The macroeconomic impact of Trump*

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Abstract

How much credit does Donald Trump deserve for the macroeconomic performance of the US economy? Growth and job creation have been robust during the first 2.5 years of his presidential term, but this does not prove that Trump made a difference. In this note we develop a counterfactual scenario for how the US economy would have evolved without Trump—we let a matching algorithm determine which combination of other economies best resembles the pre-election path of the US economy. We then compare the post-election performance of the US economy to this synthetic "doppelganger". There is little evidence for a Trump effect.

Keywords: President Trump, macroeconomic performance, economic growth, counterfactual, synthetic control method, doppelganger

JEL-Codes: E30, E60

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1 Introduction

Donald Trump was elected President of the United States on November 8, 2016. He took office as the 45th President on January 20, 2017. On many metrics, the US economy has been doing well since then. To pick one indicator, in 2019 the unemployment rate declined to 3.5 percent, the lowest value since 1969. President Trump does not hesitate to claim credit.[1] In this note we ask whether he really deserves credit for the booming economy?

To answer this question, we must not simply look at the actual performance of the US economy. Instead, we need to develop a counterfactual scenario against which we can benchmark actual developments. In order to do so we employ the synthetic control method (Abadie and Gardeazabal, 2003; Abadie et al., 2010, 2015). We construct a synthetic control unit as a weighted average from a "donor pool" of OECD countries. We determine the weights so that the behavior of the control unit resembles the US economy as closely as possible *prior to the presidential election in 2016*. The economies and their weights are picked by an algorithm in an entirely data-driven way. We then compare the actual developments in the US since the election to that of its "doppelganger" (Born et al., 2019).

We find that the doppelganger tracks the behavior of the US prior to the Trump election very well. Hence, it provides a natural benchmark for assessing the macroeconomic impact of Trump. Our identification assumption is that the doppelganger economy continues to behave in the way the US economy would have behaved in the absence of Trump. On the basis of this assumption we find no evidence for a Trump effect: during the first 2.5 years after the election, growth in the US has not been systematically different from what we observe for the doppelganger. The same holds for other economic indicators, notably total employment. This is remarkable, because we do not restrict post-election dynamics. Also, in an earlier study on Brexit, we find—on the basis of the same approach—that the Brexit vote in June 2016 has caused a significant decline of UK output relative to its doppelganger economy (Born et al.,

[1]For instance, Trump (2018) states: "We've got the greatest economy, maybe, ever—maybe in history. We have the greatest economy we've ever had ... If we didn't win, this economy would be a wreck."

2019).

Is our finding surprising? Perhaps. After all, in December 2017 the US congress enacted the *Tax Cuts and Jobs Act*. It brought about a large reduction of tax rates for individuals and businesses. While controversial in many respects, most observers agree that the tax reform provided a boost to output growth, both in the short and the long run (Barro and Furman, 2018; Mertens, 2018; Sedláček and Sterk, 2019). However, the tax reform was not the only policy measure put forward by the Trump administration. Another key item on the agenda is trade policy. While there was no full-blown trade war during the first years of the Trump administration, even a "cold trade war" is likely to be detrimental to economic activity (Dietrich and Müller, 2020; Handley and Limão, 2017; Handley and Limão, 2017). Against this background, we stress that our approach is altogether silent on the distinct effect of specific policy measures. Instead, we assess the overall impact of Trump on the US economy in the first two years after the election.

More fundamentally, one may thus ask whether administrations actually can make a difference to the macroeconomy as they come into power? As established by Hibbs (1977), election outcomes do matter for macroeconomic performance, because parties pursue policies that cater to their core constituencies. Alesina and Sachs (1988) provide further evidence for this partisan view. They document, in particular, that US growth is systematically higher during *the first half* of Democratic administrations. Just like Hibbs, they interpret their findings in the context of a trade-off between unemployment and (surprise) inflation. More recently, Blinder and Watson (2016) observe that the US economy has systematically performed better under Democratic presidents than under Republican presidents. This, they find, is because Democratic presidents have experienced more favorable economic shocks.

Trump, however, transcends traditional partisan politics to the extent that some of his policies are not conforming well with the traditional orthodoxy of the Republican party. In this regard, it is interesting to observe that national *leaders* as such can matter for economic growth. Jones and Olken (2005) find a sustained change in growth patters in the context of

leadership transitions that are caused by death due to natural causes. Such leader effects are particularly pronounced among autocrats that are less constrained in their powers. Easterly and Pennings (2019) look into the growth performance of specific leaders and find it difficult to confirm statistically significant leader effects in terms of economic growth. They emphasize that it is key to consider an appropriate benchmark rather than "giving leaders credit for the raw growth average during their tenures." This insight lies at the heart of our analysis, too.

The remainder of this note is organized as follows. Section 2 describes the construction of the doppelganger that serves as a counterfactual against which we benchmark actual developments in the US. We do so in Section 3. A final section concludes. We provide additional results in the online appendix.

2 Constructing the doppelganger

In order to measure Trump's impact on macroeconomic performance in the US, we need to define an appropriate benchmark. For this purpose, we construct a doppelganger for the US economy based on synthetic control methods as developed by Abadie and Gardeazabal (2003) and Abadie et al. (2010, 2015). Ideally, the doppelganger behaves just like the US economy, the difference being that it did not get "treated" by the economic policies of the Trump administration.

2.1 Methodology

The doppelganger is a weighted average of C countries in the "donor pool". The weights are determined by minimizing the distance between a selected number I of economic time-series in the US and in the doppelganger *prior to* the "treatment". Let T denote the length of the sample prior to treatment. In addition, following Abadie and Gardeazabal (2003) and Abadie et al. (2010), we require the doppelganger to also match the pre-treatment averages of a number K economic characteristics, so called "covariates".

Formally, we let $\mathbf{x_1}$ denote the $(M \times 1)$ vector stacking the T observations for each of the I variables of interest and the K covariate averages in the US, such that $M = I \times T + K$. Let $\mathbf{X_0}$ denote a $(M \times C)$ matrix with the respective observations in the countries included in the donor pool. Finally, we let $\mathbf{w}$ denote a $(C \times 1)$ vector of weights w_j, $j = 2, \ldots, C+1$. Then, the doppelganger is defined by $\mathbf{w}^*$ which minimizes the following mean squared error:

$$(\mathbf{x_1} - \mathbf{X_0}\mathbf{w})'\mathbf{V}(\mathbf{x_1} - \mathbf{X_0}\mathbf{w}) \ , \tag{1}$$

subject to $w_j >= 0$ for $j = 2, \ldots, C+1$ and $\sum_{j=2}^{C+1} w_j = 1$. In this expression, $\mathbf{V}$ is an $(M \times M)$ symmetric and positive semidefinite matrix.[2]

2.2 Model specification and data

In order to assess the macroeconomic performance we focus on GDP, but also on a number of labor market indicators, since these are of particular relevance in the political debate. The US has recently experienced strong employment growth as well as a remarkable increase in the labor force and, last but not least, unemployment rates have reached historically low levels. In our construction of the doppelganger we rely on time-series data for the first three variables—GDP, employment, and the labor force—such that $I = 3$. We rely on the fourth variable—the unemployment rate—in order to perform an external validation of the model, that is, we compare the time path of unemployment rate in the doppelganger economy to the US. If the doppelganger performs well in this regard, even though the time path of unemployment has not been used in the construction of the doppelganger, we feel confident to benchmark the US economy against the doppelganger. We prefer this approach to including

[2] $\mathbf{V}$ is a weighting matrix assigning different relevance to the characteristics in $\mathbf{x_1}$ and $\mathbf{X_0}$. Although the matching approach is valid for any choice of $\mathbf{V}$, it affects the weighted mean squared error of the estimator (see the discussion in Abadie et al. (2010), p. 496). Following Abadie and Gardeazabal (2003) and Abadie et al. (2010), we choose a diagonal $\mathbf{V}$ matrix such that the mean squared prediction error of the outcome variable (and the covariates) is minimized for the pre-election period. Including the covariates in the optimization differs from Kaul et al. (2018) who have raised concerns about including all pre-intervention outcomes together with covariates when using the SCM. The size of $\mathbf{V}$ is determined by the number of observations to be matched. These include I time series of length T and the K covariate averages.

the time series for the unemployment rate directly in criterion (1).[3]

As noted in Section 2.1, the estimation matches not only I time series, but also K covariates. In our application, these are average characteristics of the US economy and include the GDP shares of consumption, investment, and net exports, plus labor productivity growth and the average unemployment rate, that is, $K = 5$.[4] We construct the doppelganger on the basis of a "donor pool" of $C = 24$ OECD countries (see also our earlier study on the Brexit vote, Born et al., 2019). This is advantageous as it provides us with a set of relatively homogeneous countries and, importantly, we can also draw on a common data source: the Economic Outlook database of the OECD (issue 105, published in May 2019). In all instances, we use quarterly observations for the period 1995Q1–2019Q1. All variables are normalized to unity in 1995. Finally, we assume that treatment takes place in 2016Q4, the quarter of the Trump election. As a result, $T = 87$. In an alternative specification reported in the online appendix, we consider 2017Q1 as the treatment date, that is, the time when President Trump actually took office, and find very similar results.

2.3 The doppelganger

Figure 1 and Table 1 show the results. The table shows how the doppelganger performs in terms of our targeted covariates. The figure displays the time series for real GDP, total employment, total labor force and the unemployment rate in the US (blue solid line) and in the doppelganger economy (red dashed line). We measure the deviation of a variable from its value in 1995Q1 in percent along the vertical axis, except for the unemployment rate which we measure in percent. The horizontal axis measures time in quarters. The shaded area represents two standard deviations of the pre-treatment difference between the respective US

[3] In fact, the nature of the estimation procedure makes it difficult to combine trending variables (like real GDP) with cyclical indicators (like unemployment). This is because the minimization procedure is then dominated by the more volatile cyclical indicators. While in principle it is possible to define V, the weighting matrix in (1), such that it would assign less weight to unemployment relative to real GDP, this adjustment would necessarily be arbitrary.

[4] In order to best match on "predictors" of growth, we take averages of covariates one year prior to the election, that is, 2015Q3 to 2016Q2.

Table 1: Matching of covariates

	US	Doppelganger
Consumption / GDP	69.1	57.1
Investment / GDP	20.5	21.9
Net Exports / GDP	-4.3	0.02
Labor productivity growth	-0.08	-0.08
Unemployment rate	5.0	6.4

Note: All numbers are in percent. Labor productivity growth is the log difference between quarterly real GDP and quarterly total employment.

aggregate and its doppelganger.

The match is imperfect because our procedure determines $C = 24$ parameters (country weights) in order to match $M = 3 \times 87 + 5 = 266$ observations. By and large, we find the performance satisfactory and conclude that the doppelganger provides us with a meaningful counterfactual for macroeconomic performance in the absence of Trump. In particular, we find that the unemployment dynamics for the US and the doppelganger are remarkably similar, even though we have not included the time series of the unemployment rate in the matching procedure (only the mean unemployment rate in the set of covariates). In order to compute the unemployment rate for the doppelganger, shown in the lower-right panel of Figure 1, we use the weights $\mathbf{w}^*$ that define the doppelganger. We observe that in both economies, the US and the doppelganger, unemployment rose sharply during the Great Recession and declined steadily afterwards. Peak unemployment, was somewhat higher in the US and, because it started to decline earlier, has been lower than in the doppelganger since 2012.[5]

Table 2 displays the country weights (rounded to the second digit) that define the doppelganger economy. The United Kingdom is assigned the largest weight. Since macroeconomic performance in the UK was rather weak following the Brexit referendum, our doppelganger provides us with a conservative benchmark (see Born et al., 2019). In addition, there are

[5]In the online appendix we show results for an alternative procedure where we estimate four separate doppelgangers for each of the four variables. The benefit of this exercise is that we obtain a better fit pre treatment, since each doppelganger needs to match only $T + K = 92$ observations. Importantly, also this alternative procedure gives rise to a very similar picture.

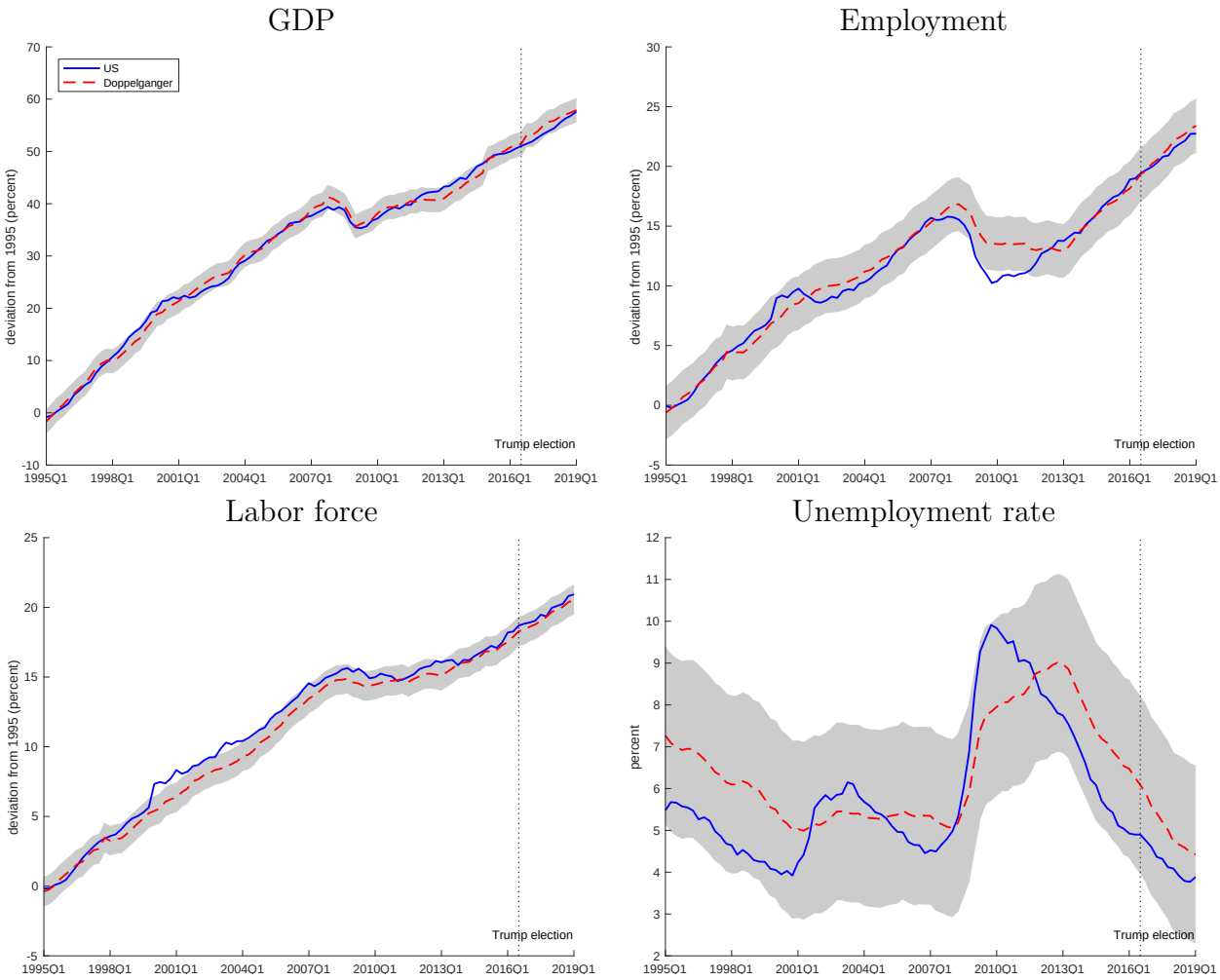

Figure 1: Macroeconomic performance and labor market dynamics in US (blue solid line) and in doppelganger economy (red dashed line). *Note:* shaded areas represent two standard deviations of the difference between the a variable in the US and the doppelganger economy. Dotted line indicates Trump election. Time-series for unemployment rate used for external validation (not used to construct doppelganger). Data source: OECD Economic Outlook 105 (May 2019).

Table 2: Composition of GDP doppelganger: country weights

Australia	<0.01	Austria	<0.01	Belgium	<0.01	Canada	<0.01
Denmark	<0.01	Finland	<0.01	France	<0.01	Germany	<0.01
Hungary	<0.01	Iceland	<0.01	Ireland	0.11	Italy	<0.01
Japan	0.13	Korea	0.10	Luxembourg	<0.01	Netherlands	<0.01
New Zealand	0.09	Norway	0.07	Portugal	0.18	Slovak Republic	0.03
Spain	<0.01	Sweden	<0.01	Switzerland	<0.01	United Kingdom	0.29

significant contributions by Ireland, Japan, Korea and Portugal. Overall, this weighting scheme appears plausible, even though our purely data-driven approach allows us to refrain from a structural interpretation of the country weights. We run additional experiments (not reported) and verify that our results are robust to excluding individual countries, such as the UK from the donor pool.

3 Assessing Trump's macroeconomic impact

We are now in a position to quantify the macroeconomic impact of Trump. In order to do this, we contrast the economic performance in the US and the doppelganger economy for the first 10 quarters following the election. Our identification assumption is that—from a macroeconomic point of view—the doppelganger and the US were equally likely to receive the "treatment" of electing Trump as president. Hence, the difference between the US and its doppelganger after the election is due to Trump. Our identification assumption is plausible because prior to the election there were no *macroeconomic* trends which set the US apart from the countries in our donor pool.[6] Moreover, as the election result took most observers by surprise (see, e.g., Wright and Wright, 2018), it is therefore unlikely that our results are contaminated by anticipation effects. Put differently, the doppelganger is the appropriate benchmark to assess the macroeconomic impact that the Trump administration made.

Figure 2 shows the results as it zooms in on the time series already shown in Figure 1 above. But now our focus is on the period after the election. In each case we contrast actual developments in the US (blue solid line) and those in the doppelganger economy (red dashed line). In order to detect a possible impact of the election we normalize all time series to zero at the time of the election, both for the US and the doppelganger. The shaded areas correspond to two standard deviations of the pre-treatment difference between the variable of interest of the US and the doppelganger. Real GDP is shown in the upper left panel. The

[6]The extent to which economic factors affected the election result remains debated (Mutz, 2018). From a macroeconomic perspective, the overall situation at the time of the election appeared relatively benign in the sense that the US economy was not in a recession or in a phase of high unemployment.

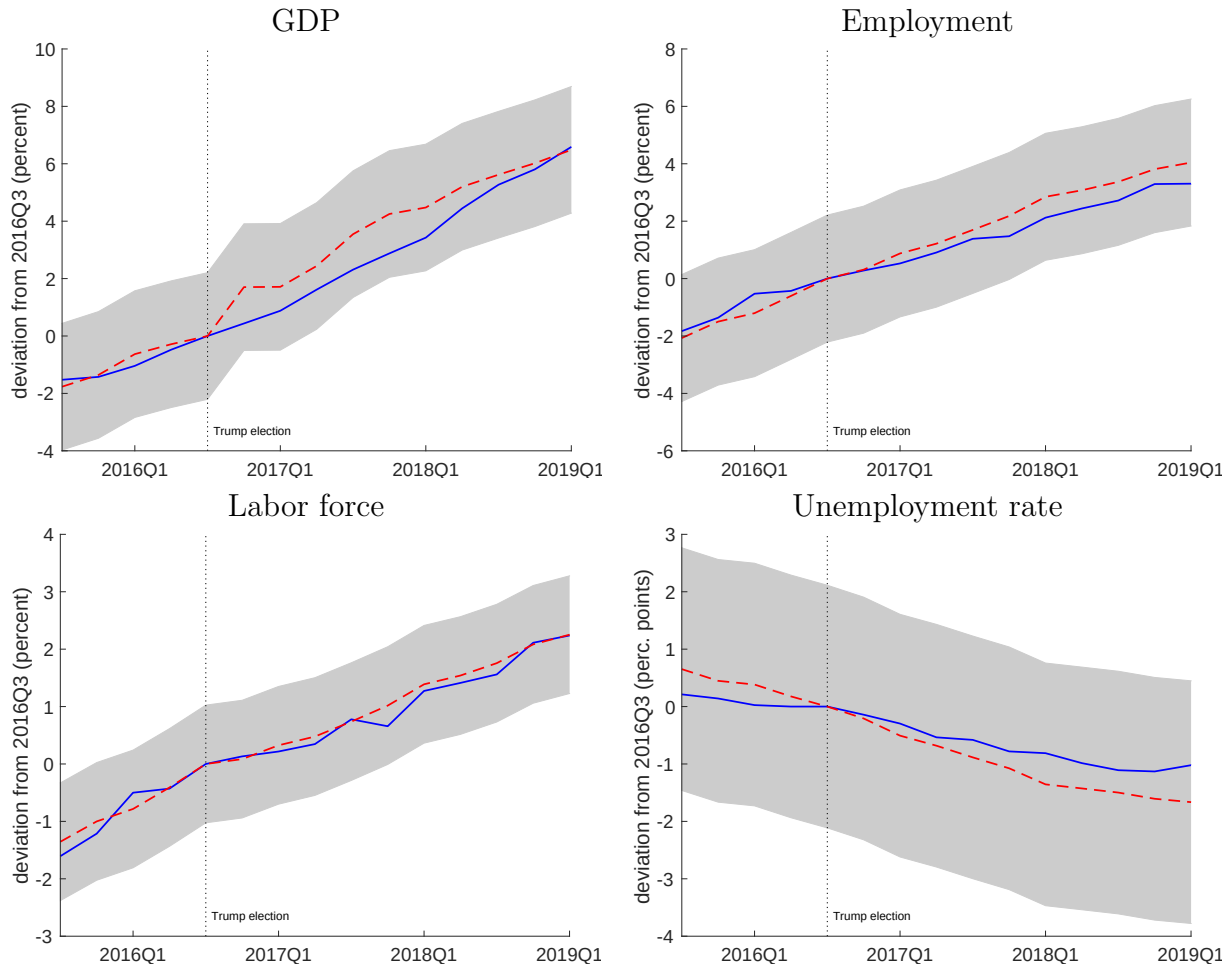

Figure 2: Macroeconomic performance of US economy (blue solid line) and doppelganger benchmark (red dashed line). *Note:* shaded areas are two standard deviations of the difference prior to Trump election. All time series normalized to zero at the time of the election. Data source: OECD Economic Outlook 105 (May 2019).

vertical axis measures the deviation from the level at the time of the election in percent.

We find that by and large the path of real GDP since the election has been very similar in the US and in the doppelganger economy. In the early phase after the election, the US somewhat underperformed relative to the doppelganger, but it caught up by the end of our sample (2019Q1). Importantly, US GDP has been evolving within the two-standard-deviation band around the doppelganger throughout. Put differently, while GDP growth in the US economy was strong since the election, this performance is *not exceptional*: the US hardly performed better than its doppelganger.

We obtain the same result for the labor market indicators shown in Figure 2. Employment is shown in the upper-right panel. Here the doppelganger somewhat outperforms the US, but also this effect is small and transient. The lower-left panel shows the evolution of the labor force. Since the election and up until 2019Q1, the growth of the labor force in the US is very close to what we observe for the doppelganger. Finally, observe that a similar picture emerges for the unemployment rate, shown in the lower-right panel. Again, after the election the unemployment dynamics in the US are somewhat less favorable than for the doppelganger, but by and large the dynamics are fairly similar and certainly within the two-standard-deviation band around the doppelganger throughout.[7] In all instances we perform the end-of-sample instability test by Andrews (2003) and cannot reject the hypothesis the performance in the US and the doppelganger economy has been the same.[8] In sum, we cannot detect a Trump effect in terms of macroeconomic performance up to 2019Q1.

4 Conclusion

During the first 2.5 years after he took office, the impact of Donald Trump on the macroeconomic performance of the US economy has been negligible. Neither do we measure an exceptional output performance, nor do important labor market indicators suggest that the US economy has been doing better than before because of Trump. It is also true that there is little in the data to suggest that the policies of the Trump administration have hurt American growth. The key to this finding is the choice of an appropriate benchmark: we use the synthetic control method to construct a doppelganger economy that serves as a counterfactual for what would have happened in the US in the absence of Trump.

Still, we mention two caveats. First, a potential concern could be that the US is well

[7] Towards the end of our sample, the US unemployment rate has declined to levels below the pre-crisis average. The doppelganger economy, however, puts weight on Japan and Ireland. In these countries too unemployment rates have fallen below their pre-crisis levels, just like in the US.

[8] More formally, we follow Hahn and Shi (2017) and test whether the post-election doppelganger gap and all the pre-election doppelganger gaps of the same length can be considered to come from the same distribution. We cannot reject this hypothesis.

integrated in the global economy so that its policies are also felt across the globe. It could be, in other words, that Trump's policies lifted all boats so that we do not find a differential effect. However, it is unlikely that the missing "Trump effect" is simply the result of spillovers to the rest of the world because several of the policies implemented by the Trump administration had a domestic focus or were more likely to hurt foreign output growth (such as the trade policies). Second, it is equally possible that the positive effects of some policies such as the tax reform take more time to materialize. The only thing we can say is that there is little evidence that President Trump made a big difference to the US economy in the first 2.5 years after the election—be it on the positive or the negative side.

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Online Appendix to "The macroeconomic impact of Trump" by Benjamin Born, Gernot J. Müller, Moritz Schularick, and Petr Sedláček

A Inauguration treatment

The main text uses the Trump election, i.e. the fourth quarter of 2016, as the treatment date. In this appendix, we show that our results are robust to considering the Trump inauguration, i.e. the first quarter of 2017, as the treatment date instead. We thus now match observations for the period 1995Q1–2016Q4.

Table A.1 shows how the doppelganger matches the covariates, Table A.2 shows the estimated country weights and Figure A.1 depicts the four variables of interest in the US and in the doppelganger economy. Importantly, our conclusions from the main text remain the same. There is no evidence of a Trump effect, even when we consider the inauguration date as the treatment.

Table A.1: Matching of covariates

	US	baseline	inauguration-based
Consumption / GDP	69.1	57.1	61.1
Investment / GDP	20.5	21.9	20.3
Net Exports / GDP	-4.3	0.02	0.5
Labor productivity growth	-0.08	-0.08	0.01
Unemployment rate	4.9	6.4	7.5

Note: All numbers are in percent. Labor productivity growth is the log difference between quarterly real GDP and quarterly total employment. Values shown for the baseline doppelganger in the main text and the alternative using the Trump inauguration as the treatment.

Table A.2: Composition of GDP doppelganger: country weights

	baseline	inauguration-based
Australia	<0.01	<0.01
Austria	<0.01	<0.01
Belgium	<0.01	<0.01
Canada	<0.01	<0.01
Denmark	<0.01	<0.01
Finland	<0.01	<0.01
France	<0.01	<0.01
Germany	<0.01	<0.01
Hungary	<0.01	<0.01
Iceland	<0.01	<0.01
Ireland	0.11	0.03
Italy	<0.01	<0.01
Japan	0.13	<0.01
Korea	0.10	0.05
Luxembourg	<0.01	<0.01
Netherlands	<0.01	<0.01
New Zealand	0.09	0.26
Norway	0.07	<0.01
Portugal	0.18	0.29
Slovak Republic	0.03	0.10
Spain	<0.01	<0.01
Sweden	<0.01	<0.01
Switzerland	<0.01	<0.01
United Kingdom	0.29	0.26

Note: Country weights for the baseline doppelganger in the main text and the alternative using the Trump inauguration as the treatment.

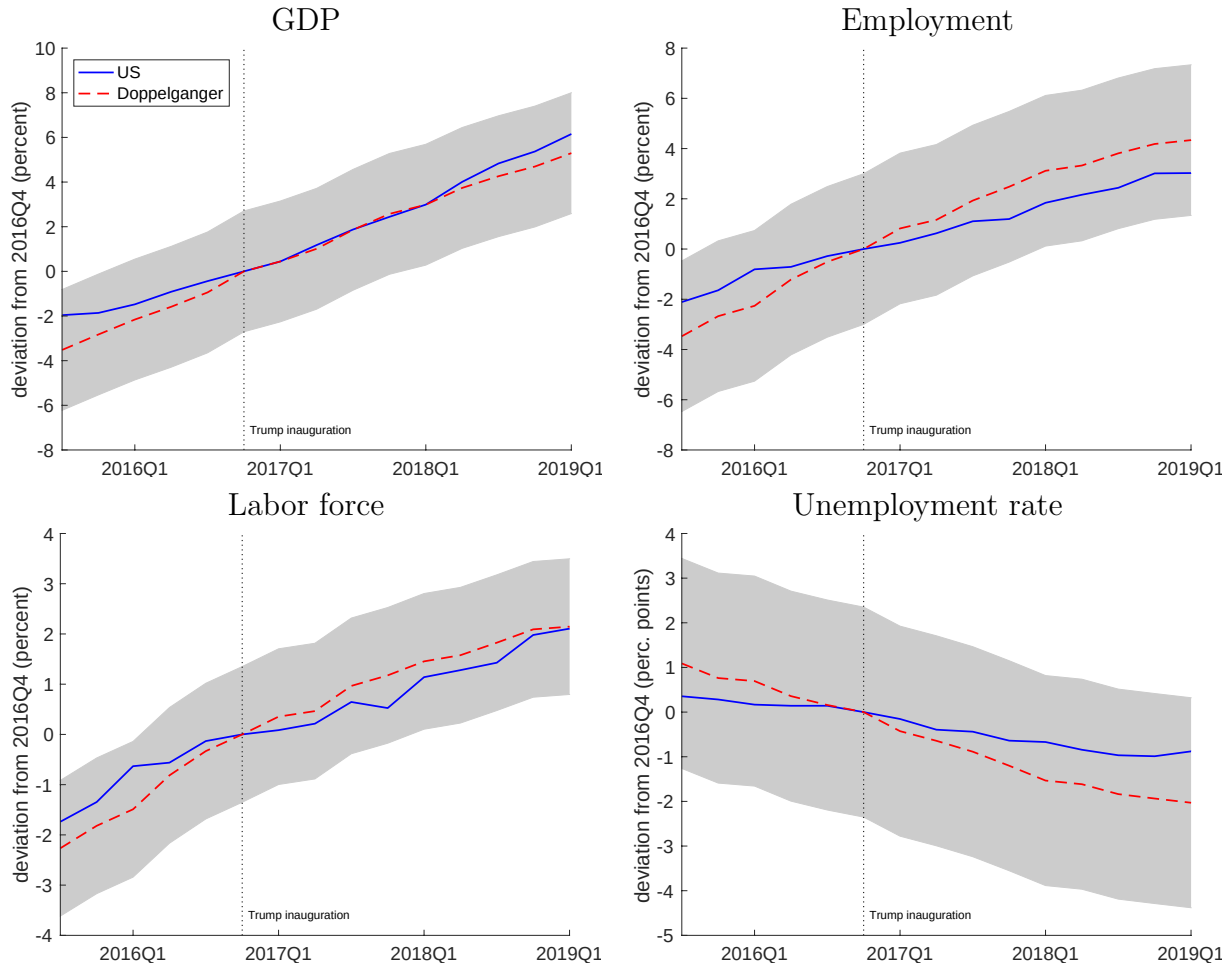

Figure A.1: Macroeconomic performance of US economy (blue solid line) and doppelganger benchmark (red dashed line) with Trump inauguration (2017Q1) taken as the treatment date. *Note:* shaded areas are two standard deviations of the respective difference between the aggregates in the U.S. and in the respective doppelganger economy prior to Trump inauguration. Data source: OECD Economic Outlook 105 (May 2019).

B Alternative doppelganger construction

The main text constructs a single doppelganger to jointly match the time paths of real GDP, total employment, total labor force and five covariate averages in the US economy. Using these estimates, we then also compute the doppelganger unemployment rate.

In this appendix, we provide an alternative approach. Instead of estimating a single doppelganger, we estimate four separate doppelgangers. One for each of the variables of interest. The benefit of this approach is that each of the four doppelgangers is characterized by a much tighter fit to the US economy. This is simply because each needs to match "only" 92 observations, as opposed to the 266 observations matched by the single doppelganger in the main text.

Table A.3 shows how the different doppelgangers match the covariates, Table A.4 shows the estimated country weights and Figure A.2 depicts the four variables of interest in the US and in the four doppelganger economies. Importantly, our conclusions from the main text remain the same. There is no evidence of a Trump effect, even when using separate doppelgangers which match each variable much more tightly than the single doppelganger in the main text.

Table A.3: Matching of covariates

	US	baseline	GDP-based	E-based	LF-based	U-based
Consumption / GDP	69.1	57.1	61.5	61.7	63.3	53.7
Investment / GDP	20.5	21.9	20.0	19.1	19.3	20.2
Net Exports / GDP	-4.3	0.02	-0.3	0.0	-1.9	4.1
Labor productivity growth	-0.08	-0.08	-0.06	-0.06	-0.08	0.37
Unemployment rate	4.9	5.8	6.4	5.7	8.2	4.2

Note: All numbers are in percent. Labor productivity growth is the log difference between quarterly real GDP and quarterly total employment. The table shows values for the US data, those for the baseline doppelganger in the main text and for four alternatives based on matching only real GDP (GDP-based), employment (E-based), labor force (LF-based) and unemployment rate (U-based).

Table A.4: Composition of GDP doppelganger: country weights

	baseline	GDP-based	E-based	LF-based	U-based
Australia	<0.01	0.17	<0.01	<0.01	<0.01
Austria	<0.01	<0.01	<0.01	<0.01	<0.01
Belgium	<0.01	<0.01	<0.01	<0.01	<0.01
Canada	<0.01	<0.01	<0.01	0.13	<0.01
Denmark	<0.01	<0.01	<0.01	<0.01	<0.01
Finland	<0.01	<0.01	<0.01	<0.01	<0.01
France	<0.01	<0.01	<0.01	<0.01	<0.01
Germany	<0.01	<0.01	<0.01	<0.01	<0.01
Hungary	<0.01	<0.01	<0.01	<0.01	<0.01
Iceland	<0.01	<0.01	<0.01	<0.01	0.55
Ireland	0.11	0.05	0.08	<0.01	<0.01
Italy	<0.01	<0.01	<0.01	<0.01	<0.01
Japan	0.13	<0.01	0.12	<0.01	0.33
Korea	0.10	<0.01	<0.01	<0.01	<0.01
Luxembourg	<0.01	<0.01	<0.01	<0.01	0.01
Netherlands	<0.01	<0.01	<0.01	<0.01	<0.01
New Zealand	0.09	0.17	0.07	0.28	<0.01
Norway	0.07	<0.01	<0.01	<0.01	<0.01
Portugal	0.18	0.14	0.11	0.44	0.11
Slovak Republic	0.03	<0.01	<0.01	<0.01	<0.01
Spain	<0.01	<0.01	<0.01	<0.01	<0.01
Sweden	<0.01	<0.01	<0.01	<0.01	<0.01
Switzerland	<0.01	<0.01	<0.01	<0.01	<0.01
United Kingdom	0.29	0.47	0.63	0.16	<0.01

Note: Country weights for the baseline doppelganger in the main text and four alternatives based on matching only real GDP (GDP-based), employment (E-based), labor force (LF-based) and unemployment rate (U-based).

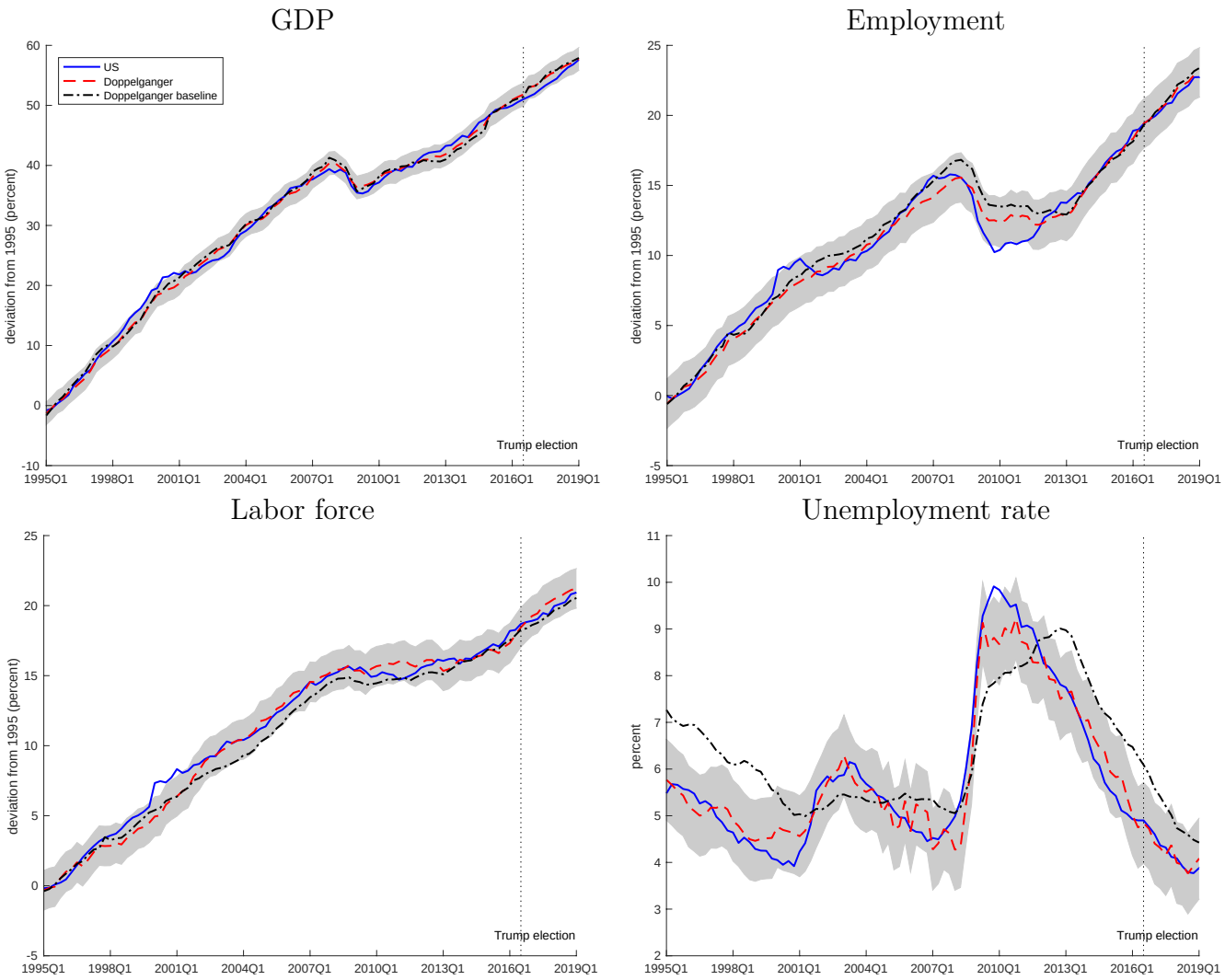

Figure A.2: Macroeconomic performance of US economy (blue solid line) and four separate doppelgangers (red dashed line). *Note:* shaded areas are two standard deviations of the respective difference between the aggregates in the US and in the respective doppelganger economies prior to Trump election. Black dash-dotted line depicts baseline doppelganger, see Section 2.3. Data source: OECD Economic Outlook 105 (May 2019).