EUROPEAN FISCAL RULES AS A LIABILITY IN THE TRANSATLANTIC TRADE CONFLICT: LESSONS FROM NiGEM SIMULATIONS

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Under the Trump administration, a transatlantic trade conflict has been escalating step by step. First, it was about tariffs on steel and aluminium, then about retaliation for the French digital tax, which is suspended until the end of the year. Most recently, the US administration threatened the European Union with tariffs on cars and car parts because of Canadian seafood being subject to lower import duties. As simulations with NiGEM show, a further escalation of the transatlantic trade conflict has the potential to slow down economic growth significantly in the countries involved. This is a considerable risk given the fact that the countries have to cope with the enormous negative effects of the pandemic shock. Furthermore, the damage caused by the trade conflict depends on the extent to which the affected countries use fiscal policy to stabilise their economies.

Keywords: trade war, economic growth, uncertainty, fiscal policy.

JEL codes: E17; F17.

Globally escalating trade conflicts such as the US-China trade war or the transatlantic trade dispute have been widely identified as a recurrent risk for economic growth (IMF, 2019). Trade conflicts may even endanger the recovery after the global pandemic shock (OECD, 2020). Interestingly, even though economists warn that a trade conflict will cause damage to all parties involved, the prospect that one's own economy will suffer less than that of a rival seems to be sufficient for some policymakers to pursue such a risky strategy. A reason behind this behaviour might be that trade conflicts at the moment are at least partly not economically but also (geo)politically motivated.

Before the pandemic crisis, the US was more or less able to maintain the pace of economic growth, in part due to its expansionary fiscal policy in 2018 and 2019, while the fiscal stance in the Euro Area had been close to neutral. Furthermore, the US government has passed measures to directly stabilise the incomes of groups affected by the trade conflict with China (Parker and Dorning, 2019). This observation is important, as US President Donald Trump once tweeted that "trade wars are good and easy to win". So far, he could claim that empirics have been on his side, as the US economy has remained supposedly unharmed by the trade conflicts while China and the European countries have felt more pain. After Mexico made concessions in the renegotiation of NAFTA and the US reached a 'Phase one' trade deal with China, Europe also remains under pressure to compromise in trade disputes.

This article tries to shed some light on the economic consequences of the transatlantic trade conflict. Using NIESR's Global Econometric Model (NiGEM),[1] we simulate the macroeconomic effects of different trade conflict escalations on both the US and the Euro Area economy. We focus on the Euro Area instead of the EU as a whole because the EU's trade in the past years (and hence in NiGEM's database) has already been affected by the Brexit, but Britain's role in a trade conflict between the US and the EU is likely to be exceptional and hard to predict.

Our analysis starts with an increase of US tariffs on the imports of cars and car parts as repeatedly announced by the Trump administration. We then present scenarios with an increasing degree of escalation. Furthermore, we

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simulate the potential for macroeconomic stabilisation through fiscal policy to counterbalance the effects of the trade conflict. Here, we allow for asymmetric fiscal reactions on both sides of the Atlantic, based on the observation that the US has been more willing to pursue an expansive fiscal policy in the past, while the fiscal policy space of the Euro Area countries is constrained due to the fiscal rules of the Growth and Stability Pact.

The article is structured as follows. In the next section we describe possible transmission channels of tariff introduction depending on the market structure. We then present our modelling and simulation strategy. The following section describes our simulation results for the Euro Area and for the US and discusses some limitations to our simulation approach. Finally, we conclude with some policy recommendations.

Economic modelling of the trade conflict

For policy simulations of a transatlantic trade conflict we have first to identify the essential transmission channels. Then, we can reflect on how to model them. Foremost, the focus is on import tariffs, whose effects depend on the market structure and the size of the country imposing them.

Let us first consider the effect of a tariff when there is perfect competition and the home country (the one imposing the tariff) is small. A small country is a price-taker in the world market with a horizontal import supply curve. Assuming that consumers regard domestic and foreign products as perfect substitutes, the import quantity is the difference between the quantity sold by domestic producers at the domestic price and the total quantity demanded by consumers at that price.

In this case, an import tariff increases the domestic sales price of the imported product by exactly the amount of the tariff. This means that the tariff is fully passed on to domestic consumers, who reduce their demand accordingly. Since the tariff also increases the domestic price, domestic firms expand their production and consumers increasingly switch to the domestic substitute. While domestic producers can sell a larger quantity at a higher price after the introduction of the import duty, foreign exporters, who continue to offer goods at the unchanged world market price, have to accept a drop in sales. This drop, however, is not large enough to affect the global price of the good.

If the country imposing the import tariff is a large country (defined as 'large' because its global demand for the good is large enough to impact world market prices), the mechanism is slightly different. Again, an increase in the import tariff increases the price at home and hence lowers the quantity demanded. However, in this case, the drop in demand by the home country also leads to a drop in the world market price of the good concerned. As a consequence, the border price of the good falls, and the increase in the domestic price is less than the amount of the tariff. The tariff-induced price change is no longer borne entirely by domestic consumers, but to a certain extent by foreign exporters, who have to accept price reductions in addition to the drop in volume.

Due to the economic relations described, many simulation studies, also using NiGEM, usually implement tariffs via changes in import and export prices (Deutsche Bundesbank, 2018). Higher import prices lead to an increase in consumer prices in the country that introduces the tariff. However, this modelling strategy only represents one of several possible channels through which tariffs may affect the economy. Depending on the market structure, there may be other reactions, which will be examined in more detail below (Slopek, 2018).

The market for motor vehicles, for example, is not well characterised by perfect competition. Instead, it should rather be seen as a market with monopolistic competition (Krugman, 1979). This concept considers suppliers whose products are not identical but differ from each other in certain features. Consumers thus regard them only as imperfect substitutes. This has two important consequences: first, companies in such a market are to a certain extent price setters and can therefore engage in strategic pricing (pricing-to-market); second, these companies make profits because they sell their products with a mark-up – sometimes considerable – above their marginal costs.

If a tariff is imposed in such a market, this has important consequences for the reaction of the exporters. Depending on the price elasticity of demand and the competitive pressure, they can decide to what extent they pass on the tariff to their customers or whether they absorb it in their own profit margin. This is particularly relevant if they assume that the tariff will only be imposed temporarily. Even a partial pass-through, as it leads to a declining market share, results in additional losses under monopolistic competition, since each unit is sold above marginal cost. Conversely, imposing a tariff in this market implies that profits of domestic companies improve. If, for example, European car manufacturers have to pay tariffs for their sales on the US market and even only partially increase their prices, the competitive pressure on US manufacturers will decrease. They can

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now sell more units or increase their prices too. Both will be reflected in rising profits.[2]

Furthermore, international value chains play an important role. 'Auto tariffs' usually do not only comprise tariffs on assembled motor vehicles, but also on motor vehicle parts. German car manufacturers, for instance, run large plants in the US and use intermediary inputs from Europe there. An import tariff on car parts therefore increases the production costs of German carmakers in the US and makes them less price competitive vis-à-vis competitors, both on the US car market and on markets elsewhere. This is because, unlike other foreign car manufacturers, German car companies in the US produce not only for the US market, but also for export. In recent years, BMW and Daimler have been the two largest car exporters in the US. Overall, US auto tariffs will definitely reduce the profits of European car manufacturers.

As an additional shock apart from the tariff, companies' financing costs can rise and, given a strategy of constant dividend payouts, the funds available for innovation and investment will be reduced. In a macroeconomic model with financial frictions, this corresponds to an increase in the risk premium required by creditors. Similarly, trade conflicts lead to rising economic uncertainty because the duration of the conflict and its outcome are uncertain and companies may therefore be reluctant to invest (figure 1). Again, this can be translated into another increase in the risk premium implying higher financing costs for companies (OECD, 2019).

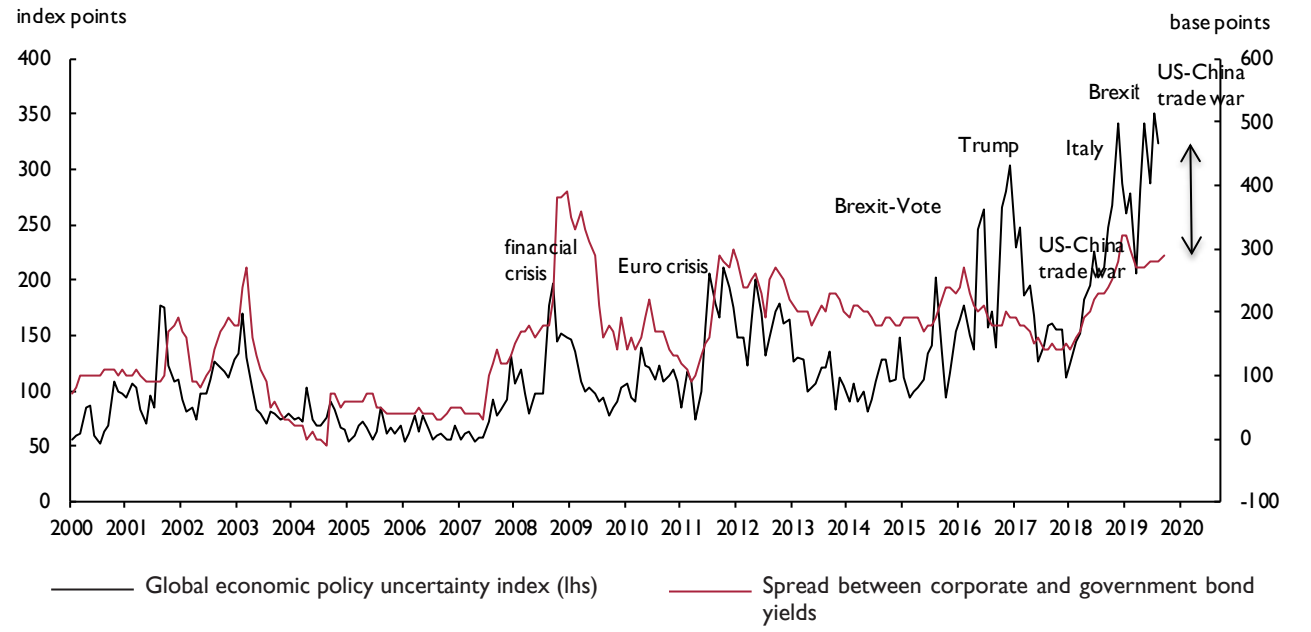
In our study, the aforementioned transmission channels are explicitly taken into account and their macroeconomic effects are analysed in detail using the National Institute's Global Econometric Model (NiGEM). As a potential shortcoming, we thereby abstract from exchange-rate reactions. Based on the findings of other studies, however, we will discuss how additional factors may influence the economic outcome.

Simulation approaches of this study

It is hard to predict the course of a trade conflict; we therefore examine different scenarios in order to delimit the range of possible outcomes. For this purpose, three simulation approaches (policy assumptions) regarding the duration of the trade conflict and the reaction of fiscal policy are combined with four scenarios of varying intensity of the conflict (table 1). This results in a total of twelve simulation scenarios.

In the case of a *temporary trade conflict* (1), we assume that the US will only increase import tariffs on products from Euro Area countries for a short period of about one year. This assumption is based on the possibility that there might be a change of power in the US in November

Figure 1. Trade tensions and economic uncertainty



Source: Economic Policy Uncertainty, Deutsche Bundesbank.

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Table 1. Transatlantic trade conflict: set-up of counterfactual simulations

Simulation	Simulation approach	Duration of shock
1	Temporary trade conflict: exporters do not pass tariffs on to consumers	October 2020–March 2022
2	Long-run trade conflict: exporters pass tariffs on to consumers	October 2020–March 2026
3	Long-run trade conflict with fiscal policy stabilisation	October 2020–March 2026
Scenario	**Assumptions regarding the development of a trade conflict between the USA and the Euro Area (EA)[a]**	**Date of implementation**
A	US car tariffs: 25% tariffs on imports of cars from the EA worth €45 billion	October 2020
B	Expansion of US tariffs: 25% tariffs on imports from the EA worth €160 billion	April 2021
C	Tit-for-Tat: Euro Area tariffs on imports from the US, with tariff rate and volume equivalent to US measures	April 2021
D	Trade conflict causes uncertainty (risk premium for real investments increases by 40 and 75 basis points respectively)	October 2020

Source: Macroeconomic Policy Institute (IMK).
Note: (a) Within the respective simulation approach, the scenarios are stacked to reflect the escalation of the trade conflict.

2020 and that the new administration might withdraw the protectionist measures introduced by its predecessor, given some changeover time. Several studies point out that the magnitude of the effects depends largely on the price-setting behaviour of exporters (Deutsche Bundesbank, 2017; Slopek, 2018). In the case of a temporary trade conflict, we assume that exporters do not pass on the costs of tariffs to consumers but instead absorb them at the expense of their profit margins. As the simulations show, such a strategy will result in corporate profits being reduced less than if tariffs were passed on to consumers.

The *long-run trade conflict* (2) assumes that the disputes will continue far beyond the US presidential election. In this case, higher tariffs will affect trade relations between the US and Euro Area member countries for the next five years. Under these conditions, exporters are likely to find it increasingly difficult to absorb the tariffs in their profits. It is therefore assumed that tariffs will be entirely passed on to consumers (Amiti *et al*., 2019). A comparison of the results from the first two simulation approaches also allows conclusions to be drawn about scenarios with partially fulfilled assumptions (medium-term duration tariffs, partial pass-through of tariffs).

In the case of a *long-run trade conflict with fiscal policy stabilisation* (3), we assume that both the US and - to a lesser extent – the Euro Area member states use debt-financed fiscal policy to support the domestic economy through increased government spending, tax cuts or higher transfers and subsidies. This assumption is based on observations in the trade dispute between the US and China. The US government has already provided substantial state aid to farmers particularly affected by this trade dispute (Parker and Dorning 2019).[3]

Description of the scenarios within a simulation approach

There are four scenarios within each of the three simulation approaches. These are inspired by the escalation of the US trade conflict with China. From this evolution and the global economic consequences of the conflict, a number of lessons can be drawn that shape the expectations regarding a transatlantic trade conflict. First, US tariffs are likely to be imposed initially on cars and automotive components. Second, the US is likely to extend tariffs to further products. Third, Euro Area member states are likely to retaliate with counter-tariffs (EU Commission, 2018). Fourth, the trade conflict between major economic areas, such as the US and the Euro Area, are likely to weigh on global economic growth through rising uncertainty. These characteristics can be translated into four scenarios (A–D). The different trade conflict intensities – from tariff skirmishes to a fully-fletched trade war – correspond to the fact that the scenarios are 'stacked', i.e. with each simulation a shock is added to shocks already considered in the scenario before (table 1).

The size of the shocks in scenarios A-D is motivated as follows. On average, cars and car parts account for about 10 per cent of Euro Area exports of goods to the US; for Germany, the country that exports the most cars, this share is considerably higher at 20 per cent. In the *car tariff scenario* (A), a tariff rate of 25 per cent on cars and parts imported from the Euro Area therefore

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translates into a 5 per cent increase in US import prices for products from Germany and a 2.5 per cent increase in US import prices for goods from the rest of the Euro Area. In the *expanded tariff scenario* (B) the tariffs will be extended to other products after six months, so that the increase in US import prices for products from all Euro Area countries is then 10 per cent.

However, US import prices only increase under the scenario (simulation approach) of a long-run trade conflict, because exporters start to pass on the tariff to consumers. In the event of a temporary trade conflict, US import prices hardly rise at all because the exporters largely absorb the tariff increase in their profit margins.

If the Euro Area members react to the extended US import tariffs with *countermeasures* (scenario C), Euro Area import prices for products from the US also rise by 10 per cent. In order to model the impact of the trade dispute on *economic uncertainty* (scenario D), a 40 basis point increase in the risk premium is assumed. This only applies to companies located in the regions directly affected by the trade dispute under the scenario of a temporary trade conflict.[4] The size of the shock is similar to other studies (OECD, 2019). In the case of a long-run trade conflict, however, the increase is assumed to be almost twice as high (75 basis points) and the uncertainty is expected to spread to the rest of the world. This assumption is motivated by the experience of the trade conflict between the US and China. Figure 1 shows, by comparing different measures of uncertainty, that the increase in political uncertainty is indeed only partially reflected in interest rate spreads. However, the slump in global capital goods production and in the value added of the manufacturing sector provides a notion of how massive the impact of the uncertainty channel has actually been since 2017 (IMF, 2019).

Temporary trade conflict: simulation results

Impact on the US economy

Figure 2 illustrates the impact of a temporary trade conflict on the US economy in terms of changes in consumer prices (figure 2a), real private sector investment[5] (figure 2b), real imports (figure 2c), real exports (figure 2d), real private consumption (figure 2e), government spending (figure 2f), real GDP (figure 2g) and unemployment (figure 2h).

A temporary trade dispute has little impact on overall economic development in the US because foreign exporters largely absorb the tariff increases in their profit margins and do not pass them on to US consumers. In this way, the tariff shock is neutralised and the US does not face the problem of imported inflation.

In the tariff-only scenarios (A–C), the effects remain largely limited to foreign trade. As import prices rise slightly, the import volume declines somewhat because US consumers start to substitute imported goods with domestic ones. In addition, the export volume falls somewhat in the event of Euro Area countermeasures (scenario C). While the tariff-only measures have no effect on US investments, there is a slightly positive effect on private consumption, because the real disposable income of private households rises slightly as the government passes on the tariff revenues to households. The bottom line is that US GDP grows somewhat more strongly in the tariff-only (A–C) scenarios relative to the baseline without trade dispute, resulting in a slight decline in the US unemployment rate.

If increased economic uncertainty is additionally taken into account (scenario D), there is a significant decline in investment demand in the US because the trade conflict dampens producers' sales expectations. The uncertainty shock finds its way into the real economy via the investment channel and unfolds its negative effects there. Lower investment also leads to a decline in imported capital goods and restricts production opportunities, resulting in a decline in exports. Overall, US GDP declines somewhat relative to the baseline scenario, leading to a slight increase in the US unemployment rate.

Impact on the Euro Area economy

Figure 3 illustrates the impact of the temporary trade conflict on macroeconomic developments in the Euro Area, which are strongly influenced by the results for Germany, as the German economy accounts for almost a quarter of Euro Area GDP.

In the tariff-only scenarios (A–C), the effects are again largely limited to foreign trade. Since European exporters largely absorb US import tariffs in their profit margins, their export prices rise only slightly, so that export volumes only fall moderately. The fact that imports are also declining is largely due to the high import content of exports, especially in Germany. Consumer prices in the Eurozone remain almost constant in the tariff-only scenarios, so that with unchanged purchasing power private consumption also remains constant. If the Eurozone countries, for their part, impose import duties on US products (scenario C), private consumption even rises slightly because by assumption the Euro Area member states reduce taxes and pass on the tariff

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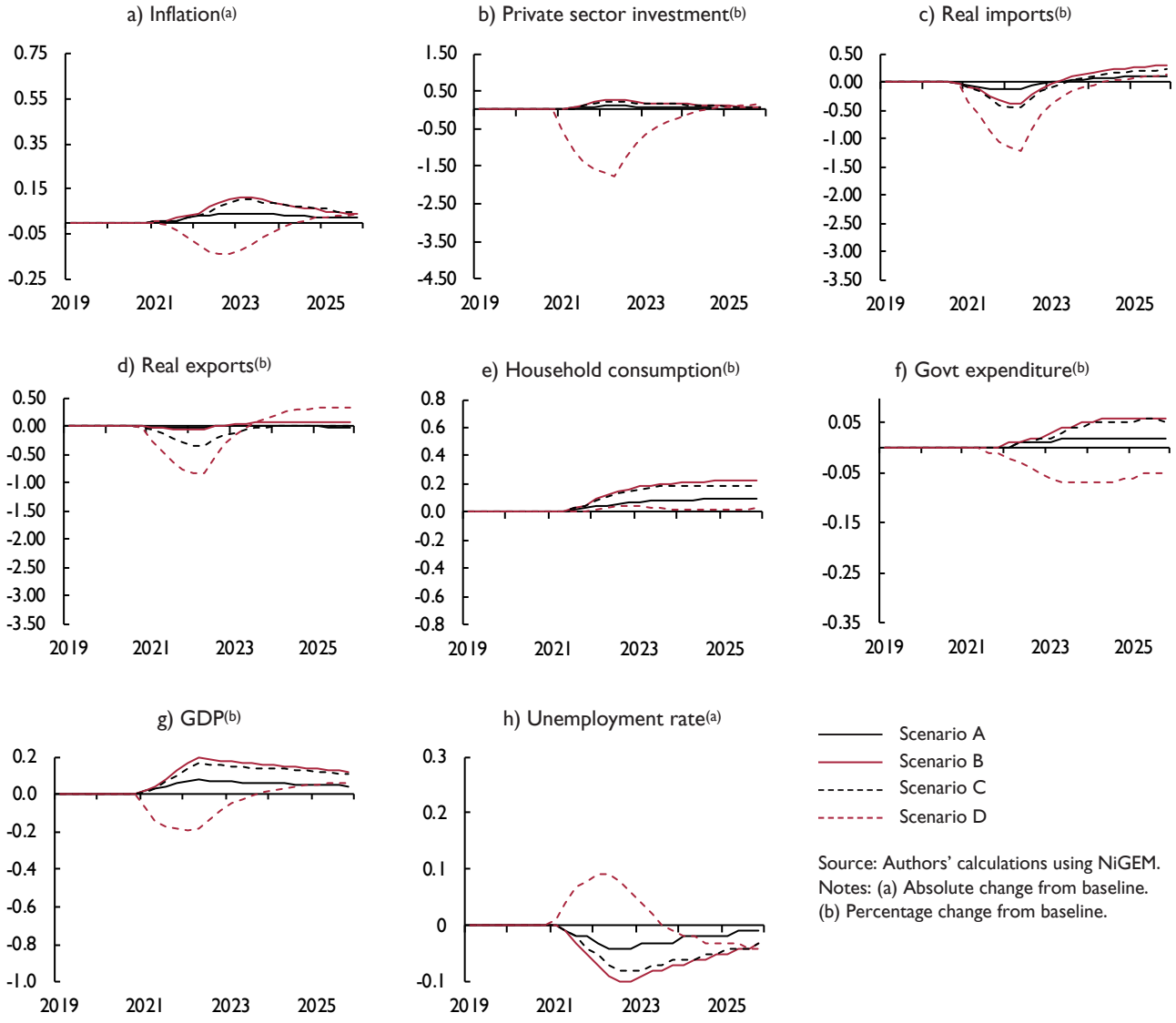
Figure 2. Effects on the US economy under a 'temporary trade tensions' scenario



Source: Authors' calculations using NiGEM.
Notes: (a) Absolute change from baseline.
(b) Percentage change from baseline.

revenues to households, thereby strengthening their purchasing power. The tariff-only scenarios have almost no impact on investment demand in the Euro Area.

The bottom line is that, overall, economic development in the Euro Area is somewhat weaker relative to the baseline scenario without trade conflict.

If increased economic uncertainty is taken into account in addition to tariff measures (scenario D), the outcome changes significantly. The economic uncertainty leads to a slump in investment demand, with the consequence that demand for imported capital goods also falls significantly. The same applies to Euro Area exports. Overall, Euro Area GDP drops relative to the baseline scenario without trade conflict, leading to a rise in the unemployment rate of the Euro Area. However, the NiGEM model tends to underestimate the influence of aggregate demand on unemployment. The reason for this is that the labour market equations imply a counteracting effect of lower wage growth stabilising employment. In contrast, updated estimates of the NiGEM employment equations indicate that the impact of wages on employment is less pronounced (Behrend *et al.*, 2019). The results presented here can therefore be regarded as the lower bound of the macroeconomic effects.

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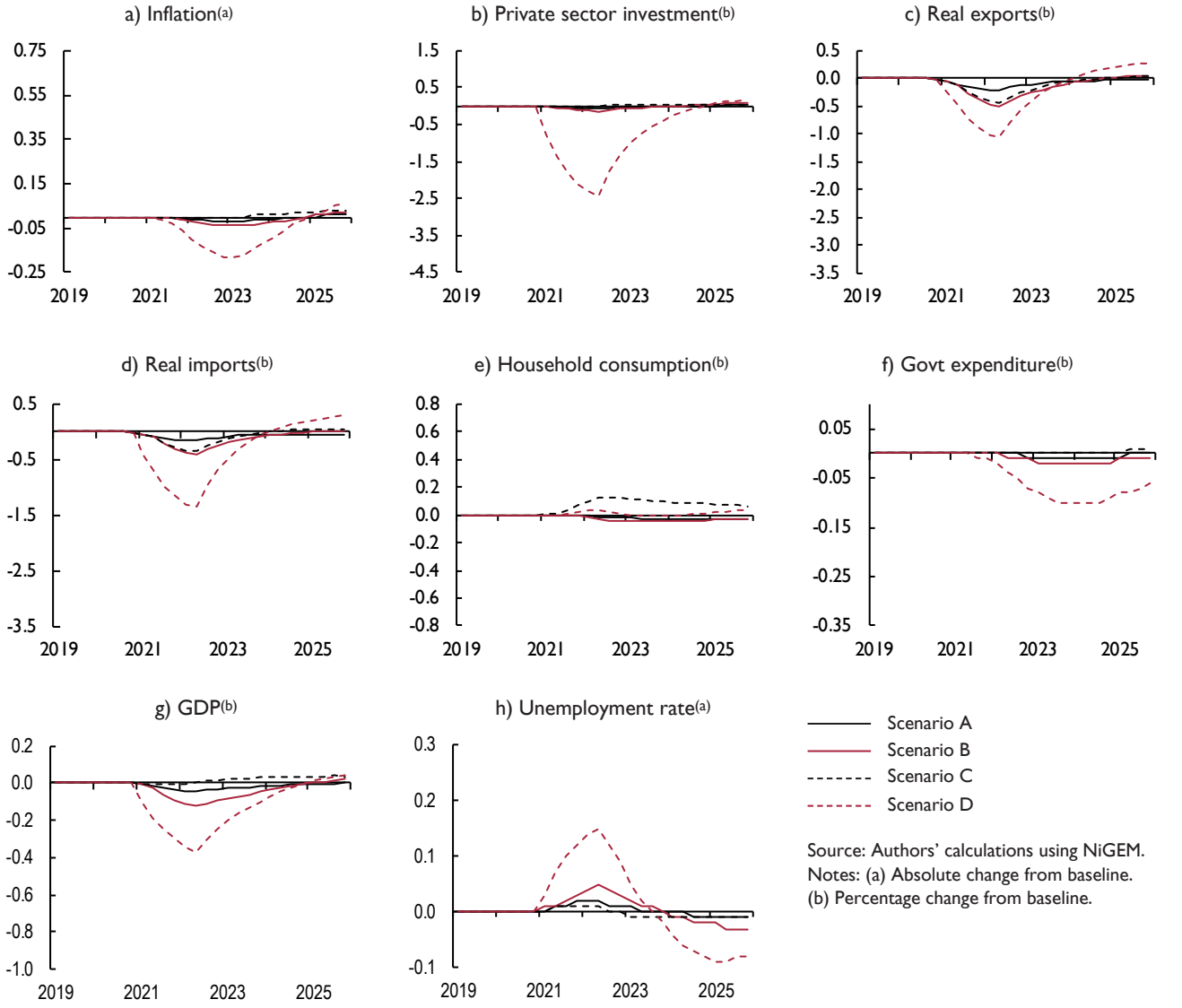
Figure 3. Effects on the Euro Area economy under a 'temporary trade tensions' scenario



Source: Authors' calculations using NiGEM.
Notes: (a) Absolute change from baseline.
(b) Percentage change from baseline.

World GDP is hardly affected by a temporary trade conflict between the US and the Euro Area. Only in the event of increased uncertainty (scenario D), does it decline slightly relative to the baseline scenario without trade conflict.

Long-run trade conflict: simulation results

Impact on the US economy

In a long-run trade conflict, exporters will no longer absorb the tariffs in their profit margins, but pass them on to consumers. Accordingly, the rise in US import prices leads to a significant increase in inflation (figure 4). In all simulations, monetary policy reacts endogenously, i.e. the central bank sets the interest rate in relation to inflation and economic growth.

The rise in domestic prices also raises the production costs of US exporters, who then raise their export prices. As a result of the deterioration in price competitiveness, US exports decline.[6] This effect is significantly aggravated if the Euro Area countries in turn raise tariffs on goods imported from the US (scenario C). In addition, increased inflation reduces the purchasing power of US consumers, which is reflected in a decline in household consumption. As US producers sell less at

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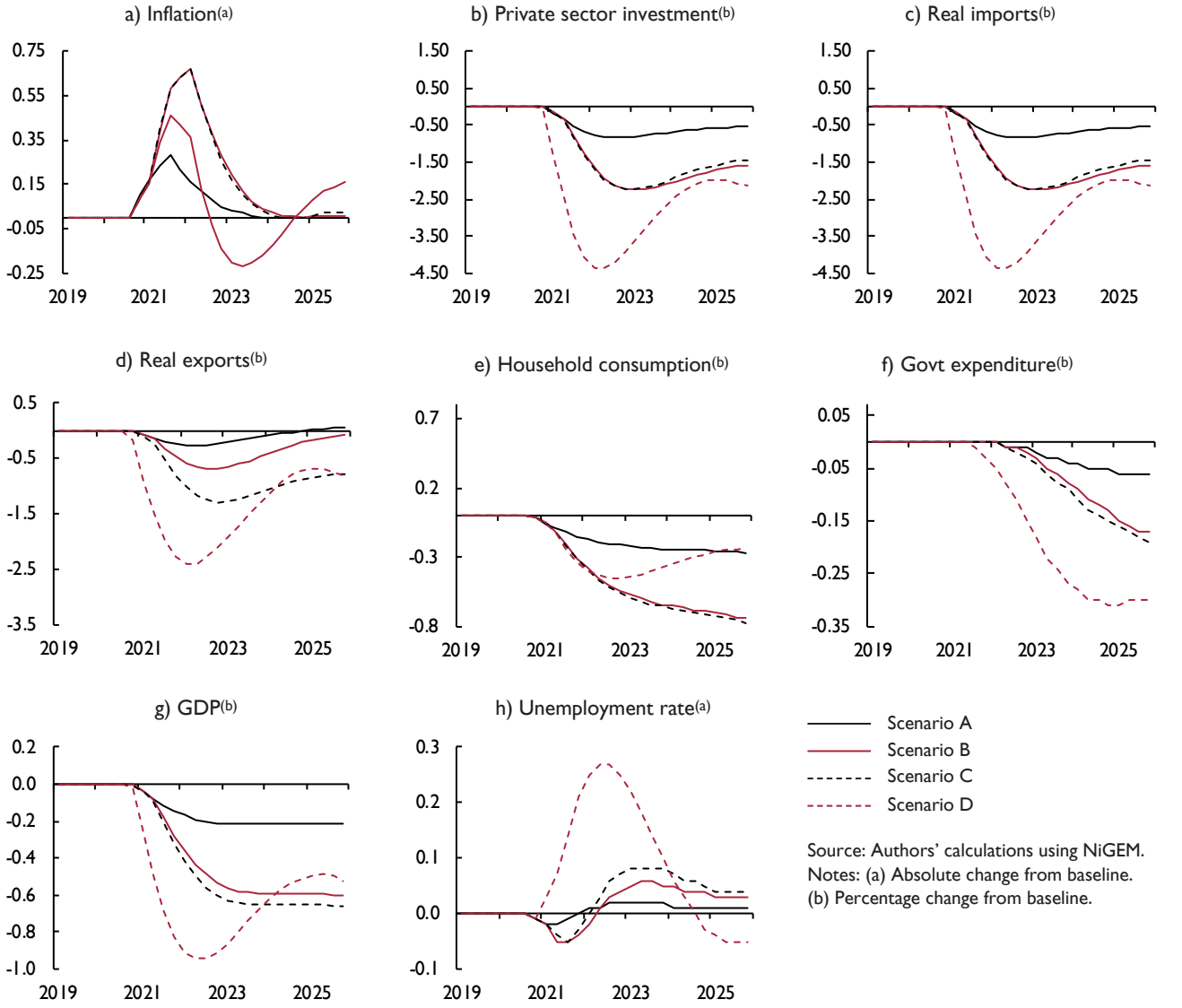
Figure 4. Effects on the US economy under a 'long-run trade tensions' scenario



Source: Authors' calculations using NiGEM.
Notes: (a) Absolute change from baseline.
(b) Percentage change from baseline.

home and abroad, they start restricting their investment activities. Summarising, the economic development in the US is negatively affected by all components on the expenditure side. A downward spiral is set in motion, which ultimately also affects government spending, albeit only slightly. The simulations show that, under the scenario of a protracted trade conflict, the introduction of tariff measures alone (scenarios B and C) leads to significant losses in economic growth. The reason why US GDP does not decline even further is that import volumes decrease due to higher import prices and reduced consumer demand.

If, in addition to the tariff measures, the increased economic uncertainty is taken into account (scenario D), US investment literally collapses. The lack of demand leads to a significant decline in US exports. Overall, in scenario D the decline in US GDP relative to the baseline amounts to almost 1 per cent at its peak. As explained above, the model is likely to underestimate the corresponding rise in unemployment.

Impact on the Euro Area economy

Figure 5 illustrates the effects of a long-run trade conflict on the economic development in the Euro Area, which

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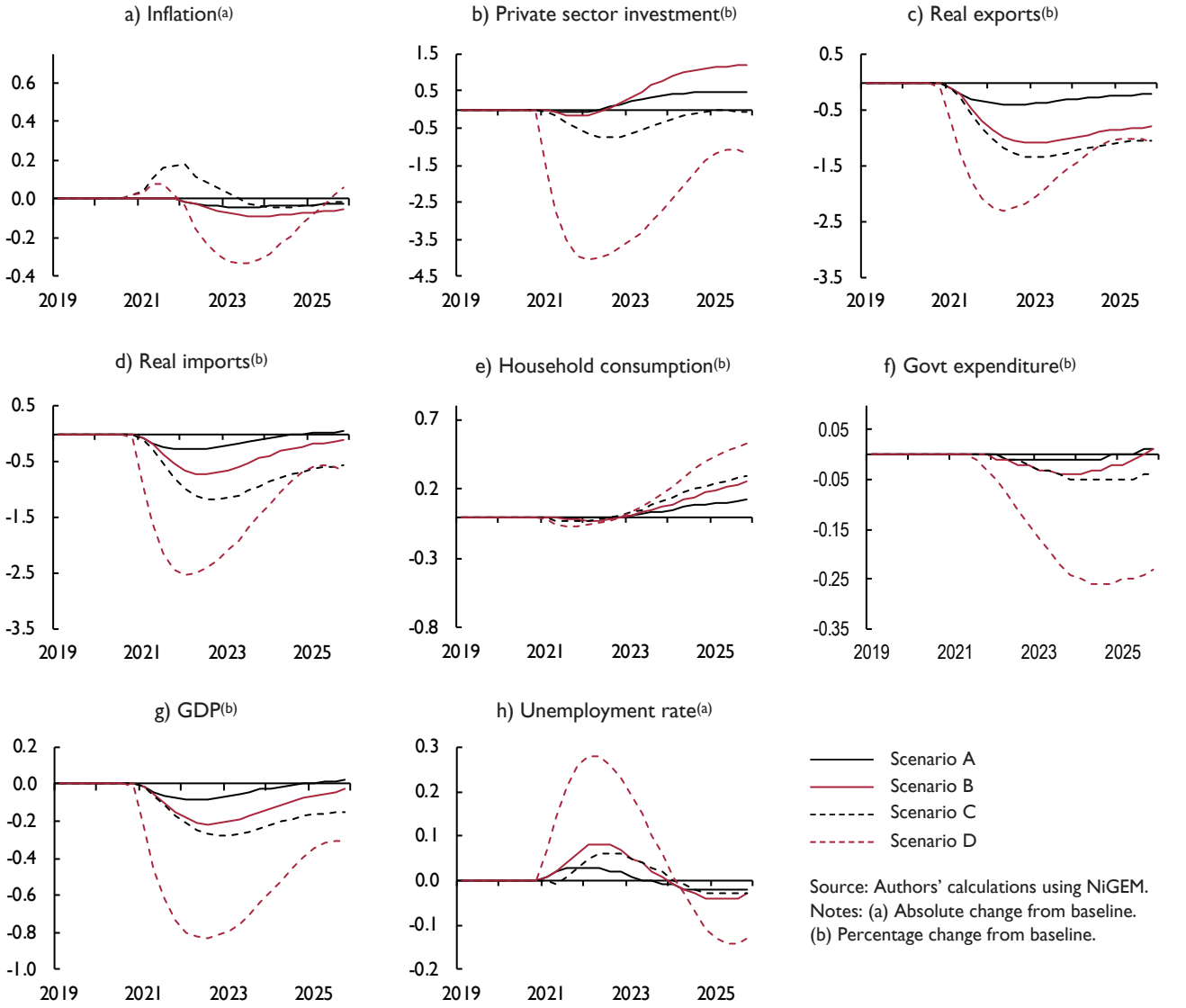
Figure 5. Effects on the Euro Area economy under a 'long-run trade tensions' scenario



Source: Authors' calculations using NiGEM.
Notes: (a) Absolute change from baseline.
(b) Percentage change from baseline.

is again strongly influenced by the results for Germany. In contrast to the US, there is almost no increase in inflation in the Euro Area. There are two main reasons for this: first, the Euro Area countries only impose tariffs in scenario C. Second, the Euro Area receives only 5 per cent of its total imports of goods from the US, so that an increase in the corresponding import prices hardly raises consumer prices in the Euro Area. In the tariff-only scenarios (A–C), the macroeconomic damage to the Euro Area is significantly lower than for the US. Since there is no change in imported inflation, the negative effects are limited to foreign trade; as European exporters pass on the tariff increases to US consumers, their sales prices increase, with the consequence that the export volume decreases. German exports, in particular, show a very high import content. In this way, the process also results in a significant decline in the import volume, which limits the negative effect on GDP.

The simulation, which takes into account the rising economic uncertainty (scenario D), leads to a collapse in real investment in the Euro Area. Exports also decline due to a lack of global demand. Hence, in the first half of the simulation period, the Euro Area suffers

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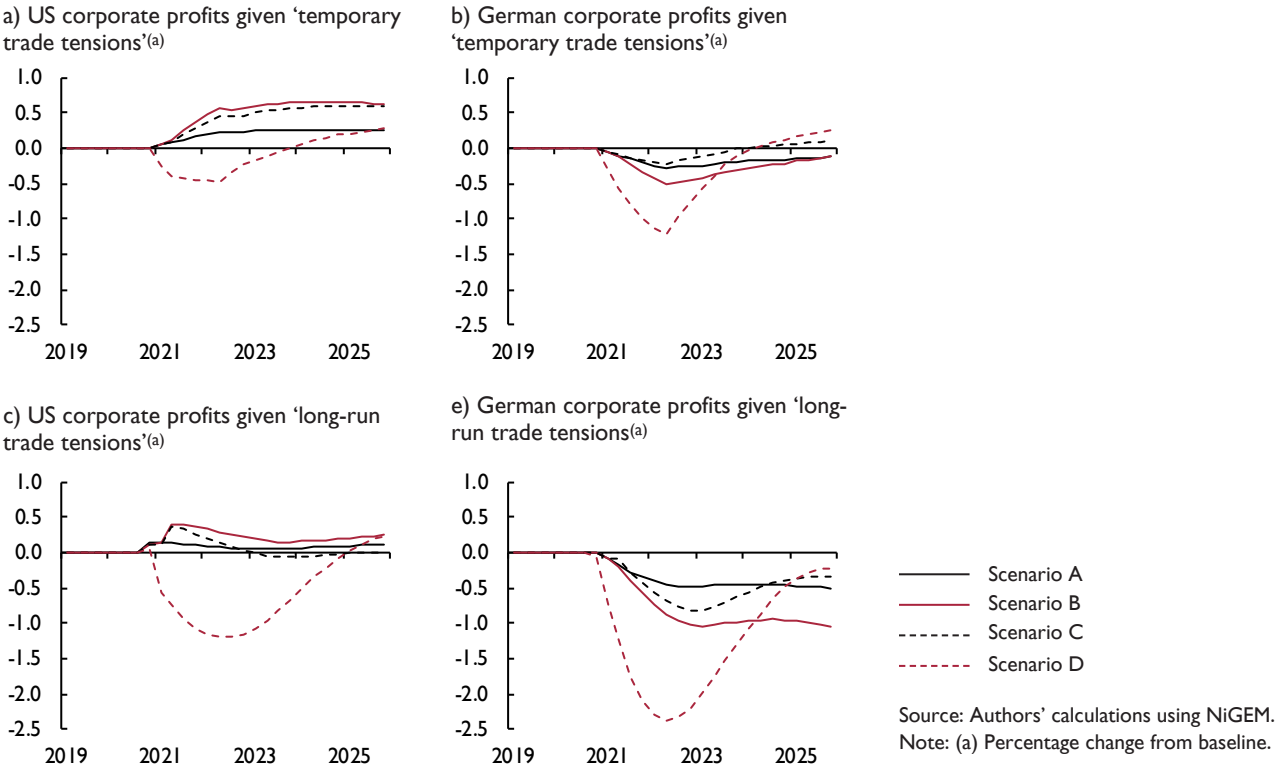
significantly from a decline in economic growth, which is gradually corrected in the second half. This is the case when inflation decreases and the Euro Area countries pass on tariff revenues to households, so that private consumption can stabilise GDP. Overall, a long-run trade conflict with the US is causing considerable damage to the macroeconomic outcome in the Euro Area. At its peak, GDP falls by more than 0.8 per cent relative to the baseline without trade conflict; the associated moderate increase in the model's unemployment rate is again likely to underestimate the actual effect.

At this point, we can summarise that the trade conflict – as simulated here – would have a slightly more negative impact on the US economy than on the European one. That a trade war would be "easy to win", as claimed by US President Trump, seems very unlikely in view of these results. A protracted trade conflict does not only cause considerable damage to countries directly involved, but also to the global economy. Correspondingly, in the uncertainty scenario (D), world GDP falls by about 0.8 per cent at its peak.

Interim conclusions using corporate profit evolution

Our simulations show that the European economies could cope with US import tariffs, which are limited to cars and car parts only and which do not induce additional economic uncertainty (Kara *et al.*, 2019). However, based on the experience of the US-China trade conflict, such a scenario seems rather unlikely. The expanded tariff scenarios show that the economic damage of the trade conflict will probably be much higher. From a macroeconomic perspective, it is favourable, if exporters absorb the tariffs in their profit margins, as this prevents the tariff shock from having an impact on the real economy. Moreover, this strategy may also be beneficial for the exporting companies themselves when they operate in markets characterised by monopolistic competition. This is illustrated in the following based on the evolution of corporate profits. Figure 6 compares the development of corporate profits between a temporary and a long-run trade conflict. The profits of US companies are shown on the left-hand

Figure 6. Summary of simulation approaches based on corporate profit evolution



Source: Authors' calculations using NiGEM.
Note: (a) Percentage change from baseline.

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side and those of German companies on the right-hand side. We focus in this section on the tariff-only scenarios (A–C) as we want to compare the impact of different reactions of firms, not of different exogenous shocks to uncertainty.

An increase in US import tariffs benefits US companies as long as the trade conflict does not lead to an increase in economic uncertainty. During a temporary trade conflict, US companies experience an almost permanent increase in their profits of up to 0.6 per cent relative to the baseline. They benefit from selling larger quantities at slightly higher prices. In the long-run trade conflict, the tariff is passed on to US consumer prices. Imported inflation weighs on both domestic and foreign sales, so that corporate profits are much weaker and increase only temporarily by up to 0.4 per cent relative to the baseline.

European companies, on the other hand, suffer a reduction in profits in all scenarios. In a temporary trade conflict, if exporters absorb the tariffs in their profit margins, their profits fall only temporarily by up to 0.5 per cent relative to the baseline. If they pass the tariff on to consumers, as assumed in a long-run trade conflict, their profits fall almost permanently by up to 1 per cent.

Other transmission channels

The literature mentions additional transmission channels of a trade conflict, but we refrained from modelling them explicitly as the empirical evidence is not clear-cut. In this context, exchange-rate adjustments should be mentioned. If, contrary to the selected modelling approach, an endogenous adjustment takes place, exchange rates will follow an interest rate differential of the currency areas involved (interest rate parity). If US tariffs have an impact on consumer prices and interest rates, this modelling approach thus tends to lead to an appreciation of the US dollar. If investors subsequently shift capital from other regions (especially from emerging markets) to the US, the global growth losses in the wake of the trade conflict will be even more severe than in the simulations presented so far (Erken *et al.*, 2019). The same applies if one assumes that the introduction of tariffs triggers productivity losses for exporting countries – whether in the form of a loss of capital productivity (Krugman 2018) or labour productivity (Erken *et al.*, 2019). If productivity growth slows, this stresses the long-term consequences of a trade conflict, because the persistence of adverse effects is then highly likely to exceed that of a pure tariff shock scenario.

It could be argued that the result of a slightly more negative impact of the long-run trade conflict on the US economy than on the European one only holds under the assumption of constant import shares. To our knowledge, NiGEM does not allow endogenous adjustment of import shares. Moreover, explicit interventions are difficult to reconcile with our scenario construction, since each of the stacked shocks would require a different adjustment of import shares for the economic regions involved.

The imposition of tariffs can lead to the diversion of trade flows, at least to a certain extent. The size of the trade diversion effect depends on various factors. If, for example, US demand for Euro Area imports is relatively price-inelastic, third countries will have only limited benefit from the fact that their price competitiveness vis-à-vis their Euro Area competitors in the US market has improved. In transatlantic trade, differentiated and technically complex goods from the areas of mechanical and vehicle engineering, data processing equipment, and electrical and optical products are of great importance. Demand for these goods should be rather price-inelastic, which should limit the extent of trade diversion. Furthermore, exporters affected by the tariffs could change their price-setting behaviour in third markets in order to increase their market share there or even react by shifting production to third countries. However, such effects do not play a major role in our simulations. Our results are strongly driven by the following effect: with the beginning of the trade conflict, the decline in GDP in the US and the Euro Area puts a strain on global demand. In absolute terms, other regions are therefore exporting less and subsequently importing less. As a result, exports from the Euro Area member states to third countries and from the US to third countries are also lower. Still, trade diversion can have an impact on relative losses, but such a detailed analysis, including other regions of the world, goes beyond the scope of this paper.

The role of monetary policy in our simulations deserves a few additional comments. We use a classical endogenous monetary policy response, in which the central bank raises interest rates in response to a rise in inflation.[7] Of course, one could question this assumption, as the central bank could explicitly refrain from reacting to higher inflation caused by higher tariffs to avoid dampening economic growth. However, the alternative of no monetary policy response, ie fixed on base path, is even less appealing, since this approach per assumption excludes expansionary monetary policy with which the central bank reacts in some scenarios to higher uncertainty and lower growth prospects due to the trade conflict. Under such conditions, the growth impact of tariffs will be even larger. Hence, the choice of a traditional central bank reaction function seems sensible.

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The tariff scenarios modelled in NiGEM concern direct trade relations between the countries involved. However, trade in the 21st century is characterised by global value chains. In order to analyse the effects of a trade conflict, models that use an international value-added approach go beyond the direct effects. For instance, the share of Czech value-added contributing to the exports of other European countries is 15 times higher than that of direct Czech exports to the US (Kara *et al*., 2019). The car supply industry plays an important role in this context. Huidrom *et al*. (2019) use network analysis within a consistent input-output framework to capture value-added growth along global value chains to analyse the impact of a 25 per cent US tariff on cars and car parts from the EU. Their results show that the tariffs generate growth losses for Germany amounting to 0.1 to 0.2 percentage points. The impact of the corresponding tariff scenario in NiGEM is just about 0.1 percentage points. Thus, the change from baseline in a network-based model tends to be slightly higher than in NiGEM, but the differences are still only small. The key message remains that the impact of an increase in uncertainty on GDP is more harmful for the economy than the impact of the tariff itself (Kara *et al*., 2019; OECD 2019).

Long-run trade conflict with fiscal policy stabilisation: simulation results

A long-run trade conflict, in which tariffs are passed on to consumer prices, seriously depresses economic growth. It is therefore likely that economic policy, especially in the US, will move towards stabilising the economy. We, therefore, use a third simulation approach, which also takes fiscal policy stabilisation measures into account. However, these measures are asymmetrical.

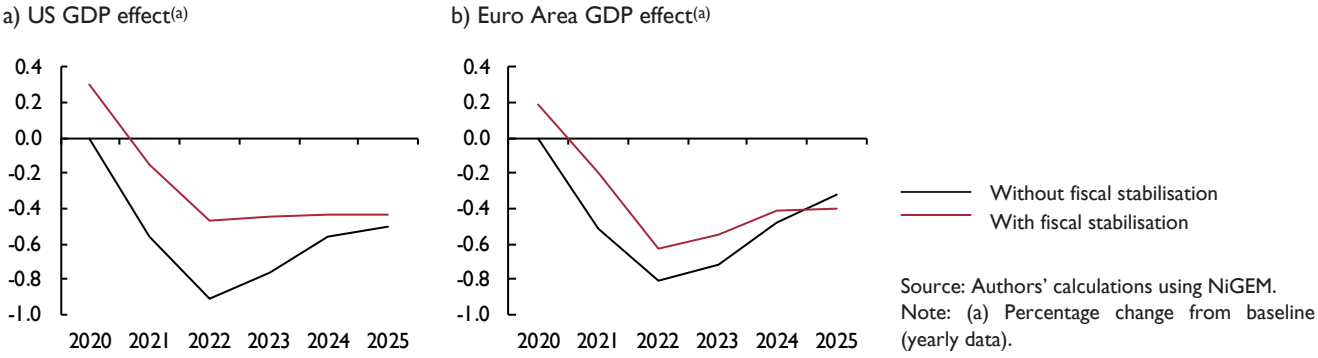
Based on the reactions of fiscal policy in past downturns, but also because of the European Stability and Growth Pact and even stricter national rules, for example the German debt brake, it is also likely that such stabilisation will be more pronounced in the US than in Europe. Accordingly, we assume a credit-financed government spending impulse for the US, which increases in two steps to 1 per cent of GDP over the simulation period; for the Euro Area countries, the assumed credit-financed government spending impulse amounts only up to 0.5 per cent of GDP.

Figure 7 shows the effects of a long-run trade conflict with asymmetrical fiscal policy measures only for the most adverse scenario, including a rise in economic uncertainty. In the simulations, higher government spending hardly affects the domestic price level and thus export prices, but it does stimulate the domestic economy and real imports. Overall, the adverse effect of the trade conflict on economic growth is somewhat mitigated.

In the US, the stronger fiscal stimulus means that the GDP decline in the uncertainty scenario (scenario D) is only half as large as in the same scenario without stabilisation. At the same time, the government debt ratio rises by 3 percentage points towards the end of the simulation period. In the Euro Area, which provides a less expansive fiscal impulse in the simulation, growth losses are about one-third smaller than in the case without stabilisation.

Interestingly, the relative losses are shifted; if one focuses on the (plausible) case of an increase in uncertainty, the strong fiscal stimulus in the US is not able completely to offset the negative effects of the trade conflict, but GDP stabilises more quickly than in the Euro Area at an acceptable level of –0.4 per cent. Overall, despite fiscal stimulus, there are still adverse effects from the trade conflict in both regions. However, the net effect of the

Figure 7. Macroeconomic effects of long-run trade tensions with and without fiscal stabilisation (Scenario D)



Source: Authors' calculations using NiGEM.
Note: (a) Percentage change from baseline (yearly data).

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trade conflict and of the fiscal policy intervention leads to a more vibrant GDP development in the US compared with the Euro Area. If one assumes that the Euro Area will completely refrain from fiscal policy countermeasures – as happened similarly during the euro crisis – the economic losses will be even more pronounced.

Economic policy conclusions

In summary, a protracted trade conflict causes noticeable damage in the economic areas involved, even if fiscal policy is stabilising. This is the case because increasing uncertainty and subdued investment dampen economic growth. If economic policy does not respond, the damage is even greater.

In the event of an asymmetrical fiscal policy response – as simulated here – the US may succeed in changing the relative losses in output in such a way that Europe will suffer more. If the European countries were to forego fiscal stabilisation measures altogether, they would become the big losers in this conflict. One reason for not taking decisive fiscal policy action could be that the stabilisation measures already taken to cope with the economic consequences of the Corona crisis have led to a significant increase in the government debt-to-GDP ratio in many Euro Area countries and also EU fiscal rules restrict fiscal policy space. However, there is no objective reason for such a self-limiting view of fiscal policy from a financial market perspective. The strong fiscal response of the EU and its member states during the pandemic crisis, supported by ECB bond puchases, have demonstrated that an increase in debt-to-GDP ratio for stabilisation policies does not need to spook investors. Rather, if a self-limiting view of fiscal policy were to take effect in Europe, so that the European countries refrain from taking substantial fiscal stabilisation measures while the US administration uses state aid to support industries that are suffering from the negative impacts of the trade conflict, Europe is in danger of falling behind.

NOTES

1 We employ the tariff model v19.2t2.
2 For an in-depth analysis see Krugman (1979) and Helpman and Krugman (1989).
3 In 2018, the US government had launched an emergency aid package for US farmers worth US $12 bn. In May 2019, US President Trump announced further aid worth $16 bn.
4 This increase relates exclusively to the external financing of investments. Since we do not assume that the shareholders demand higher risk premia, this puts the assumed uncertainty shocks into perspective.
5 These essentially include investments in equipment, commercial construction investments by companies and residential construction investments by households.
6 The simulations described here employ constant exchange rates; see the explanations below.
7 The second factor in NiGEM's 2-pillar strategy, which is used for policy reactions of the ECB, is nominal GDP growth.

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