflation, leaving it more in the hands of private employers. Privatisation of substantial public assets, such as gas, electricity, telephony or rail and the surrender of the task to increase social equality to market forces had similar consequences. Overall, it was a massive shift to monetarist policies and an individualistic approach in society.

2.3 Literature Review

The policies of the Thatcher government were highly polarizing and influential in their time and, to some extent, both these features still hold truth today. Such specific attributes make these policies highly attractive as a case for empirical study. These studies naturally differ in its outcomes and conclusions, but they share the initial assumption. We emphasize that in this section - the Thatcher government meant significant changes.

One of Thatcher economic consultants, Patrick Minford, wrote several papers that advocated and praise her policies. In Matthews & Minford (1987), based on evidence obtained by application of the Liverpool model[7], he purports that the recession of 1980-81 was produced by external and supply-side shocks rather than tight domestic demand. Moreover, consecutive Thatcher policies had great impact on inflation reduction, productivity growth and unemployment retention.

Charles Bean also dedicated some of his articles to the impact of Thatcher's economic reforms. Bean & Symons (1989) provides us with a complex view on the effect of Thatcher's policies. They put forward the view that the government fulfilled its own essential stated goal; to get inflation under control suing monetary policy. They then conclude that change was linked to the conduct rather than the structure of industrial relations, with changed working practices and manning levels contingent on reduced trade union bargaining power, which resulted from unemployment shocks, anti-union legislation and greater competition in product markets.

Conversely, in *Thatcher Miracle?* by Layard & Nickell (1989), we see an empirical study with the aim of evaluating the development of inflation under the Thatcher government. Layard & Nickell express their argument that the inflation numbers are disproportionately big with such a great unemployment in the period of 1982-87. Further, he provide us evidence that a significant part of the inflation decrease was caused by British oil in the North sea and the concomitant appreciation of sterling, not reforms.

On the other hand, Turner *et al.* (1992) explore the increase of private sector efficiency under Thatcher. They obtain evidence for a structural brake caused by Thatcher reforms in business sector dynamics. Their econometric model shows that the dynamics of liquidations of companies significantly differ between the 1970s and the 1980s. Such evidence is coherent with Thatcher's promoted policies of stopping subsidies to "lame duck" companies.

Now, however, we review the more current methods exemplified by Benati (2008) application of structural VAR[8]. He investigates in this article the causes of Great

[7]Model developed by Minford *et al.* (1984)

[8]Vector autoregression model

Moderation in the UK. He obtains the evidence for good luck being the key contributor rather than a good policy. Furthermore, his model reveals that in the case of application of a Thatcherite monetary policy a decade earlier, the changes would have limited impact on inflation at a price of decreased output. In a reversal experiment, applying monetary policy of the previous decade on the Great Moderation period would also not make a significant difference.

Campos & Coricelli (2017) tried to find empirical evidence for the established opinion that the U-turn in the UK's relative competitiveness decline happened thanks to Thatcher's structural reforms. Using structural break tests on GDP per capita and TFP[9], he found none. Instead, his results pointed to an earlier structural change that precipitated an end to the British long-term competitive decline, its entry into the EC (More precisely, the start of serious negotiations in 1970/1969).

Last but not the least, Podestà (2018) challenges the thesis stated in Pierson (1994) about Thatcher's deconstruction of the welfare state. He used the synthetic control method to obtain his conclusion - the UK government did not significantly alter the key attributes of its welfare state. Beside that, he demonstrated, at least partially, the enormous impact of the Thatcher government on trade union density.

All in all, most relevant empirical studies on the impact of the Thatcher government are of older date, and therefore use older estimation methods. We see the opportunity to bring new insights by revising her impact complexly using recent methods. Thus, we will apply the same method as in Podestà (2018) but adjusted to our different aim. Next, we will inspect the proposed synthetic control method and its suitability for our case in the following chapter.

[9]Total factor productivity

Chapter 3

Synthetic Control Method

The synthetic control method (SCM) is a method suitable for comparative case studies recently developed by Abadie & Gardeazabal (2003) and extended further in his later works (Abadie *et al.* (2010), Abadie *et al.* (2015)). It provides us with a systematic way for the estimation of the effect of a policy intervention on a chosen outcome variable for an exposed unit (city, country, etc.). This method has enjoyed broad popularity in recent years; the establishing paper (Abadie & Gardeazabal (2003)) has, according to Google scholar, above 2,000 citations, of which over one half has been generated over the last three years. For example, Athey & Imbens (2017) describe the method as:

> "...arguably the most important innovation in the policy evaluation literature in the last 15 years."

One reason for this enormous number of citations lays, among other things, in the flexibility of the method and its ability to be used for comparative study in various spheres. For instance, the aforementioned high-profile SCM papers answer a very broad variety of different questions: from "What was the effect of terrorist activity on Basque economic performance?" to "How California's tobacco control program influenced the cigarettes consumption in California?" to "What was the economic impact of German reunification in 1990 for West Germany?". Another essential and very welcomed feature of this method is its transparency. Analysts can simply compare how a model suits the pre-intervention period and clearly see the dynamics and values that construct the counterfactual.

SCM operates on the very simple and straightforward principle of creating a synthetic unit through a specifically weighted average of different units that have not been exposed to the intervention concerned. The values of weights belonging to unexposed-units are set so that their final combination matches the treated unit during time periods before the intervention of interest. Such a synthetic unit then

represents the unit as it would be without being exposed to intervention. The difference between the treated unit and its synthetic double then shows the estimated impact of treatment.
The flexibility, simplicity and transparency are key determinants for the application of this method in our study. We believe these features make it highly suitable for answering our research question: What is the economic effect of the Thatcher revolution? In the following paragraphs, we shall formally describe the method, the inference methods and their previous applications to similar cases and variables of interest.

3.1 Formal Model Description

Let us suppose we have data for $J+1$ units[1] denoted by i in T time periods denoted by t. Let us then split the units by the presence of the intervention of interest[2]; without loss of generality, we assume that the only unit exposed to intervention of interest is the first one; $i = 1$.[3] We shall divide the time periods in a similar fashion; let t_0 be the last period before the intervention, where $1 \leq t_0 < T$. We assume that the treated unit is continuously exposed to the intervention during every time period such that $t \in [t_0+1, T]$ where $t \in \mathbb{Z}$. This leaves us with J remaining units unaffected by the intervention in every time period. These unexposed units all together form the control group, or, in other words, the "donor pool" as commonly referred to in SCM papers.
Let Y_{it}^N, Y_{it}^I denote the observed outcome[4] in the absence and in the presence of treatment, respectively, for the unit $i \in \{1, ..., J+1\}$ for the time period $t \in \{1, ..., T\}$. Y_{it}^I is obviously relevant only for time periods from $t_0 + 1$ to T. We further assume that the intervention does not affect outcomes in any of pre-intervention periods. In reality, intervention often has pre-implementation effects on the unit (e.g. the reaction of the stock market after the Brexit referendum, in the case where Britain leaving the EU is the intervention itself(Lash & Krudy 2016)), but this assumption is satisfied by redefining t_0 to the last period before such pre-implementation effects take place.
Let $\alpha_{it} = Y_{it}^I - Y_{it}^N$ denote the effect of the intervention for unit i for period t. Trivially, this equation equals zero in every time period before the intervention of interest, if the previously stated assumptions hold. In more formal notation: $\alpha_{it} = 0$ for every unit $i \in \{1, ..., J + 1\}$ for all periods such that $t \in [1, t_0)$.
Hence, generally, the observed outcome for unit i for period t is $Y_{it} = Y_{it}^N + \alpha_{it} D_{it}$,

[1] In our case, the units are countries
[2] Thatcherism
[3] United Kingdom
[4] Real GDP, Unemployment, Inflation

where D_{it} is the indicator of whether unit i for period t is exposed to intervention. Thus, D_{it} equals 1 only in case where $i = 1$ and $t > t_0$ and zero otherwise. Our goal is to estimate α_{1t} for $t > t_0$ which is defined as:

$$\alpha_{1t} = Y_{1t}^I - Y_{1t}^N \tag{4.1}$$

As Y_{1t}^I is already observed[5], what we need to do to complete this task is to estimate Y_{1t}^N - the counterfactual. Here, we use the essential aspect of SCM - creation of a single synthetic unit with $i = 1$ from a weighted average of the rest of the J non-treated ones:

$$\hat{Y}_{1t}^N = w_2 Y_{2t} + ... + w_{J+1} Y_{J+1} \tag{4.2}$$

Where, for all weights: $w_i \in \{w_2, ..., w_{J+1}\}$ holds $0 \leq w_i \leq 1$ and $\sum_{i=2}^{J+1} w_i = 1$. Now, the last task that remains is obtaining the optimal values for weights. Let us switch to matrix notation used in the method established in the Basque study (Abadie & Gardeazabal (2003)) for this purpose. Let us have $\mathbf{W} = [w_2, ..., w_{J+1}]^T$ be the $(J \times 1)$ matrix of weights. We posit that we have obtained K variables - unit characteristics that predict sufficiently the outcome variable Y and determine adequately the nature of the units. Let $\mathbf{X}_1$ be the matrix of size $(K \times 1)$ obtaining these characteristic variables for the first treated unit $(i = 1)$. For the donor pool, let us define $\mathbf{X}_0$ as the $(K \times J)$ matrix composed of all K characteristic variables for each unit $i \in \{2, ..., J + 1\}$. Then, the weights for the control group are determined precisely by minimizing the following expression:

$$(\mathbf{X}_1 - \mathbf{X}_0\mathbf{W})^T \mathbf{V} (\mathbf{X}_1 - \mathbf{X}_0\mathbf{W}) \tag{4.3}$$

Where $\mathbf{V}$ stands for the relative importance of predictor variables. Last but not the least, we have to obtain $\mathbf{V}^*$. Abadie (2013) offers us various ways - such as setting weights directly on your own (in some cases the researcher could have a legitimate reason for setting up particular weights) or running a regression of predictive variables on the outcome variable and use the obtained parameters as weights for the appropriate variables. However, in this thesis, we will use a different method offered in the same paper, which also happens to be the most widely used one. Weights are determined by minimization of differences between the treated unit and its synthetic alternative during the pre-treatment period: $(Y_{1t}^I - Y_{1t}^N)$.

[5]The real-world, actual United Kingdom

That is formally solved by minimizing:

$$MSPE = \frac{1}{T_0}\sum_{t=1}^{T_0}(Y_{1t} - \sum_{j=2}^{J+1} w_j^* Y_{jt})^2 \tag{4.4}$$

Where MSPE stands for Mean Squared Prediction Error and w^* is function of $\mathbf{V}^*$ which consequently creates a bilevel optimization problem. Thus, for each value of $\mathbf{V}$, there is an optimal w^* obtained from the minimisation of equation 4.3. Then, the set of acquired optimal values for unit weights is introduced into the MSPE. There, its minimization defines both $\mathbf{V}^*$ with its according $\mathbf{W}^*$. This $\mathbf{W}^*$ then determines the entire synthetic outcome by plugging in equation 4.2. Then, furthermore, by comparing it with the original outcome in equation 4.1 we can fulfil our intention - to estimate the effect of the concerned intervention of interest.

3.2 Inference Methods

Probably the most tricky part of the SCM process is inference. A majority of studies using SCM feature only one exposed unit and small data samples (low number of time periods). Also, the absence of data randomisation is obvious for time series. Thus, the relevance of SCM results is not possible to be evaluated by conventional methods with confidence intervals and standard errors. However, Abadie & Gardeazabal (2003) offer us some unorthodox solutions (extended and new ones developed in Abadie's later works); placebo tests that have the ability to, to some point, evaluate the significance of treatment effects. They are divided by notation in to two groups; "in-time placebos" and "in-space placebos"(Abadie *et al.* 2015).
The first type, in-time placebos, works on the principle of running the same SCM (identical donor pool, characteristic variables, w^* obtaining methodology...) on the same treated unit, but shifting t_0 to an earlier time period. In case we posses enough data, we can inject various different earlier time periods. Afterwards, we compare the outcome of this synthetic treatment and placebo(s) obtained by the test. If the results of the placebo share notable similarity with the original study, then there is significant reason to be doubtful of our results, our confidence in validity of results should be doubted. There is one necessary condition for running this test, though, as Abadie *et al.* (2015) states:

> "These tests are feasible if there are available data for a sufficiently large number of time periods when no structural shocks to the outcome variable occurred."

Unfortunately, not satisfying this condition is our reason for not constructing "in-

time placebos" in this study.[6]

On the other hand, the in-space placebos method consists in the application of the same SCM, one by one, on every unit from the donor pool; in other words, in the construction of placebos for every control unit. In the study that established SCM, Abadie & Gardeazabal (2003), this placebo is used to check the member of the donor pool with the biggest assigned weight. Let us pose that SCM for this control unit of high importance would reveal high disproportion and gaps between placebo and reality. Such outcome would consequently arouse suspicion about the relevance of treated unit results.

Adopting different approach, using all donor pool placebos, we can compare placebo effects with the effect on the treated unit. If we found out that the impact on the exposed unit is significantly larger relatively to placebo outcomes, we can conclude that there is statistical evidence of significant intervention effect on treated unit.

One disadvantage of this test is that it only examines whether the impact magnitude is unusually big relatively to donor pool members. It is out of this test's reach to reveal if such effects are caused by idiosyncratic shocks or other hidden shifts; therefore, it is highly necessary to correctly and precisely construct the data pool. Other results might signal either a poorly constructed model (composition of donor pool/set of characteristic variables) or treatment insignificance for the chosen outcome variable. However, this test could be easily biased due to the structure of donor pool. The control units were selected in order to compose a "tailored fit" for the treated unit. Obviously, such a fit may be unsuitable for different units as members of donor pool. This method provides us also with a specific p-value, as in traditional statistical inference. However, its interpretation is highly specific:

> "In the absence of randomization, the p-value still has an interpretation as the probability of obtaining an estimate at least as large as the one obtained for the unit representing the case of interest when the intervention is reassigned at random in the data set.(Abadie *et al.* 2015)"

Abadie *et al.* (2010) give us a further upgraded version of this interference method with the elimination of some units from the donor pool. They are treated according to their pre-intervention MSPE compared to the one belonging to the treated unit. Such actions build on the logic that if our treated unit would not fit properly into the pre-treatment period, we would conclude that its post-treatment gap, between the synthetic and the real unit, is caused by bad model fit rather than the treatment itself. Therefore, placebo units with miserable pre-treatment fit do not produce valid

[6] A significant group of predictor variables are available from later time periods. Sectoral shares from UNECO are unavailable before 1970 and school enrollment data before 1971 and 1973. Such data measures makes in-time placebo either unsuitable because of different variables or of a short period between the real intervention the and placebo one.

information about the previously discussed rarity of treated unit effect, as their ratio would be influenced by bad pre-treatment fit.
However, there is more information that could be extracted from running placebos on all donor pool members. Abadie *et al.* (2015) constructs a so called "Robustness Test". In the case where a synthetic treated unit is composed of more units, we can test its robustness by applying the SCM and excluding them one at the time. Then, we compare the obtained synthetic outcomes with each other and the normal result, of course. If the results do vary significantly, it would undermine our trust for the results.
To conclude, there is no one conventional inference method, but instead a bundle of them. Therefore, it is more challenging, but still achievable to confirm SCM significance.

3.3 Related applications

Until now, this section has covered the universal application of SCM. Here we will inspect SCM papers that are related to our research question so we can properly construct our model. Also, by describing these examples we further demonstrate the suitability of SCM for our case study.
To our knowledge, the only use of the synthetic control method as applied to the Thatcher government's impact is the aforementioned Podestà (2018). That is helpful, but, as stated before, his outcome variables cover attributes of welfare state, which is quite different from those proposed by us. Therefore, we briefly explore in this section a couple of SCM application papers for every single one of our output variables.

3.3.1 Real GDP

The paper that established SCM as a method Abadie & Gardeazabal (2003), uses Real GDP as its outcome variable. The paper investigates the effect of terrorist attacks in the time period of 1969-2000 on the Basque region. Their counterfactual unit - without attacks - obtained the expected direction of the effect; 10% higher outcome for this Spain region.
Anther often cited paper, Nauro F. Campos (2014), observes the impact of European integration. He investigates the productivity development in relation to all EU enlargement waves from 1973 (including the UK's) to 2004. He also collects evidence for a positive effect of EU membership for all countries beside Greece, with an average of 12% lower outcome per capita without joining the EU.
Newiak & Willems (2017), finally, look for evidence of IMF advice impacting economic growth. There are several treated units; developing countries with which IMF

started consulting their economic policies after 2005. They conclude overall positive impact of about 1% of real GDP annually.

3.3.2 Inflation

Beside SCM with real GDP as outcome, Newiak & Willems (2017) provides in the same paper also the estimation of IMF consultations on CPI. Here they found a stronger effect of, on average, 3% lowering inflation per year, although on a smaller number of units.
Emerging economies are also inspected in Lee (2010). He evaluates the effect of inflation-targeting policy on countries that adopted this approach in 1990s and 2000s. He found evidence of a positive impact for some countries as Czech Republic, Colombia and Hungary. This is in contrast to Chile, which, as he says, is often presented as an example of successfully implemented inflation targeting policies, where he does not find any significant effect.
Hallren (2014) estimates the effects of quasi-dollarization and official dollarization in Argentina and Ecuador, respectively. He found an inflation-diminishing effect for both countries with significantly greater on Argentina then Ecuador, although both effects appeared only after several years.

3.3.3 Unemployment

The effect of Mariel Boatlift is examined by Peri & Yasenov (2018). They evaluate the effect of this migration wave from Cuba to the USA (approximately 125 thousand migrants within 6 months in 1980) on Miami labour market figures. However, they did not find any significant evidence a for sudden difference in unemployment.
Ozbeklik (2016) then observes the impact of Right to Work legislation in Oklahoma. This law forbids employees in unionized workplaces to negotiate their own specific work conditions, which he states causes them to engage in trade union organizations. They found an impact amounting to a decrease of the private sector unionization rate, but no significant effect on the employment rate.
Lastly, an investigation into the effect of natural disasters on the labour market is carried out by Coffman & Noy (2012). They examine Hurricane Iniki on the island of Kauai, which caused 7.4 billion US dollars-worth of direct damages. They produce evidence of a significant long term shortage above 10% in the number of private sector employment positions.

Chapter 4

Data Selection

The scope of methodological variation of SCM is not particularly wide. Therefore, its outcome and relevance is highly dependent on the researcher's data selection, as already indicated in the previous section. It is, at the same time, their biggest task and also their biggest contribution to the study. In the following paragraphs, we provide a structured explanation of our data choices.

4.1 Time Periods

The choice of the last pre-intervention period is not at all troublesome. The elections took time at May of 1979, and we assume some lag in the effects of reforms caused by the dynamics of political process. Due to such suggestion of ours and the annual nature of data we set $t_0 = 1979$.

The assumption of continual exposition to intervention could, potentially, make the decision about the of length of the treatment period a more complex problem. We are, unfortunately, constrained by exogenous issues, as the last decade of the millennium was ample with structural changes. For instance, Ireland, Finland or Sweden would be useless as members of the donor pool due to the occurrence of "Celtic Tiger" and financial crises in the countries. Therefore, we construct the post-treatment period as 1980-90 to avoid such donor pool constraints or otherwise biased results by idiosyncratic shocks. Such a length interval also mirrors Abadie *et al.* (2015):

> "...because a roughly decade-long period after the reunification seems like a reasonable limit on the span of plausible prediction."

The last component of the time data is the pre-treatment period length. We start it in 1960[1]; thusm the ratio of pre-treatment to post-treatment period is 20:11. There

[1]Predictor variables providing sectoral shares are available from 1970, primary and tertiary school enrolments are available from 1973 and 1971 respectively

is no exact rule on what this ratio should be, although we suggest it is acceptable based on high diversity of this measure in essential SCM studies, from 10:28 (Abadie & Gardeazabal 2003) to 30:13 (Abadie *et al.* 2015).

4.2 Units

The structure of the donor pool is the most essential component of the SCM results and their consequent relevancy. Unfortunately, to our knowledge there has not been proposed a set of rules for how to construct it, beside the one obvious necessary assumption covering the selection of control units - not to be affected by the treatment (Nauro F. Campos 2014). In this section, we will provide a transparent and data-driven method of donor pool construction.

The first part of our selection method is building a wider group of similar suitable units - in our UK case, it will be other developed economies. There are various lists from our period of interest, of -at the time - so-called industrialized economies. We are taking into account OECD members and lists from most prominent multinational institutions: the International Monetary Fund and the World Bank. The World Economic Outlook report series was started by the IMF in 1980. Thanks to slow dynamics of changes in the level of development, these data are sufficient even though they are dated only one year after our treatment of interest appeared. The first volume of nowadays well established World Economic Outlook identified 21 world countries as industrial ones (Fund 1980). If we compare that list to the WB's World Development Report from the same year, the only difference was the inclusion of Spain (Bank 1980). Both of these lists contained all OECD member countries except Turkey, Portugal, Greece (and, in WB's case, Spain). Apart from Turkey, the rest of the mentioned OECD member countries were soon added:

> "...but in 1989 Greece and Portugal were reclassified from developing to industrial countries. The relevant report - the October 1989 WEO - is silent on the reasons for why this reclassification took place." (Nielsen 2011)

Thus, we have decided to exclude Turkey and keep the rest of 1980s OECD members (beside the treated unit, UK, obviously) as the reclassification was not clearly explained.

In the next step, we rule out small-scaled economies, Iceland and Luxembourg, because of their specific small-country nature, following the logic used in the German reunification study (Abadie *et al.* 2015). This part leaves us with a potential donor pool composed of 20 industrial economies.

Now that we have obtained a bundle of generally suitable developed economies, we

can proceed to the second step - fulfilling the only essential assumption; no exposed units included in donor pool. United States are a pretty obvious candidate for elimination. The Reagan administrative is famous for its similar neo-liberal reforms happening simultaneously with the Thatcher government. However, we intend to provide a more systematic approach based on exact data. We adopt Podesta's practice from his comparative study (Podestà 2018). It is based on the reasoning that right-wing governments tend more to curb the welfare state (in our case to enforce Thatcher-like policies). He excluded every country where more than half of government seats belonged to a secular right-wing party for at least five years within the period of 1980-90. We use the same database (Brady *et al.* 2014) but with a small redefinition and modification of the criterion to be more proportional. We will remove every country where such right-wing parties obtained a majority of government seats for at least one *half* of our post-treatment period. This small upgrade makes this method easily repeatable in the future and more consistent.
It is proper to mention that, in our case, the only difference is keeping the New Zealand in the donor pool. As you can see in Table 5.1, this systematic method clearly detects USA with $ratio = 0.91$. We intentionally included the UK in the table to support our adopted method by visible data evidence. Further this approach narrows our donor pool by requiring the absence of Canada, Denmark and Japan[2].
The last intervention in the control units selection is of a less systematic and more pragmatic nature. We were unfortunately forced to exclude West Germany due to specific data demands[3].
To sum up, our final version of the donor pool contains a sufficient number of relevant units; 15 OECD members, developed economies, whose governments did not lean towards right-wing policies for at least half of our post treatment period.

4.3 Variables

The aim of this thesis is to evaluate the overall economic impact of the Thatcher revolution. We suggest there are three essential indicators that substantially cover a nation's economic development: real GDP per capita, inflation and unemployment Therefore we have to make three models, one for each of these outcome variables.
Predictor variables should provide an approximate characterizations of economies; they ought to be essential determinants to define them. Our choice of predictor variables is composed of a conventional core in combination with our additions. We mainly continue to build on the logic provided in two essential SCM studies from

[2]All excluded countries' ratios in table are marked by being **Bold**

[3]Estimation methodology creating PENN 9.0 database uses entire Germany as single unit even before its own re-unification which is contrast with rest of our data sources; WB, AMECO and Clio Infra

Table 4.1: Share of seats in government (%) held by right-wing parties

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	Ratio
Australia	100	100	100	17	0	0	0	0	0	0	0	0,27
Austria	0	0	0	7	12	12	12	1	0	0	0	0,00
Belgium	9	0	46	46	46	46	40	40	23	11	11	0,00
Canada	17	0	0	0	25	100	100	100	100	100	100	**0,55**
Denmark	0	0	24	71	82	83	83	83	84	85	85	**0,73**
Finland	0	0	0	0	0	0	0	27	41	41	42	0,00
France	100	42	0	0	0	0	75	100	37	0	0	0,27
West Germany	0	0	0	0	0	0	0	0	0	0	0	0,00
Greece	100	83	0	0	0	0	0	0	0	39	83	0,27
Ireland	0	41	20	81	81	81	81	14	0	4	7	0,36
Italy	0	0	0	2	4	4	4	3	3	3	3	0,00
Japan	100	100	100	100	100	100	100	100	100	100	100	**1,00**
Netherlands	36	24	7	44	44	44	39	33	33	28	0	0,00
Norway	0	25	100	81	67	67	21	0	0	10	50	0,36
New Zeland	100	100	100	100	58	0	0	0	0	0	17	0,45
Portugal	4	5	5	2	0	0	0	0	0	0	0	0,00
Spain	0	0	0	0	0	0	0	0	0	0	0	0,00
Sweden	42	17	0	0	0	0	0	0	0	0	0	0,00
Switzerland	29	29	29	30	33	33	33	33	32	32	32	0,00
United States	0	100	100	100	100	100	100	100	100	100	100	**0,91**
United Kingdom	100	100	100	100	100	100	100	100	100	100	100	**1,00**

Source: Brady *et al.* (2014)

Abadie that evaluated economic performance (real GDP). Thus we provide sectoral shares (more stratified), investment ratio, trade openness ratio (divided to export and import figures) and school enrollments (primary and tertiary).

Our modification starts with the urban ratio as a substitute for population density used for Spanish regions(Abadie & Gardeazabal 2003), as we would argue it is more suitable for our case of national states. To complete GDP formation with merchant trade and capital formation already used, we add household consumption and government spending. Due to short availability and limited complexity of school enrolments, we have decided to include also other human capital variables: Human capital index (containing average years of schooling and rate of return to education) and Gini coefficient for education. In case of a demography-characterising variable, we rather prefer the age dependency ratio to the population growth rate, as the latter is essentially included in real GDP per capita, which makes it redundant (Janota 2015). Eventually, our last basic addition is the usage of *remaining* outcome variables - we use them to serve as predictor variables for each other, although in the case of inflation this is no new thing (Abadie *et al.* 2015). For these predictor variables, the average over the pre-intervention period will be used as input to $\mathbf{X}_0$ and $\mathbf{X}_1$.

Still, we need to take special care when using an outcome variable as its own covariate. Its biggest advantage is that even if we omit some important predictor variable, its influence will be included in the outcome variable. Therefore, it is becoming popular to treat every year of the outcome variable as a separate predictor variable. But

as Kaul *et al.* (2014) demonstrate, such SCM application makes all other covariates irrelevant with insignificant effects. Thus, the model would have the same outcome even shile omitting all other predictor variables, which could cause bias if they were relevant. We follow this logic and also one of the suggestions stated in Kaul *et al.* (2014). Therefore, in the case of using outcome variable as covariate, we use only the value for the last pre-treatment year.

This leaves us wuth a relatively large set of covariates usually used in the economic SCM applications. To our knowledge, there is no statistically driven evidence for preferring either a smaller or greater number of predictor variables. However, even a quick look at related SCM applications reveals that choice of covariates differs strongly depending on the outcome variable. Therefore, we continue to further explore our data-set and look for specific needs for our outcome variables.

We decided to create two models for every outcome variable, which differ only in the set of predictor variables. We will provide a comparison of their results and inference methods outcomes in order to obtain more a complex research outlook. One model will be universal, using all by this point stated covariates. The other one will be adjusted to every outcome variable's specific nature.

For real GDP we use almost the same set as Abadie *et al.* (2015) or Newiak & Willems (2017). To do so we, have to modify some of our variables; rate of market openness is created by absolute sum of total exports and imports and industry share is a simple sum of Manufacturing, Mining and Construction. We supplement Tertiary school enrollment with Human Capital Index in the schooling attributes category. We further add urban ratio, as previously stated, as a replacement for population density from Abadie & Gardeazabal (2003).

The models on unemployment are, unfortunately, mostly obtaining variables missing from our data-set and to our knowledge unavailable for the UK in our period, like average wage(Coffman & Noy 2012) or ethnicityPeri & Yasenov (2018). Fortunately, they also contain the education attributes or urban areaOzbeklik (2016). Therefore, we decided to replace the missing attributes by using a deeper insight on education - using all of our "Human capital variables" (see table 4.2) in combination with our addition of demography which is a proxy for the work force and thus unemployment.

Those SCM applications that have inflation as an outcome variable typically use a low number of variable types. Hallren (2014) uses, beside inflation, the population growth and government spending ratio. Both Newiak & Willems (2017) and Lee (2010) use various inflation lags. The more prominent paper Lee (2010) even uses all inflation lags available in addition to GDP per capita - exactly what is not recommended by Kaul *et al.* (2014). In any case, we decide to keep following the last period lag only suggestion in combination with their different used variables and our addition of the Gini education coefficient. This addition is based on evidence

Table 4.2: Covariates description, sources and model usage

Variable	Description	Time	Source	rgdp	unemp	infl
Outcome variables						
rgdp	Real GDP per capita (in 2011 dollars)	1960 -	Penn 9.0	Y	-	Y
unemp	Unemployment rate (%)	1960 -	AMECO	-	Y	Y
infl	Inflation rate (%)	1960 -	WB	Y	-	-
GDP formation (in % of GDP)						
hauco	Household consumption	1960 -	Penn 9.0	-	-	-
govsp	Government spending	1960 -	Penn 9.0	-	-	Y
inves	Total Investment	1960 -	Penn 9.0	Y	-	-
exp	Total Exports	1960 -	Penn 9.0	Y*	-	-
imp	Total Imports	1960 -	Penn 9.0	Y*	-	-
Sectoral shares (% of Value added)						
agri	Agriculture, Hunting, Forestry, Fishing	1970 -	UNCTAD	-	-	-
manuf	Manufacturing	1970 -	UNCTAD	Y**	-	-
minin	Mining,Utilities	1970 -	UNCTAD	Y**	-	-
const	Construction	1970 -	UNCTAD	Y**	-	-
retail	Wholesale, Retail Trade, Restaurants	1970 -	UNCTAD	-	-	-
trans	Transport, Storage and Communication	1970 -	UNCTAD	-	-	-
other	Other services	1970 -	UNCTAD	-	-	-
Human capital						
hucap	Human capital index	1960 -	Penn 9.0	Y	Y	-
gini	Gini of the spread of education	1960 -	Clio Infra	-	Y	Y
schprim	Primary school enrollment (% gross)	1973 -	WB	-	Y	-
schtert	Tertiary school enrollment (% gross)	1971 -	WB	Y	Y	-
Demography (% of population)						
urban	People living in urban areas	1960 -	WB	Y	Y	-
age	Age dependency ratio	1960 -	UNCTAD	-	Y	-

*part of openness ratio variable; absolute sum of Export and Import % of GDP

**part of industry variable; sum of Manufacturing, Mining and Construction

provided in (Crowe 2004) that inflation tends to be higher in countries with higher inequality.

See table 5.2 for complex, fragmented and detailed summary containing all variables with precise description, source, time availability and their models occurrences (rgdp/unemp/infl; where Y stands for Yes included).

Chapter 5

Empirical results

In this chapter, we present the outcomes of our SCM applications. The chapter contains all 6 synthetics described in the previous chapter, ordered by their outcome variables. In the interest of simplifying the results overview, we divide them in advance by the approach to the choice of predictors variables. Models using all available covariates will be noted as Model U standing for Universal (displayed in blue) and the second ones with specific method of choosing are named Model A for Adjusted (displayed in red). We also perform three inference methods on every application to reliably analyse not only the size of the effects but also their significance.

5.1 Real GDP

5.1.1 Synthetic control method results

Table 5.1 shows all countries' weights that construct a synthetic UK for both models. We see that even though the Adjusted model used over half (11 to 21 variables) of Universal's model covariates (and merged a few) the composition of the synthetic UK is visibly similar. For both synthetic UK units it holds that over 90% are constructed by a combination of Australia, New Zeland and Ireland.
The differences are naturally wider in predictor variable synthetic weights. The Adjusted model's the most important variable is the sum of original variables, Industry with 0.856, accompanied by relatively unimportant Human capital and the other specially modified variable - Openness ratio - with 0.056 and 0.043, respectively. The Universal model is more balanced, without a single variable obtaining relative importance over 0.2, although the most important variable did belong to the Industry group - mining, with 0.18. Beside human capital variables such as Gini coefficient, human capital index and gross tertiary school enrollment, the only variable passing

Table 5.1: Synthetic Unit Weights of Real GDP models

Country	Model U Weights	Model A Weights	Country	Model U Weights	Model A Weights
Australia	0.475	0.480	Netherlands	0.000	0.000
Austria	0.000	0.020	New Zealand	0.124	0.131
Belgium	0.001	0.000	Norway	0.000	0.000
Finland	0.000	0.000	Portugal	0.003	0.060
France	0.001	0.000	Spain	0.023	0.000
Greece	0.000	0.000	Sweden	0.000	0.000
Ireland	0.374	0.310	Switzerland	0.000	0.000
Italy	0.000	0.000			

at least 0.1 relative importance was investment[1].

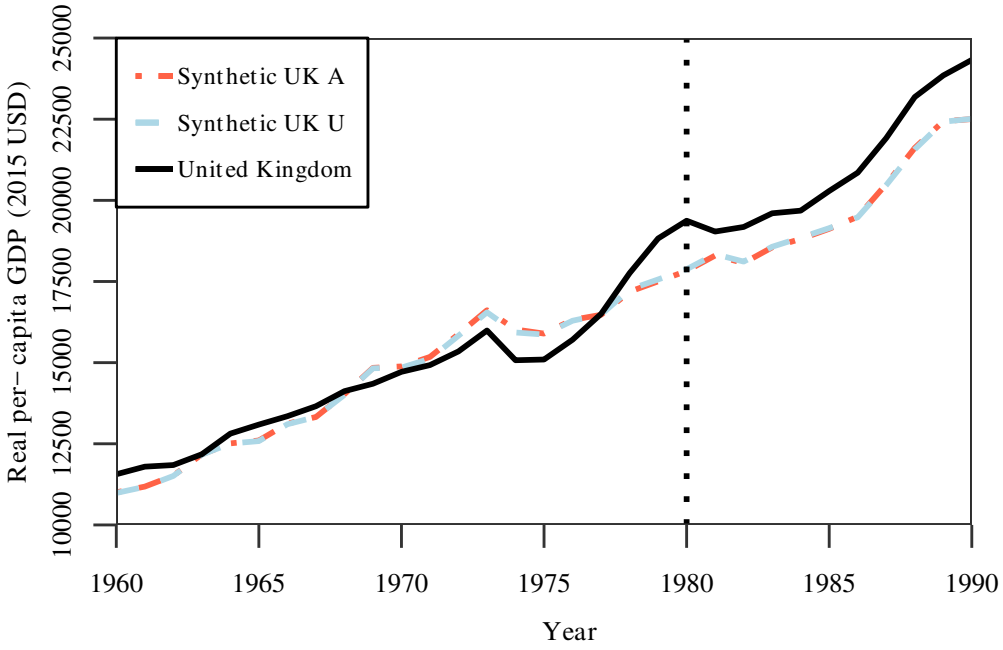


Figure 5.1: Trends in real Per-Capita GDP: Great Britain vs. Great Britain synthetics "Universal" and "Adjusted"

Figure 5.1 shows both the Universal and Adjusted models in comparison to the GDP per capita development of United Kingdom, where the vertical dotted line stands for the start of treatment period. The Universal and Adjusted model outcomes are virtually the same as their mutual overlap prevails for entire both pre- and post-intervention periods. That is direct consequence of the extremely related control

[1]The entire list of variable synthetic weights for these and following model can be found in Appendix B

unit weights. These almost identical results point to the irrelevance of some number of variables used in the Model U.

The other statistic that Figure 5.1 provides on the first sight is the solid and stable positive effect of Thatcher government. The annual average effect is 1394.33 and 1406.55 for the Universal and the Adjusted model, respectively. But here, we must place emphasis on the often tricky but important nature of pre-treatment fit. The figure 5.2 shows the gap between United Kingdom real GDP and our two models. We can see that fits is not ideal in the initial period and it completely deviates after 1977 (marked by a thinner dotted line). We see that the "positive impact" optically consists only in sustaining the value of initial post-intervention bad fit.

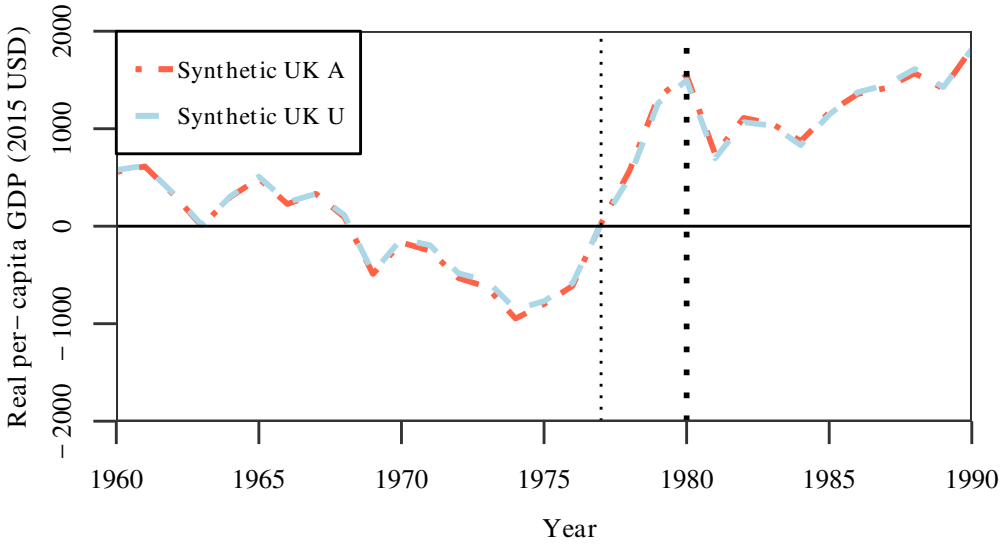


Figure 5.2: Per-capita GDP Gap between Great Britain and Great Britain synthetics "Universal" and "Adjusted"

5.1.2 Inference

In Figure 5.3 we present the results of Placebo studies on models A and U for real GDP.

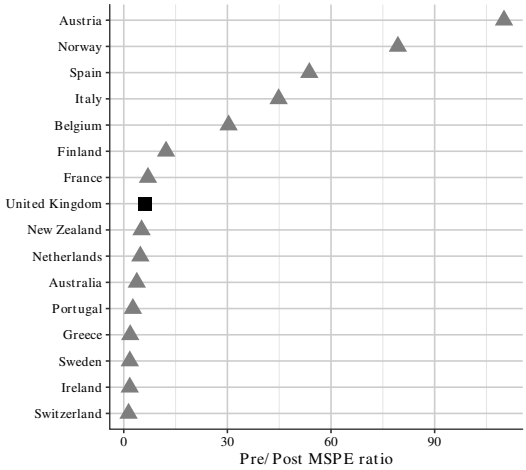
The Post/Pre MPSE ratio localized at a) and b) does not alter significantly for the models as the ratio of both falls persuasively in average members of the donor pool. As stated in Chapter 3, such results indicate the relative insignificance of any impact proposed by the SCM model.

To construct the robustness test, we in advance exclude the countries that, despite having obtained nonzero synthetic weights, did not score above 0.02, as we find them insignificant in the construction of our synthetic UK. In the Universal model case we exclude with such logic Belgium, France and Portugal, none for the Model A.

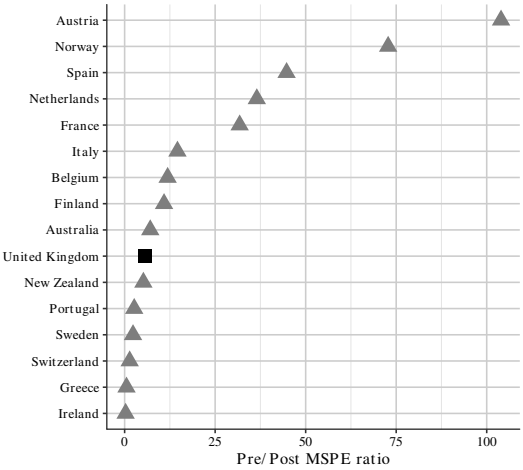
Therefore, the robustness test for Model U consist of leaving one out from foursome of Australia, Ireland, New Zealand and Spain. As we can see in c) the model is not robust at all, the high dependence on Australia is reflected on the line well below the others. The Model U obtains significantly better outcome from a robustness test that leaves out one of Australia, Austria, Ireland, New Zealand and Portugal
The observation of in space placebo tests only further confirms the implications of the MSPE ratio inference method for both models.

5.1.3 Summary

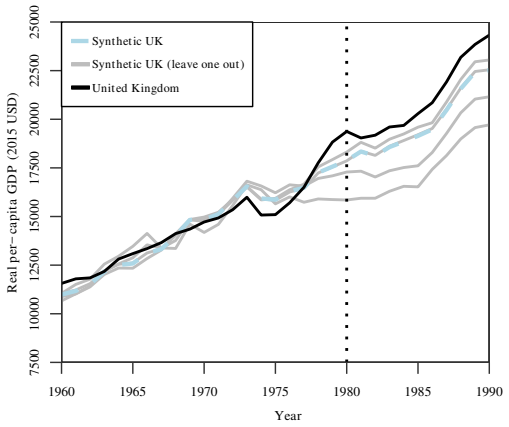
Both the Universal and the Adjusted model indicate an increasing effect of relatively the same size. Nevertheless, the only significant difference between Model A and U is provided by the robustness test which clearly prefers the Adjusted model. Unfortunately, its fit to the pre-treatment period is equally insufficient as for the Universal model. Therefore, its outcome of average positive intervention impact of 1394.33 can not be taken differently than with a rather large grain of salt. The essential drift away of our synthetic units occurred in 1977. Therefore, we suggest that the inability of these models to obtain sufficient pre-treatment fit could arise from the disproportionately economic improve after Callaghan's U-turn mentioned in the second chapter.



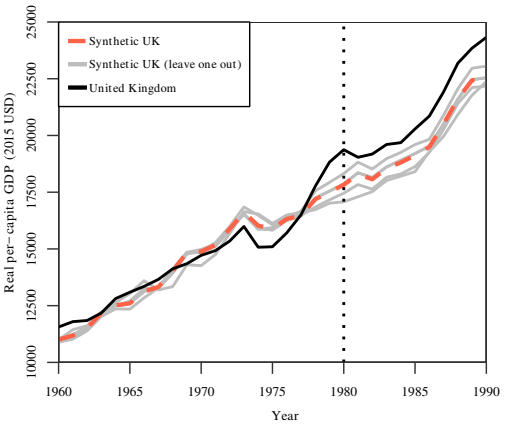
(a) Post/Pre MSPE ratio Model U



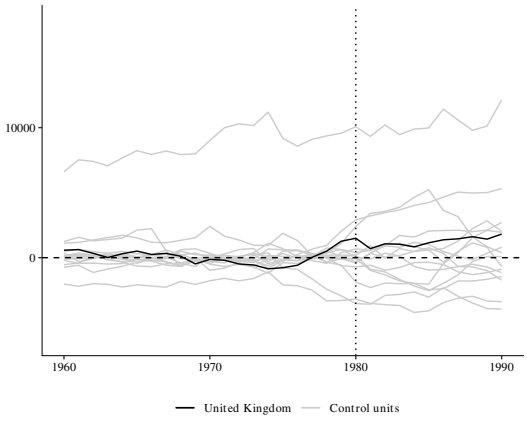
(b) Post/Pre MSPE ratio Model A



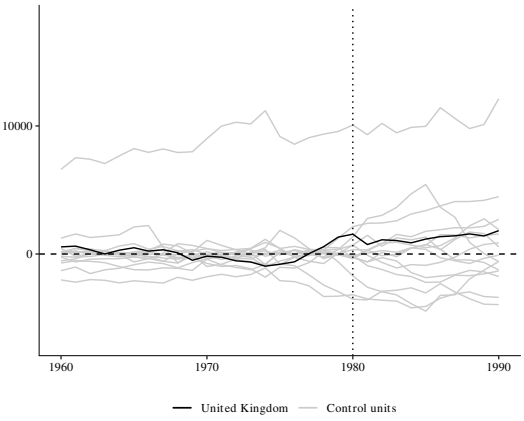
(c) Robustness test Model U



(d) Robustness test Model A



(e) In space placebos Model U



(f) In space placebos Model A

Figure 5.3: Placebo studies on real GDP

5.2 Unemployment

5.2.1 Synthetic control method results

Unlike in the previous case involving GDP, in Table 5.2 one can see that the countries' weights constructing a synthetic UK show significantly more distinctions between Universal and Adjusted model. Nevertheless, the highest weighted country is the same for both models, Australia. Among shared significant units we can also see Sweden, although it is twice more determining for the Universal model. The Universal synthetic UK further consists of France and Portugal, in contrast to more widely distributed Adjusted model with significant donors from Switzerland and Belgium.

For Model A, Gini education coefficient has earned the relatively most important

Table 5.2: Synthetic Unit Weights of Unemployment Models

Country	Universal M Weights	Adjusted M Weights	Country	Universal M Weights	Adjusted M Weights
Australia	0.305	0.387	Netherlands	0.000	0.028
Austria	0.000	0.035	New Zealand	0.000	0.009
Belgium	0.000	0.114	Norway	0.000	0.030
Finland	0.000	0.057	Portugal	0.157	0.002
France	0.220	0.021	Spain	0.002	0.027
Greece	0.000	0.017	Sweden	0.231	0.120
Ireland	0.012	0.019	Switzerland	0.073	0.109
Italy	0.000	0.022			

role with a synthetic weight of 0.474, complemented by the gross primary school enrolment, human capital index and urban ratio. Interestingly, log of unemployment has zero importance. For the Universal model, the relative importance of variables is naturally more divided, with inflation, unemployment lag and tertiary school enrollment being the most substantial covariates.

We present both our synthetic applications aimed at predicting unemployment in Figure 5.4. Again, we can see that very similar pattern in the development of synthetic UK units A and U. However, after a closer look, we see that they differ in details which, is caused by the diversity in the obtained synthetic weights for donor pool members. The effect is recognizably negative in terms of Thatcher increasing unemployment. The annual average effect is 2.7895 and 3.1462 for Universal and Adjusted model respectively.

We further observe the pre-treatment fit in Figure 5.5 providing the differences between UK unemployment and our synthetic control units. It fits consistently for the entire pre-intervention period. Also, the observed impact of treatment tends to occur smoothly after the intervention implementation.

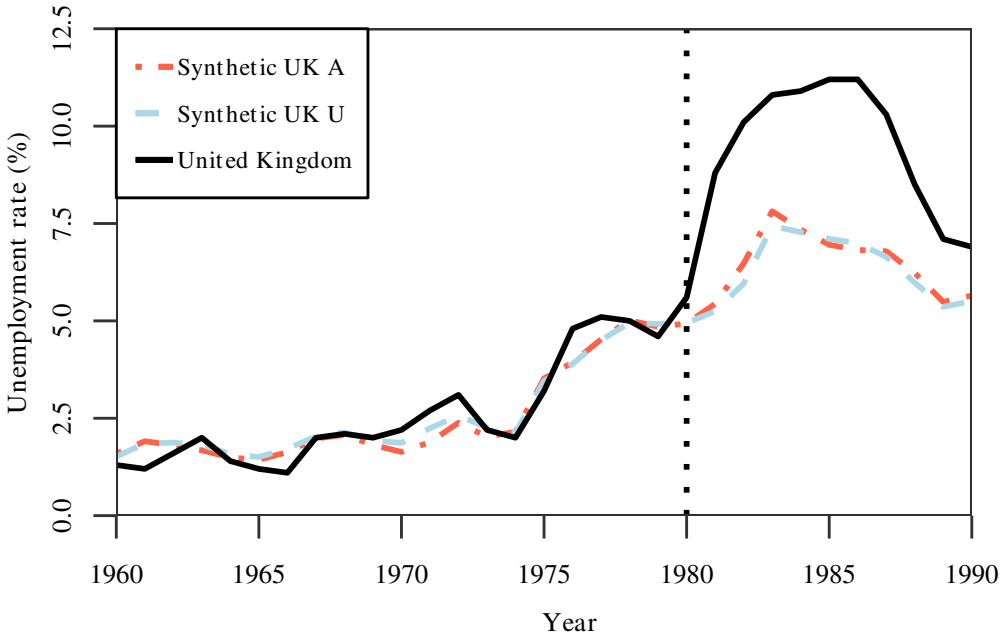


Figure 5.4: Trends in Unemployment rate: Great Britain vs. Great Britain synthetics "Universal" and "Adjusted"

5.2.2 Inference

Now we observe the significance of these observed impacts in Figure 5.6, which consist of inferences on both unemployment models.

On a first glance, both MSPE a) and b) ratios look rather mediocre. However,

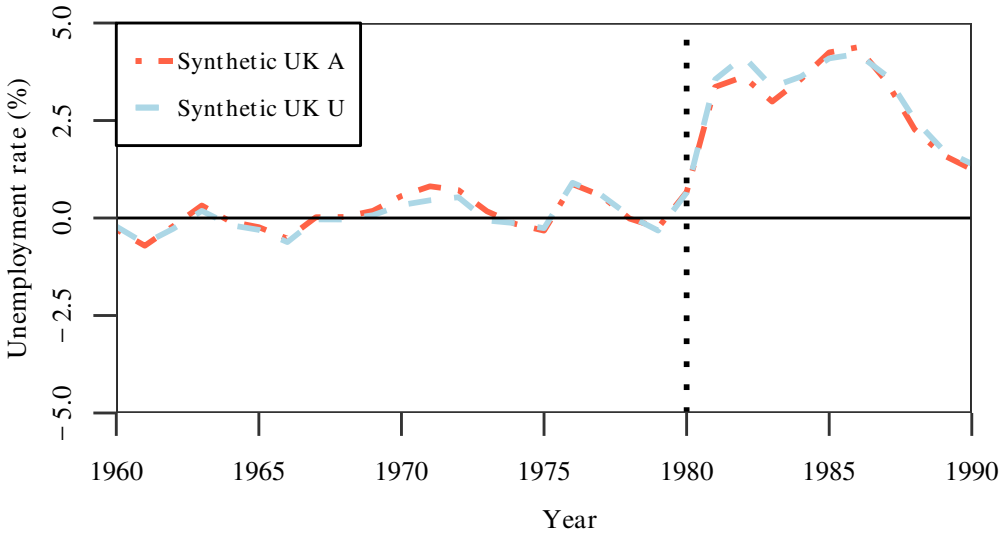
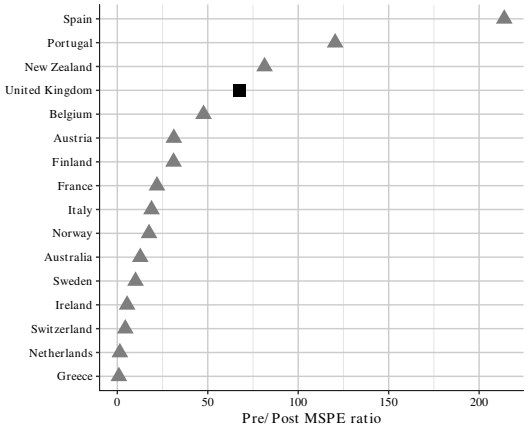


Figure 5.5: Unemployment Gap between Great Britain and Great Britain synthetics "Universal" and "Adjusted"

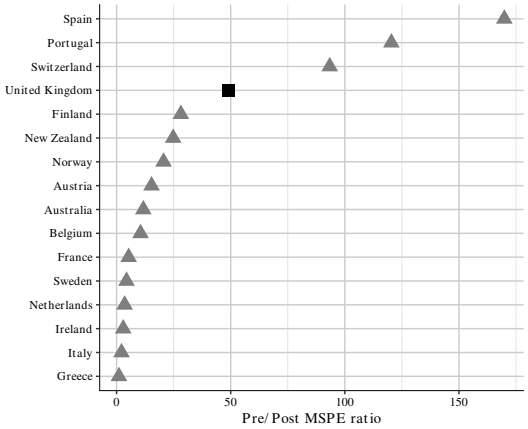
the rate of synthetic United Kingdom looks relatively non-essential only due to the extremely high values for Spain and Portugal. As we mention in the Data chapter, these countries belonged on the periphery of industrial economies. Therefore the rest of donor pool constructed by clearly developed economies (beside Greece) is not suitable for them, which causes their high MSPE rates. Yet, it is important to mention that the Universal model fares better than the Adjusted one.
Both synthetic units are composed from a large number of donor pool members. The Adjusted model still maintains 10 available for leaving out even after replication of our procedure from real GDP inference. Therefore, both robustness tests obtain unusally big number of lines. Neither robustness is fully satisfactory but they provide us consistency in terms of the nature of the impact.
The in space placebos provided visual confirmation of the MSPE ratio tests; indices that this data pool is not suitable for Portugal or Spain unemployment. It further answers the question of why the last donor pool member that did not occur in the World economic outlook 1980 industrial economies list also did not pop in the MSPE ratio in similar fashion. The most outstanding line in pre-intervention in both e) and f) is Greece, therefore it was impossible for it to obtain big post/per MSPE ratio.

5.2.3 Summary

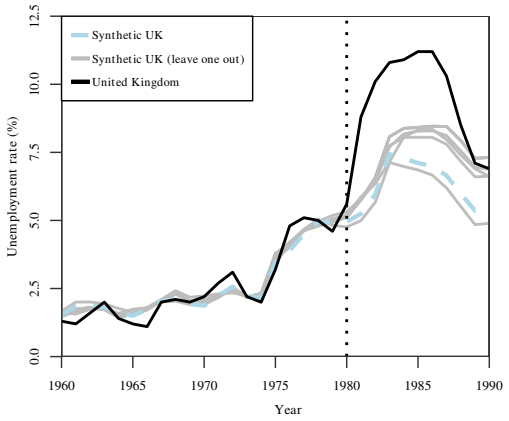
Both Model U and A resulted in similar outcomes of similar size, while being optically suitable. However, the Universal model provided higher relevance during the inference testing. We believe we found evidence for Thatcher government's negative impact on unemployment rate, with annual average equal to 2.7895% in the time period of 1980-90. Such evidence would be consistent with both Thatcher advocates Matthews & Minford (1987) presenting it as necessity or her critics Layard & Nickell (1989) which suggesting it is inefficiency.



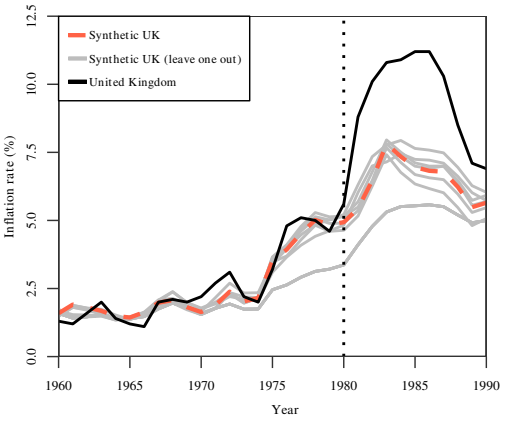
(a) Post/Pre MSPE ratio Model U



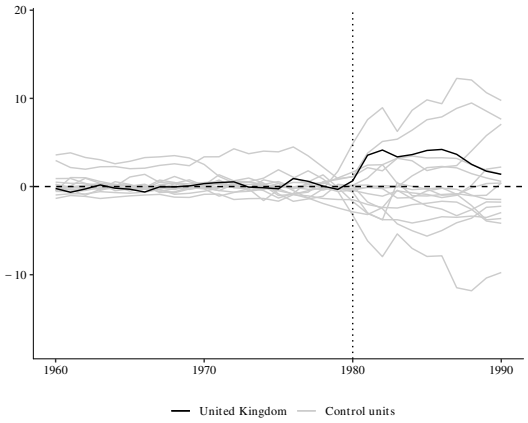
(b) Post/Pre MSPE ratio Model A



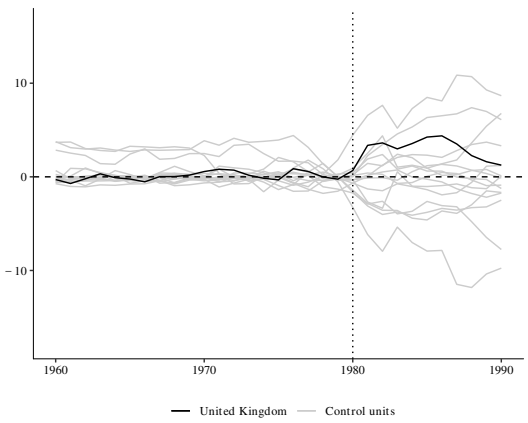
(c) Robustness test Model U



(d) Robustness test Model A



(e) In space placebos Model U



(f) In space placebos Model A

Figure 5.6: Placebo studies on Unemployment

5.3 Inflation

5.3.1 Synthetic control method results

When considering inflation, the relationship between the synthetic weights of units belonging to our two models is closer to their GDP fellows than to their unemployment ones. As we see in Table 5.3 both synthetic units are composed from Ireland and New Zealand - the Model A entirely, and the Universal model with additions of small significance.

Table 5.3: Synthetic Unit Weights of Unemployment models

Country	Universal M Weights	Adjusted M Weights	Country	Universal M Weights	Adjusted M Weights
Australia	0.000	0.000	Netherlands	0.000	0.000
Austria	0.005	0.000	New Zealand	0.361	0.124
Belgium	0.000	0.000	Norway	0.000	0.000
Finland	0.000	0.000	Portugal	0.000	0.000
France	0.000	0.000	Spain	0.000	0.000
Greece	0.000	0.000	Sweden	0.031	0.000
Ireland	0.602	0.876	Switzerland	0.000	0.000
Italy	0.000	0.000			

The predictor variable weights must alter by definition, as the Adjusted synthetic model for inflation uses only four covariates. The model grants some importance to only two of them - 0.839 to inflation lag and 0.151 to Gini educational index. Inflation lag maintains significant role also in the Universal model, even though its relative importance is 4 times smaller. The Universal model's three most important variables are investment ratio, tertiary school enrollment and already mentioned inflation lag.

In Figure 5.7 we see what we could already expect. The similarity in synthetic control units weights reflects in increased closeness of our models. In the matter of fitting to the pre-intervention period, these measures are highly satisfactory, considering we're dealing with a variable as volatile as inflation. Both models propose the decreasing average annual impact of intervention on inflation; -2.2386 for Model A and -2.8537 for the Universal model.

The significant difference in these impacts occurred is visible in Figure 5.8. The downward mound makes the difference. The figure further inspects the details of pre-intervention fit.

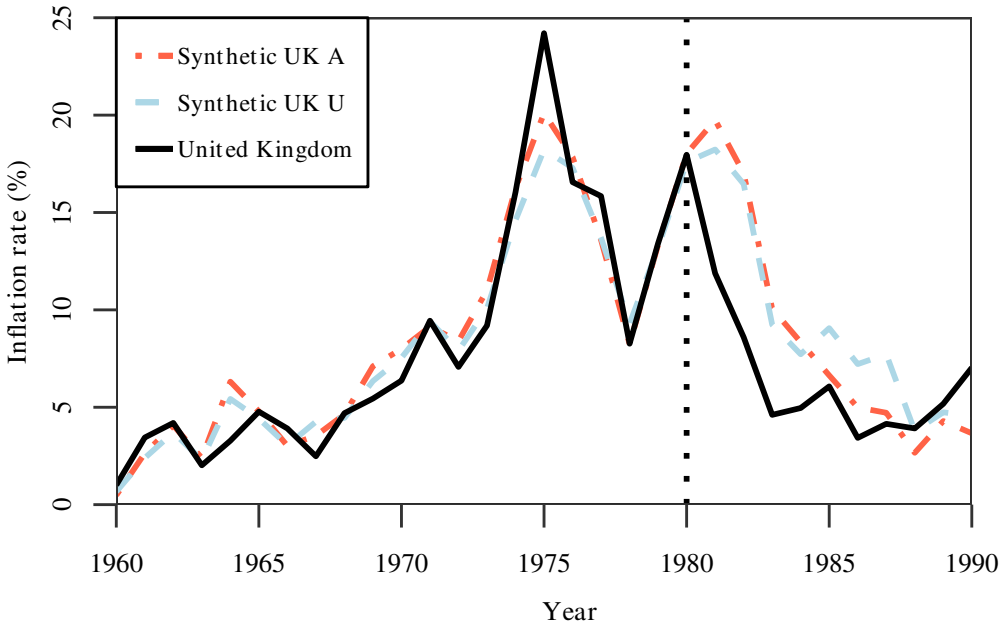


Figure 5.7: Trends in Inflation rate: Great Britain vs. Great Britain synthetics "Universal" and "Adjusted"

5.3.2 Inference

Let us explore the Inference methods, visualized in Figure 5.9.

The MPSE test supports the relevance of both synthetics. They are relatively specific to their donor pools' placebos. It needs to be mentioned that Model A possesses more

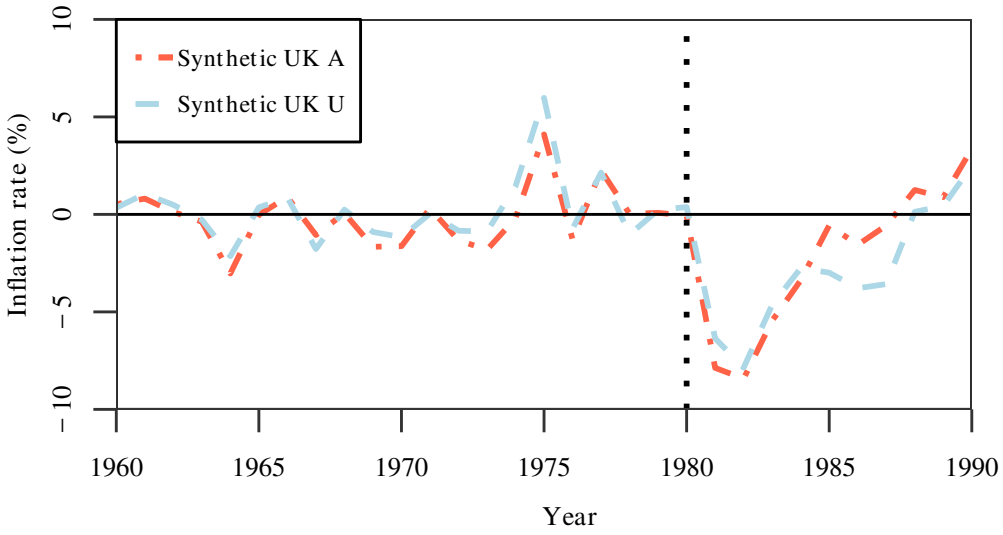
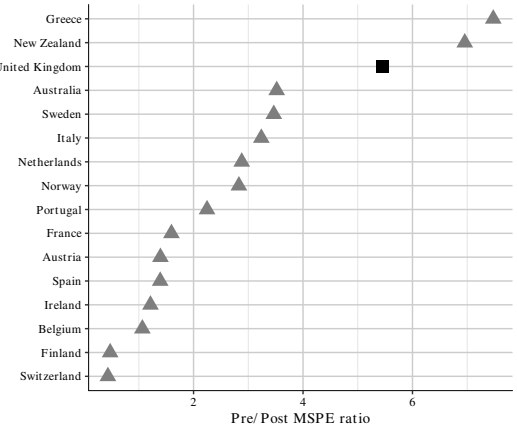


Figure 5.8: Inflation Gap between Great Britain and Great Britain synthetics "Universal" and "Adjusted"

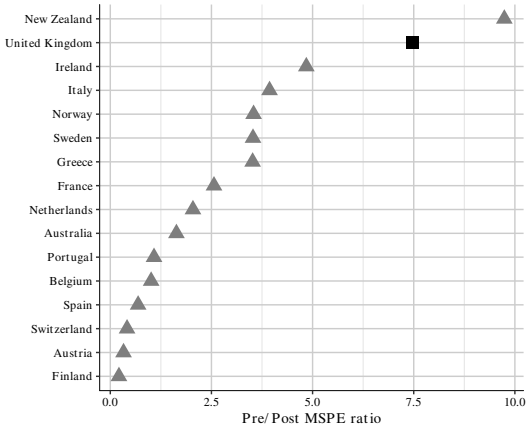
prominent status. The only problem might occur from the score of New Zealand that outruns UK synthetics in both cases and at the same time retains relatively high synthetic weight.
The robustness test could not really turn out differently if when both of the synthetics are composed of virtually two (exactly two, in the Adjusted case) countries. In the case of Model A, we can observe in its robustness both countries from which is his synthetic unit composed.
The in space placebos reveals that a significant part of the MPSE ratio scores is provided rather by good pre-intervention fit than great intervention impacts. This good-fit impact is visibly stronger for Adjusted model.

5.3.3 Summary

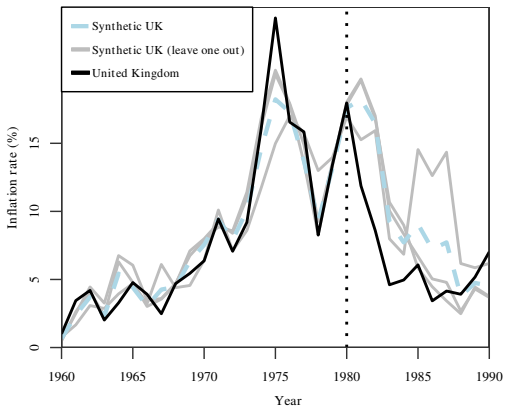
Both these models shares the same weaknesses and strengths. Being composed of merely two control units is clearly a weakness in terms of robustness. On the other hand, they both obtain satisfactory pre-treatment period fit and MSPE ratio scores. However, based on inference methods, we slightly prefer the Adjusted model. We believe in its superiority, therefore we will take to account its evidence of average annually decreasing impact; -2.2386. Such impact could be to some extent again consistent with both less (Matthews & Minford 1987) and more (Bean & Symons 1989) Thatcher critical mentioned studies.



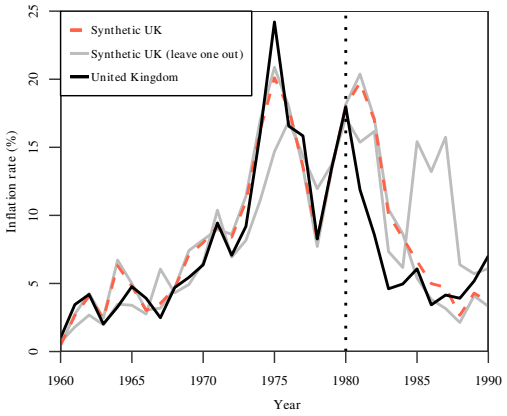
(a) Post/Pre MSPE ratio Model U



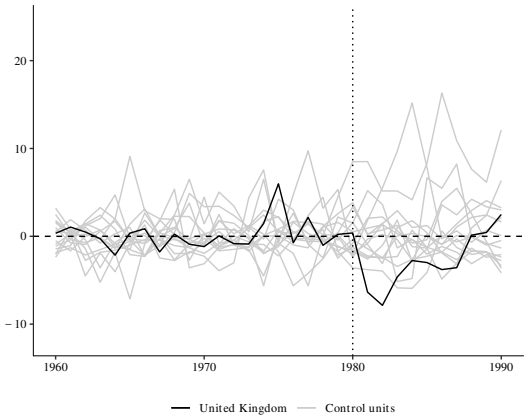
(b) Post/Pre MSPE ratio Model A



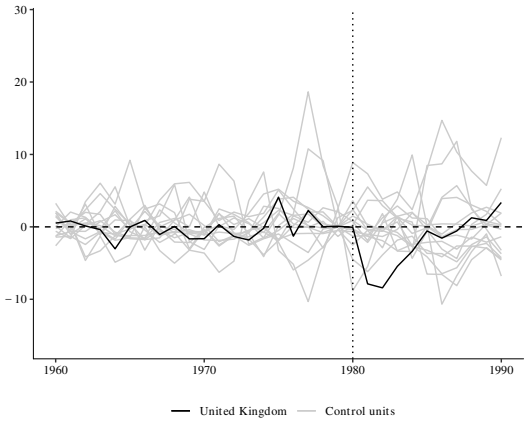
(c) Robustness test Model U



(d) Robustness test Model A



(e) In space placebos Model U



(f) In space placebos Model A

Figure 5.9: Placebo studies on Inflation

Chapter 6

Conclusion

This thesis has explored how Margaret Thatcher altered and eventually dismantled the post-war political consensus in the United Kingdom, and how she affected the subsequent economic performance of the U.K.

The existing literature has suggested a broad palette of empirical treatments of Margaret Thatcher's actions as Prime Minister. However, it has been possible to find a few to some extent generally recognized concepts. To challenge both consensual and divisive scholars' positions, this thesis has provided a close analysis of Thatcher's reactions to the main politico-economical challenges of previous governments and has attempted to estimate the effect of these actions on the UK economy through the lens of the synthetic control method on three outcome variables; real GDP per capita, unemployment and inflation.

We have found that the Thatcher government differed from previous governments primarily by its level of dedication to complete her free market and monetarist agenda. We also inspected that, on the other hand, her practical approach to trade unions did not alter so significantly until she reached a more robust position in the UK's politics, which allowed her to enforce her ideas.

In applying the synthetic control method, we placed great emphasis on the right choice of covariates; therefore, we constructed two models with different choices for every outcome variable. We consequently decide which of the couple is superior through placebo test applications and further discuss and assess the outcome of the more reliable one.

In conclusion, the synthetic unit on real GDP development suggests a positive impact of the Thatcher's government on economic growth, although the relevance of this result is somewhat diminished by a dubious pre-intervention fit of the model.

Fortunately, the relevance of our synthetic control inflation and unemployment estimates is sufficient, as approved by our provided inference methods. Over the same time period, it together paints the picture that Thatcher exploited the inflation-

unemployment trade-off. The opposing average effects for the same period equal to a rise in unemployment of 2.8 % and decrease of inflation in the size of 2.2 %.
Overall we find that our results are consistent to some extent with majority of our known empirical studies. Because to some extent all conclude that Thatcher government pushed down the inflation at cost of higher unemployment.

Overall, we find that our results reached thanks to a previously unused method are consistent to some extent with the majority of known empirical studies on the topic. Because to some extent all conclude that the Thatcher government pushed down the inflation at cost of higher unemployment, this thesis points to two things: despite being relatively new, SCM is a valid method of testing a policy's impacts when correctly set up, and it furthermore gives us a novel result that allows us to estimate the exact size of the effect of the Thatcher on inflation and unemployment. However, as we have not found support for the hypothesis that her government had a significant effect on real GDP, we cant conclude whether the lower inflation had the desired impact on production.

Bibliography

Abadie, A., A. Diamonda, & J. Hainmuellera (2010): "Synthetic control methods for comparative case studies: Estimating the effect of california's tobacco control program." *Journal of the American Statistical Association* **105(490)**: pp. 493–505. http://dx.doi.org/10.1198/jasa.2009.ap08746.

Abadie, A., A. Diamonda, & J. Hainmuellera (2015): "Comparative politics and the synthetic control method." *American Journal of Political Science* **59(2)**: pp. 495–510.

Abadie, A. & J. Gardeazabal (2003): "The economic costs of conflict: A case study of the basque country." *The American Economic Review* **93(1)**: pp. 113–132. http://links.jstor.org/sici?sici=0002-8282%28200303%2993%3A1%3C113%3ATECOCA%3E2.0.CO%3B2-C.

Athey, S. & G. W. Imbens (2017): "The state of applied econometrics: Causality and policy evaluation." *Journal of Economic Perspectives* **31(2)**: pp. 3–32.

Bank, W. (1980): "World development report 1980." *Technical report*.

BBC (1997): "Dawn of the thatcher era." http://www.bbc.co.uk/news/special/politics97/background/pastelec/ge79.shtml.

Bean, C. & J. Symons (1989): "Ten years of mrs. t." *NBER Macroeconomics Annual* **4**: p. 13–61.

Benati, L. (2008): "The "great moderation" in the united kingdom." *Journal of Money, Credit and Banking* **40(1)**: pp. 121–147.

Brady, D., E. Huber, & J. D. Stephens (2014): "Comparative welfare states data set,." *Technical report*, University of North Carolina and WZB Berlin Social Science Center,.

Butler, D. & D. Kavanagh (1974): *British General Election of February, 1974*. Macmillan.

Callaghan, J. (1976): "Leaders speech at labour party conference, blackpool." http://www.britishpoliticalspeech.org/speech-archive.htm?speech=174.

Campos, N. F. & F. Coricelli (2017): "Eu membership, mrs thatcher's reforms and britain's economic decline." *Comparative Economic Studies* **59**: p. 169–193.

Coffman, M. & I. Noy (2012): "Hurricane iniki: measuring the long-term economic impact of a natural disaster using synthetic control. environment and development economic." *Development Economics* **17**: pp. 187–205.

Cox, A. (1982): *Politics, Policy and the European Recession*. Palgrave Macmillan UK.

Crowe, C. (2004): "Inflation, inequality and social conflict." *Technical Report 657*, Centre for economic performance.

Fund, I. M. (1980): "World economic outlook 1980." *Technical report*.

Guttman, R. (1976): "State intervention and the economic crisis: the labour government's. economic policy 1974-75." *Kapitalstate* pp. 225–271. https://www.marxists.org/history/usa/pubs/kapitalistate/Kapitalistate4&5.pdf.

Hallren, R. J. (2014): "The impact of dollarization and currency boards on income and inflation: A synthetic control analysis." https://ssrn.com/abstract=2486253.

Harmon, M. D. (1997): *The British Labour Government and the 1976 IMF Crisis*. Palgrave Macmillan UK.

Heath, E. (1970): "A better tomorrow." http://www.conservativemanifesto.com/1970/1970-conservative-manifesto.shtml.

Janota, M. (2015): *Estimating the Euro effect with Synthetic Control Method for Eastern Europe*. Master's thesis, Charles University in Prague, Faculty of Social Sciences, Institute of Economic Studies.

Kaul, A., S. Klössner, G. Pfeifer, , & M. Schieler (2014): "Synthetic control methods: Never use all pre-intervention outcomes as economic predictors." *Technical Report 83790*, Saarland University.

Kavanagh, D. (2011): "Thatcherism and the end of the post-war consensus." http://www.bbc.co.uk/history/british/modern/thatcherism_01.shtml.

Lash, H. & E. Krudy (2016): "World stocks tumble as britain votes for eu exit."

Layard, R. & S. Nickell (1989): "The thatcher miracle?" *The American Economic Review* **19(2)**: pp. 215–219.

Lee, W.-S. (2010): "Comparative case studies of the effects of inflation targeting in emerging economies." *Oxford University Press* **(63)**: p. 375–397.

Matthews, K. & P. Minford (1987): "Mrs thatcher's economic policies 1979-87." *European economic review* **17(2)**: pp. 253–270.

Minford, P., S. Marwaha, K. Matthews, & A. Sprague (1984): "The liverpool macroeconomic model of the united kingdom." *Economic Modelling* **1**: pp. 24–62.

Nauro F. Campos, Fabrizio Coricelli, L. M. (2014): "Economic growth and political integration: Estimating the benefits from membership in the european union using the synthetic counterfactuals method." *IZA* **(8162)**. `https://ssrn.com/abstract=2432446`.

Neild, R. & F. Hahn (1981): "The keynesian petition." *The Times,* **30.3**: p. 4.

Newiak, M. & T. Willems (2017): "Evaluating the impact of non-financial imf programs using the synthetic control method." *Technical Report 109*, IMF.

Nielsen, L. (2011): "Classifications of countries based on their level of development: How it is done and how it could be done." *IMF Working Paper* **(11/31)**.

Ozbeklik, O. E. . S. (2016): "What do right-to-work laws do? evidence from a synthetic control method analysis." *Journal of Policy Analysis and Management, John Wiley & Sons, Ltd.* **35(1)**: pp. 173–194.

Peri, G. & V. Yasenov (2018): "The labor market effects of a refugee wave: applying the synthetic control method to the mariel boatlift." *Technical report.* `http://www.nber.org/papers/w21801`.

Pierson, P. (1994): *Dismantling the Welfare State? Reagan, Thatcher, and the Politics of Retrenchment.* Cambridge: Cambridge Univ. Press.

Podestà, F. (2018): "Was pierson right? a synthetic control analysis of reagan and thatcher's welfare state retrenchments." *FBK-IRVAPP Working Paper Series* **(2018-02)**.

Seldon, A. & D. Collings (1999): *Britain under Thatcher.* Routledge.

Temin, P. (2003): "The golden age of european growth reconsidered." *European Review of Economic History* **6**: p. 3–22. `http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.186.2152&rep=rep1&type=pdf`.

Thatcher, M. (1979): "1979 conservative party general election manifesto." http://www.conservativemanifesto.com/1979/1979-conservative-manifesto.shtml.

Thatcher, M. (1980): "Leaders speech at labour party conference, birningham."

Turner, P., A. Coutts, & S. Bowden (1992): "The effect of the thatcher government on company liquidations: an econometric study." *Applied Economics* **24**: pp. 935–943.

Wilson, H. (1974): "Let us work together – labour's way out of the crisis." http://www.labour-party.org.uk/manifestos/1974/Feb/1974-feb-labour-manifesto.shtml.

Appendix A

Synthetic control weights of predictor variables

A.1 Models on real GDP per capita

Variable	Synthetic weight
infl	0.055
unemp	0
rgdp (lag)	0.001
urban	0.069
age	0
gini	0.164
hucap	0.138
hausco	0.002
govsp	0.002
inves	0.12
exp	0.023
imp	0.011
agri	0
manuf	0
minin	0.185
const	0.004
retail	0.001
trans	0.001
other	0.031
schtert	0.179
schprim	0.015

Table A.1: GDP Universal Model synthetic weights of predictor variables

Variable	Synthetic weight
infl	0.004
rgdp (lag)	0
hucap	0.056
inves	0.012
open	0.043
urban	0.003
indu	0.856
schtert	0.026

Table A.2: GDP Adjusted Model synthetic weights of predictor variables

A.2 Models Unemployment

Variable	Synthetic weight
infl	0.109
unemp (lag)	0.103
rgdp	0.086
urban	0.062
age	0.062
gini	0.033
hucap	0.055
hausco	0.043
govsp	0.008
inves	0.014
exp	0.02
imp	0.009
agri	0.001
manuf	0.075
minin	0.029
const	0.033
retail	0
trans	0.031
other	0.098
schtert	0.109
schprim	0.004

Table A.3: Unemployment Universal Model synthetic weights of predictor variables

Variable	Synthetic weight
unemp (lag)	0
urban	0.129
age	0.041
gini	0.474
hucap	0.121
schtert	0
schprim	0.234

Table A.4: Unemployment Adjusted Model synthetic weights of predictor variables

A.3 Models Inflation

Variable	Synthetic weight
infl (lag)	0.189
unemp	0.001
rgdp	0.001
urban	0
age	0
gini	0.054
hucap	0.041
hausco	0
govsp	0.069
inves	0.332
exp	0.028
imp	0.002
agri	0
manuf	0.001
minin	0
const	0
retail	0.037
trans	0
other	0
schtert	0.235
schprim	0.011

Table A.5: Inflation Universal Model synthetic weights of predictor variables

Variable	Synthetic weight
rgdp	0.001
govsp	0.009
gini	0.151
infl (lag)	0.839

Table A.6: Inflation Adjusted Model synthetic weights of predictor variables