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The macroeconomic impact of tariffs on Northern Ireland

Adele Bergin⁽¹⁾, Luke Doyle⁽²⁾ and Stephen Millard⁽³⁾

Abstract

In this paper, we use a model simulation-based approach to assess the macroeconomic impact of US tariffs on the Northern Ireland (NI) economy. More specifically, we use AMNIE, a newly developed structural macroeconomic model for NI, designed for medium-term economic projections and policy analysis to examine quantitatively the effects of tariffs of different sizes set by the United States on EU and UK exports. We find that Northern Ireland experiences persistent output losses across all tariff scenarios, with trade acting as the primary transmission channel. Further, targeted tariffs on major trading partners generate substantially larger effects than uniform global tariffs, reflecting Northern Ireland's strong integration with UK and EU markets. Finally, while Northern Ireland is significantly affected, cross-country comparisons show that its exposure lies between that of the United Kingdom, which experiences larger declines, and the European Union, where impacts are somewhat more moderate. While these effects may be partially mitigated by trade deflection under Northern Ireland's dual-market access, the magnitude is uncertain and likely to depend on the scale of tariff differentials, with evidence suggesting that sizeable rerouting effects typically arise only in response to larger tariff shocks.

Keywords: Macroeconomic simulation, US tariffs; Northern Ireland; trade deflection

JEL Classification: C53, E17, F13, F15

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1 Introduction and motivation

Following Brexit and the Windsor Framework, Northern Ireland (NI) occupies a unique position by remaining within the UK customs territory while simultaneously aligning with the EU Single Market for goods with Dual EU/UK regulatory regimes. This enables privileged access to both EU and UK markets for goods trade, although in practice movements between GB and NI involve additional administrative requirements and are not entirely frictionless (Northern Ireland Assembly, 2023). This unique status also introduces complex dynamics in the face of US tariffs. Although the United States currently imposes a uniform ten per cent tariff on goods imports from all countries, albeit imports of certain goods face higher tariffs, at one stage goods of EU and UK origin faced differential tariffs. A potential tariff differential, where EU-origin goods face a higher tariff than UK-origin goods, may incentivise EU firms to reroute exports through Northern Ireland, contingent on compliance with rules of origin. This could enhance Northern Ireland's strategic importance in international trade, with significant macroeconomic ramifications.

In this paper, we assess the sensitivity of the NI economy to tariff-induced price changes and external trade shocks. We do this by conducting scenario analysis to estimate the impact of increased US protectionism on NI trade. We examine how this trade impact may propagate through the broader NI economy, affecting key macroeconomic indicators such as employment, unemployment, domestic demand, wages and prices. And we further explore the sensitivity of the NI economy to external trade shocks given the widespread nature of US tariffs.

To fix intuition, we first use a simple 'toy model' to show how tariffs on EU and UK exports to the United States might be expected to lead to a fall in UK, EU and NI imports and consumption, given the worsening of their terms of trade. We then use AMNIE, a newly developed structural macroeconomic model for Northern Ireland, designed for medium-term economic projections and policy analysis, described in Bergin et al. (2025), to carry out some quantitative simulations based on actual US tariff rates for UK, EU and other countries' exports.

We find that Northern Ireland experiences persistent output losses across all tariff scenarios, with trade acting as the primary transmission channel. Further, targeted tariffs on major trading partners generate substantially larger effects than uniform global tariffs, reflecting Northern Ireland's strong integration with UK and EU markets. Finally, while Northern Ireland is significantly affected, it is less affected than the United Kingdom as a whole, reflecting lower responsiveness of trade flows to price changes, which dampens the adjustment in trade volumes. By contrast, it experiences larger declines than the European Union, where impacts are somewhat more moderate given the lower exposure of EU trade to the United States. These effects may be partially offset by trade deflection and tariff-jumping behaviour arising from its dual-market access, though the scale of these offsets is inherently uncertain and dependent on firm-level responses.

The paper is structured as follows. We first discuss the relevant literature before illustrating the key intuition underlying our results using a toy model. We then describe AMNIE, concentrating on the trade side of the model, showing how it can be used to examine the effects of external shocks on the NI economy. We then use the model to examine a set of scenarios based on different assumptions about US trade restrictions, which allows us to assess quantitatively the effects of US tariffs on the European Union, Ireland, Northern Ireland and Great Britain. Finally, we conclude with some thoughts on what our results mean for the medium-term outlook for Northern Ireland, Ireland and the United Kingdom.

2 Literature

We connect two strands of the literature. First, we examine the macroeconomic effects of US protectionist policies. Second, we draw on the literature on tariff jumping behaviour and trade deflection.

Empirical Evidence on Tariffs

A broad range of economic theory and empirical research suggests that protectionist policy is welfare reducing. Tariffs are argued to distort countries away from activities in which they hold a comparative advantage, leading to lower economic efficiency. As a result, tariffs are associated with reduced economic growth, lower productivity and investment, higher unemployment, and increased inequality (Furceri et al., 2018; Costinot and Rodríguez-Clare, 2014; Irwin, 2017).

Evidence for Northern Ireland

The announcement of tariffs by the Trump administration has already had measurable effects on Northern Ireland, prompting initial analysis by Department for the Economy (DfE) (2025). To assess these impacts, the authors employ a computable general equilibrium (CGE) model developed by the Fraser of Allander Institute at the University of Strathclyde. The analysis considers a baseline scenario that reflects the current policy environment, under which pharmaceutical products are excluded from the ten per cent tariff. In addition, several alternative scenarios are examined to capture uncertainty surrounding the potential inclusion of pharmaceuticals and aerospace products. The simulations suggest that the tariffs are likely to have a negative impact on Northern Ireland's economic growth, reducing future growth rates by approximately 0.2 per cent, alongside negative effects on investment, exports, wages, and employment.

Evidence in Ireland, the United Kingdom and the broader global economy

Research on the macroeconomic effects of recent US protectionist policies on Ireland and other European economies has also emerged. For Ireland, Egan and Roche (2025) analyse the potential impact of tariffs using an Irish macroeconometric model in conjunction with the National Institute's global econometric model, NiGEM. Their analysis considers a range of tariff scenarios, with rates between ten and 25 per cent,

applied over both the short and long run and encompassing tariff and non-tariff barriers. Across simulations, the results indicate predominantly negative effects on the Irish economy. At the global level, higher trade barriers are associated with tighter monetary policy in the Euro Area, leading to higher interest rates and an appreciation of the exchange rate. Domestically, the simulations suggest reductions in modified domestic demand, employment, wages, and household income, alongside declines in output, particularly in the traded sector. Government debt is also found to increase as a result of weaker economic activity.

Other research in the Irish context includes Lukmanova and O’Grady (2025), who employ a multi-country, multi-sector dynamic stochastic general equilibrium (DSGE) model to assess the macroeconomic effects of tariffs and trade fragmentation. Their results indicate negative effects on economic growth, with particularly adverse impacts on the pharmaceutical sector and other industries that are heavily integrated into global value chains. Real GDP is estimated to decline by approximately 0.6 per cent, while household welfare falls by around 1.7 per cent. Given the relatively low labour intensity of pharmaceutical production, the adverse effects are transmitted primarily through the reallocation of labour and capital across sectors. This shift towards less productive activities emerges as the key driver of the welfare loss, as reflected in the model’s large negative reallocation effect.

At the European level, Motyovszki (2025) employs the European Commission’s QUEST model, a multi-region DSGE framework, to analyse the macroeconomic implications of trade policy shocks. Simulation results suggest that a unilateral increase in US tariffs would lead to a moderate decline in EU real GDP, driven mainly by weaker export demand from the United States.

Examining broader global effects, Bernard et al. (2024) use NiGEM to analyse the macroeconomic consequences of a sharp escalation in US trade protectionism. Their scenarios consider an increase in US import tariffs of 60 per cent on imports from China and 10 per cent on imports from all other economies, alongside retaliatory tariffs imposed by US trading partners. The authors estimate that, over the subsequent two years, global GDP would be approximately 1 per cent lower as a result of the tariffs. Over a five-year horizon, global GDP and world trade are projected to be around 2 per cent and 6 per cent lower, respectively, with heterogeneous effects across countries depending on their trade exposure to the United States.

Tariff Jumping & Export Deflection

Tariff jumping is a well-documented phenomenon in the international trade and FDI literature, whereby firms respond to higher trade barriers by relocating production inside the tariff wall rather than exporting into it. Instead of paying a tariff on exports, firms incur a fixed cost associated with establishing local production through greenfield investment and subsequently avoid the tariff on each unit sold. As a result, higher tariffs can induce a reallocation of foreign direct investment toward jurisdictions offering preferential market access. Recent empirical evidence supports this mechanism: Moder and Spital

(2025) show that the introduction of tariffs is associated with an increase in greenfield foreign direct investment in countries benefiting from imposing the tariff. Specifically, greenfield FDI projects increases by around 4% following a tariff increase in the previous year.

Belderbos and Sleuwaegen (1998) provides early and influential firm-level evidence that trade protection induces tariff-jumping FDI. Focusing on Japanese electronics firms operating in Europe, the study shows that higher trade barriers significantly increase the probability of local production, with inward FDI largely substituting for exports. This result highlights a key mechanism through which tariffs alter the composition of international economic integration, shifting activity from cross-border trade toward localised production, a channel that remains central in recent analyses of tariffs and greenfield FDI.

Trade deflection refers to the reallocation of exports across destination markets in response to changes in relative trade costs, without any relocation of production. Evidence from Bown and Crowley (2007) shows that when exporters face trade barriers in one market, exports of affected products to alternative destinations typically increase by 5–20%, depending on market size and substitutability. Similar evidence is found by Cheng et al. (2021) who uses Chinese export data and finds that US antidumping duties reduced Chinese exports to the United States ('trade destruction') while increasing exports to third-party markets ('trade deflection') in a persistent manner by about 12%. These results underscore the potential for tariff differentials to induce export redirection even in the absence of production relocation.

Northern Ireland is particularly well positioned to attract tariff-jumping investment and trade deflection in the event of a differential tariff on UK and EU goods. Under the Windsor Framework, Northern Ireland benefits from privileged dual market access, remaining effectively within the EU Single Market for goods while also retaining unfettered access to the UK internal market. This unique institutional arrangement may generate substitution investment, whereby firms – particularly those based in Ireland – redirect investment towards Northern Ireland that would otherwise have been in the European Union, to minimise trade costs and policy uncertainty. While this literature documents the existence of tariff-jumping and trade deflection effects, there is limited evidence on their macroeconomic implications. This paper contributes to the literature by exploring, in a stylised manner, the potential extent to which such mechanisms could offset tariff-induced shocks in Northern Ireland, without claiming precise quantitative predictions.

3 A simple model of the NI economy

In this section, we construct a simple, calibrated, model of the NI economy and its interactions with the rest of the United Kingdom (i.e., Great Britain, GB), the European Union and the United States. The idea is to generate some intuition for our quantitative results below, both in terms of the driving processes and the rough magnitudes. The

model is a four-country real business cycle model where the four countries correspond to Northern Ireland, the European Union, Great Britain and the United States. Each country is endowed with its own good, but households will want to consume all four goods. We assume identical preferences over the four goods:

$$U_j = \ln \left(c_{1,j}^{\alpha_{j1}} c_{2,j}^{\alpha_{j2}} c_{3,j}^{\alpha_{j3}} c_{4,j}^{1-\alpha_{j1}-\alpha_{j2}-\alpha_{j3}} \right)$$

Where U_j denotes country j utility, $c_{1,j}$ denotes country j consumption of GB goods, $c_{2,j}$ denotes country j consumption of EU goods, $c_{3,j}$ denotes country j consumption of NI goods and $c_{4,j}$ denotes country j consumption of US goods.

We let the GB good be the numeraire and denote the relative price of the other goods by p_j , where $j = 2$ (for EU goods), 3 (for NI goods) or 4 (for US goods). These relative prices correspond to each country's terms of trade with Great Britain. Buying foreign goods is associated with a tariff. In the case of EU-GB trade, we think of this tariff as picking up non-tariff barriers. To capture the Windsor agreement, we assume that there are no tariffs between Northern Ireland and Great Britain or the European Union. Armed with these assumptions, we can write the budget constraints facing household in each country:

$$\text{Great Britain} \quad c_{1,1} + p_2(1 + \tau_{12})c_{2,1} + p_3c_{3,1} + p_4(1 + \tau_{14})c_{4,1} = y_1$$

$$\text{European Union} \quad (1 + \tau_{12})c_{1,2} + p_2c_{2,2} + p_3c_{3,2} + p_4(1 + \tau_{24})c_{4,2} = y_2$$

$$\text{Northern Ireland} \quad c_{1,3} + p_2c_{2,3} + p_3c_{3,3} + p_4(1 + \tau_{14})c_{4,3} = y_3$$

$$\text{United States} \quad (1 + \tau_{41})c_{1,4} + p_2(1 + \tau_{42})c_{2,4} + p_3(1 + \tau_{41})c_{3,4} + p_4c_{4,4} = y_4$$

Where τ_{ij} denotes the tariff associated with country i imports of country j goods (where we assume the 'tariff' between the United Kingdom and the European Union to be the same on both sides) and y_j denotes household income for country j , which will equal the value of its endowment plus the tariff income, which we assume is redistributed 'lump-sum' from the government to households.

Market clearing implies that for each good j we have:

$$c_{j,1} + c_{j,2} + c_{j,3} + c_{j,4} = e_j$$

Where e_j denotes the endowment of good j . To aid calibration, we assume that $\sum_j e_j = 1$. This implies that the e_j 's will denote the share of each country's output in total output of the four countries. In principle, these equations can be solved simultaneously for the relative prices. But given how nonlinear the system is, it turns out that there is no closed-form algebraic solution. Instead, we solve the model numerically. In order to do that, we need to calibrate the endowments, the preference parameters and the baseline tariffs.

We set the endowments based on the (rough) GDP shares of our four countries: Great Britain 5.99 per cent, European Union 45 per cent, Northern Ireland 0.01 per cent and the USA 49 per cent. We set the consumption shares of domestic goods based on their values in the data. The imports to GDP ratios for Great Britain, the European Union, Northern Ireland and the United States are approximately 30 per cent, 10 per cent, 65 per

cent and 15 per cent, respectively, implying $\alpha_{11} = 0.7$, $\alpha_{22} = 0.9$ and $\alpha_{33} = 0.35$ and $\alpha_{44} = 0.85$.

For the remaining consumption shares, we assume that the share of each country's imports of goods from the other three countries are proportional to the exporting countries' shares of world trade: approximately 15 per cent for the European Union, 3 per cent for Great Britain, 0.005 per cent for Northern Ireland and 10 per cent for the United States. This implies $\alpha_{12} = 0.17996$, $\alpha_{13} = 0.00006$, $\alpha_{14} = 0.11998$, $\alpha_{21} = 0.02307$, $\alpha_{23} = 0.00002$, $\alpha_{24} = 0.07691$, $\alpha_{31} = 0.0697$, $\alpha_{32} = 0.3482$, $\alpha_{34} = 0.2321$, $\alpha_{41} = 0.02499$, $\alpha_{42} = 0.12497$ and $\alpha_{43} = 0.00004$. In terms of tariffs, our baseline calibration has an implicit tariff of 1 per cent on UK-EU trade and of 2 per cent on US-UK and US-EU trade. That is, we set $\tau_{12} = 0.01$ and $\tau_{14} = \tau_{24} = \tau_{41} = \tau_{42} = 0.02$. This captures trade frictions that exist even in a world without tariffs.

Now suppose the United States were to post a 20 per cent tariff on all imported goods (modelled by setting $\tau_{41} = \tau_{42} = 0.22$, i.e. the baseline value of 0.02 plus the additional tariff of 0.2). This would raise the price of GB, EU and Northern Ireland goods in the United States and US households would now face different relative prices. With US goods being relatively cheaper domestically, US households consume more US goods and, so, US exports fall. In addition, because the United States is a large economy (49 per cent of the 'world' in this calibration), there is enough of an improvement in the terms of trade for the United States so that US households can continue to consume the same level of imports while also consuming more domestic goods. Hence, aggregate US consumption rises. We note that this result reflects the assumptions underlying our simple model. As the model is entirely 'real', the inflationary effects of a tariff, and the associated monetary policy tightening in response, will be missing. And as we have assumed an endowment economy, there will be no effects of the tariff on production costs coming through increases in the cost of imported intermediates. Given these features are present in AMNIE, our main results below represent a more realistic response for the United States.

That said, the main interest of this paper is in the effects of the US tariffs on Northern Ireland. The worsening terms of trade for Great Britain, the European Union and Northern Ireland lead these countries to import less, and overall consumption falls in each of the three countries. The numerical results of this experiment are presented in Table 1. We can note that Northern Ireland is more affected by the imposition of tariffs than Great Britain and the European Union. This is simply because it is a much more open economy and so is more affected by the fall in its terms of trade than Great Britain and the European Union. Conversely the European Union is least affected by the tariffs given it is less exposed to external trade than the United Kingdom.

Table 1: Effect of a 20 per cent increase in US tariffs

	Northern Ireland	Great Britain	European Union	United States
Consumption	-3.52%	-1.84%	-1.18%	2.10%
Exports	0	0	0	-14.32%
Imports	-5.37%	-5.99%	-11.21%	0
Terms of Trade (relative to GB)	0	-	0	16.72%

A key question for this paper is the extent to which Northern Ireland gains from being part of both the EU and UK single markets when the United Kingdom and European Union are faced with different US tariffs, as was the case until recently. To examine this within our toy model, we carry out an experiment where we raise US tariffs to 15 per cent on UK goods and 20 per cent on EU goods. The results are given in Table 2, below. The differential tariffs lead to smaller falls in the terms of trade and consumption for Northern Ireland and Great Britain than in the uniform tariff case. In addition, given that Northern Ireland is part of the EU single market, higher demand for NI goods from the European Union will lead to a rise in the NI terms of trade. In turn, this means that Northern Ireland benefits by more than the rest of the United Kingdom from the lower tariff relative to the European Union.

Table 2: Effect of a 20 per cent increase in US tariffs on EU goods and a 15 per cent increase in US tariffs on UK goods

	Northern Ireland	Great Britain	European Union	United States
Consumption	-2.30%	-1.35%	-1.19%	2.02%
Exports	0	0	0	-13.79%
Imports	-3.51%	-4.43%	-11.26%	-0.01%
Terms of Trade (relative to GB)	-0.48%	-	-1.49%	14.56%

Unfortunately, the simple model fails to account for the possibility of tariff-jumping investment and trade deflection. As argued above, this is likely to be particularly important in the NI case given both the Windsor framework – providing Northern Ireland with privileged access to both the UK and EU markets for goods – and the geographical proximity of Northern Ireland to Ireland, as well as the existing cross-border links between firms. In our work using AMNIE, we consider a scenario where EU (Irish) firms are easily able to redirect their exports out of Northern Ireland by making ‘tariff-jumping’ investments North of the border.

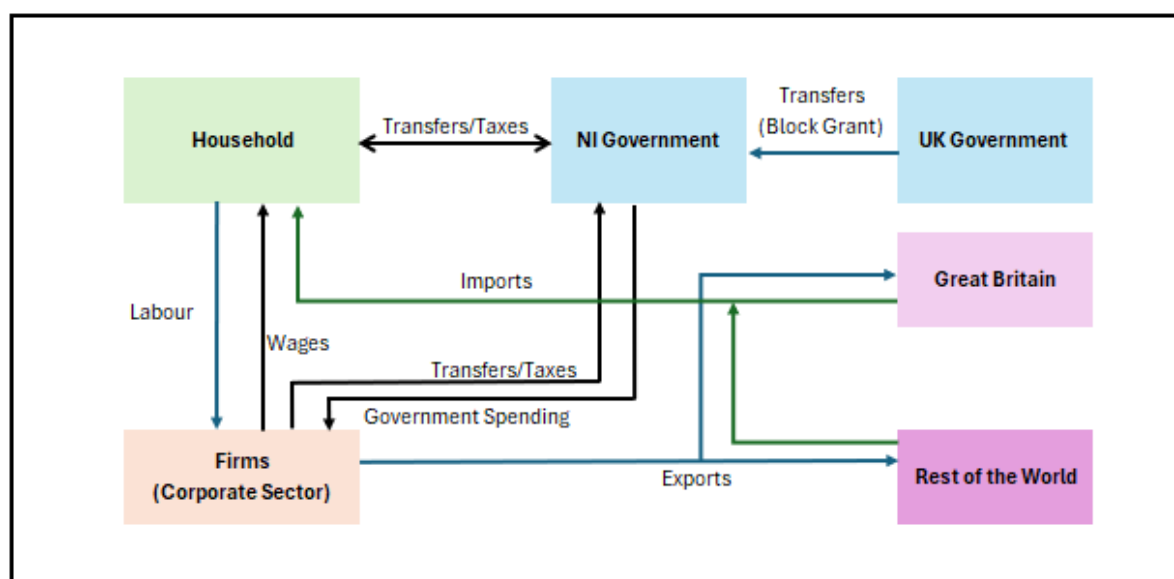
4 AMNIE – A Model of the NI Economy

In this section, we describe AMNIE, the model we will use to generate our quantitative results. It is designed to generate counterfactual projections and quantify the effects of macroeconomic shocks and policy changes on Northern Ireland, as well as spillovers to and from the United Kingdom, Ireland, the European Union, and the global economy.¹

Northern Ireland combines participation in UK-wide fiscal, monetary and labour market institutions with goods-market alignment to the EU Single Market under the Windsor Framework. In modelling terms, this implies differentiated trade price formation and market access conditions across Great Britain, Ireland, the European Union and the rest of the world. AMNIE is specified as a structural macroeconometric model in which behavioural equations are estimated within an error-correction framework. Long-run equilibrium relationships, derived from economic theory, are combined with short-run dynamic adjustment processes to ensure both empirical coherence and theoretical consistency.

The overall structure of the AMNIE model is summarised in Figure 1, which illustrates the key sectors and their interactions.

Figure 1: AMNIE Model Structure



¹ See Bergin, A., Low, H., Millard, S., and Kumar Verma, A. (2025). Modelling Northern Ireland within the context of the all-island economy, ESRI Research Series RS198, Dublin: ESRI/NIESR, <https://doi.org/10.26504/rs198> for a discussion of a medium term economic projection for Northern Ireland and a range of policy shocks and other external shocks. For a technical description of the AMNIE model see Bergin, A., Low, H., Millard, S., and Kumar Verma, A. (2025). A macro-model of the Northern Ireland Economy, ESRI Working Paper 796, Dublin: ESRI/NIESR, <https://www.esri.ie/publications/a-macro-model-of-the-northern-ireland-economy>

The core of the model comprises four broad sectors:

- Households: consumption and labour supply respond to real disposable income, wealth, and demographic trends.
- Firms: output is produced using labour and capital inputs; investment behaviour depends on demand expectations and cost conditions.
- Government: incorporates UK block grants and devolved fiscal policies; tax revenues and public spending adjust endogenously.
- Foreign Sector: exports and imports respond to global demand, exchange rates, and trade policy variables.

The model database comprises Northern Ireland macroeconomic time series compiled for modelling purposes, including output, employment, prices, fiscal accounts, and bilateral trade flows. These series are constructed to ensure consistency with the global trade linkages embedded in NiGEM. Behavioural parameters are estimated using Northern Ireland time-series data where available, supplemented by cross-country elasticities drawn from NiGEM and ESRI's model of the Irish economy, COSMO (the CORE Structural MOdel of the Irish economy), to ensure coherence with international evidence. Where data limitations arise, parameters are calibrated to maintain consistency with observed macroeconomic aggregates.

AMNIE supports both forecasting and counterfactual simulation exercises. It can evaluate the effects of a wide range of shocks, including fiscal policy changes, demand disturbances, exchange rate movements, and trade policy shocks such as tariffs, on key macroeconomic aggregates including GDP, trade volumes, inflation, household income, and investment. The model captures short-run dynamics, such as quarterly adjustments in output, prices, and trade, alongside medium-term responses in investment, consumption, and trade balances. It also allows for spillover effects across linked economies.

AMNIE is embedded within NiGEM's global macro-econometric framework. In baseline simulations, global output, foreign prices, world interest rates and external demand are determined within NiGEM and treated as weakly exogenous to Northern Ireland. This structure provides externally determined paths for key international variables that are internally coherent within a global general equilibrium setting. External shocks, such as changes in US trade policy or shifts in world demand, are first resolved within NiGEM and subsequently transmitted to AMNIE through trade volumes, relative prices, exchange rates and financial conditions. Northern Ireland outcomes therefore reflect both the direct effects of domestic adjustment and the indirect effects arising from global feedback mechanisms operating through multilateral trade and macroeconomic linkages. The model has been incorporated into NiGEM, enabling Northern Ireland-specific simulations using the same import price, trade volume, and general equilibrium treatment applied in global tariff analyses. This allows Northern Ireland-specific simulations to be conducted within the broader NiGEM framework while retaining a distinct regional focus.

The model is also linked to COSMO, creating an integrated framework for analysing Northern Ireland within the wider all-island economy. This linkage enables assessment of how shocks propagate not only through UK and global channels via NiGEM but also through north-south economic interactions on the island of Ireland. COSMO provides a structural representation of the Irish economy that informs AMNIE's treatment of Ireland, enhancing the model's ability to capture interdependencies between Northern Ireland and the Republic of Ireland.

In line with NIESR's approach in NiGEM, tariff shocks are introduced as changes in import cost variables that feed through to import prices, trade volumes, and domestic macroeconomic aggregates. Tariff measures enter the import price equations as additive components to border prices, allowing a distinction between underlying world prices and policy-induced wedges. Changes in tariffs therefore affect domestic prices directly and, through estimated trade elasticities, influence import demand, export competitiveness and substitution between domestic and foreign goods. These import price changes propagate through general equilibrium feedbacks to influence output, consumption, and investment.

The core transmission mechanism operates through the following channels:

- Prices: higher import tariffs raise the cost of imported goods, leading to increases in headline inflation and relative prices.
- Trade volumes: higher relative import prices reduce import volumes in line with estimated demand elasticities, while export performance adjusts through changes in competitiveness and external demand conditions.
- Aggregate demand: adjustments in consumption and investment arise as real incomes and purchasing power shift, affecting GDP outcomes.
- General equilibrium feedbacks: changes in global output and price levels from tariff shocks in major economies are transmitted back through multilateral trade linkages, influencing Northern Ireland economic performance via exports, imports, and external demand.

Although these channels are captured in our simple model, AMNIE also captures the dynamic effects of how the tariff shock is propagated. In addition, through being linked to NiGEM and COSMO, AMNIE not only captures the direct effects described above, such as higher import prices and reduced trade volumes, but also the indirect effects, including macroeconomic spillovers through linked regions and markets. As a result, it provides a suitable framework for quantitative policy evaluation of tariff shock scenarios affecting Northern Ireland and the wider economy.

5 Results

This section reports the macroeconomic effects of five tariff scenarios simulated using AMNIE. Results are expressed as annual deviations from a no-tariff baseline over the

period 2025 to 2030. Real variables, including GDP, consumption, exports, and imports, are reported as percentage deviations from the no-tariff baseline, while inflation and the unemployment rate are reported in percentage point deviations. In all scenarios, tariffs are modelled as increases in US import tariffs on goods from its trading partners, including the United Kingdom, Northern Ireland, the European Union and other regions. The scenarios are designed to isolate both the intensity of tariffs and their distribution across trading partners, allowing us to distinguish between broad-based global trade restrictions and more targeted shocks affecting key economies. This structure allows us to distinguish between level effects (overall size of tariffs) and composition effects (which trading partners are most affected). The analysis focuses on Northern Ireland (NI), with comparisons to the wider United Kingdom and Ireland providing context.

The five scenarios are:

1. **Benchmark Shock:** A severe and concentrated protectionist shock, with tariffs of 20 per cent on goods applied to Northern Ireland, the United Kingdom, the European Union, and the rest of the world, with 60 per cent applied to China.
2. **UK Preferential:** As the *Benchmark shock*, but with a reduced tariff of ten per cent on goods applied to UK exports, isolating the effect of the UK trade agreement.
3. **UK-EU Differential:** As in the *Benchmark shock*, but with tariffs of ten per cent on the UK and 15 per cent on the European Union, capturing a differential regime between the United Kingdom and the European Union.
4. **10% Global Permanent:** A uniform and permanent ten per cent tariff on goods applied to all trading partners. Comparing this scenario with the benchmark shows the extent to which the effects of tariffs are non-linear, while comparing this scenario with the 'UK Preferential' scenario shows the extent to which the negative effects on the United Kingdom (including Northern Ireland) result from lower demand from other countries affected by US tariffs (i.e. the indirect effects coming through trade outside of the United States).
5. **10% Global Temporary:** A temporary uniform ten per cent tariff on goods applied for eight quarters, allowing an assessment of the persistence of tariff shocks.

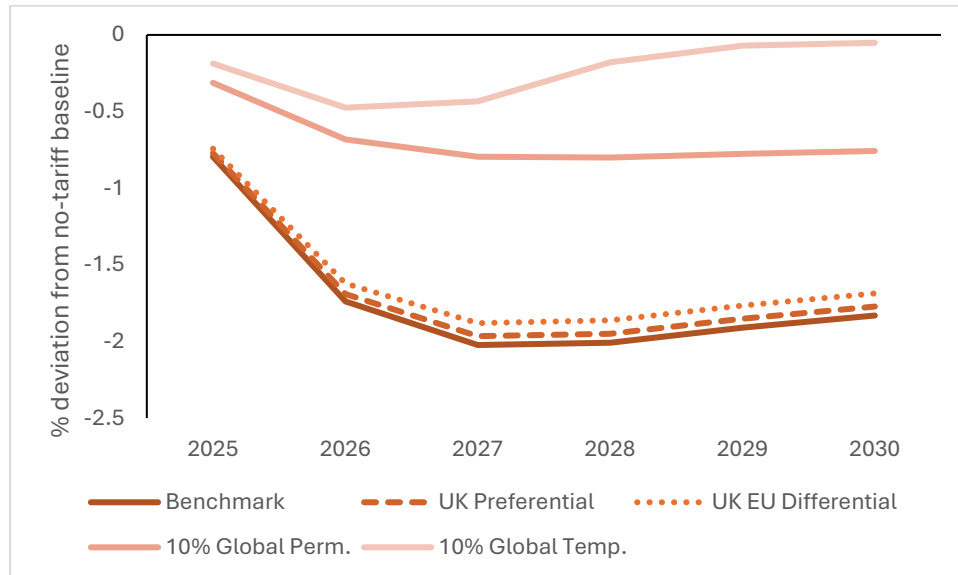
In each case, we are particularly interested in the response of the NI economy. Across all simulations, the pattern is consistent. Tariffs reduce trade volumes immediately, raise inflation in the short term, and depress output and consumption persistently. Differences across scenarios are largely explained by tariff intensity and by the relative exposure of each economy to affected trading partners. The simple model suggested that Northern Ireland, as a small, open economy integrated within both the UK and EU markets, is more exposed to US tariff shocks, and that any gains from differential tariffs are muted by UK and EU-related demand. The AMNIE results below confirm this intuition, showing the worst effects of US tariffs are moderated under preferential UK tariffs but persistent output and trade losses remain.

5.1 *Effects on Northern Ireland*

5.1.1 Output

We begin by examining the effects on output across all scenarios, before turning to the more detailed transmission channels underlying these results. The NI economy experiences negative and generally persistent output effects across all five scenarios (figure 2). The magnitude of the contraction increases with both tariff intensity and the targeting of tariffs on key trading partners.

Figure 2: Effects of US tariffs on NI GDP



Source: AMNIE simulations

Under the benchmark scenario, NI GDP declines by approximately 0.8 per cent in the short term relative to a no-tariff baseline. The contraction deepens substantially over the following years, reaching a trough of just over two per cent in 2027 before gradually moderating somewhat. By 2030, output remains around 1.8 per cent below baseline, indicating a persistent level effect on output rather than a temporary deviation. Reducing tariffs on the United Kingdom to ten per cent (UK Preferential scenario) leads to a modest attenuation of output losses throughout the horizon. A further reduction in tariffs on the Euro Area (UK-EU Differential scenario) provides some additional, albeit limited, mitigation of impacts. While these adjustments improve outcomes at the margin, they do not substantially alter the overall path, highlighting the importance of Northern Ireland's trade linkages with both markets.

In contrast, a uniform reduction in global tariffs generates considerably smaller output losses. Under a permanent ten per cent global tariff, NI GDP declines by around 0.3 per cent in 2025, with the fall deepening to approximately 0.8 per cent in the more medium term. The temporary global tariff scenario produces a more muted and short-lived response, with output effects peaking at around 0.5 per cent before gradually dissipating as the tariff is removed.

Overall, the results indicate that targeted reductions in tariffs help reduce their negative effects but are much less effective than across-the-board reductions in tariffs. Given Northern Ireland's strong trade linkages with both the United Kingdom and the European

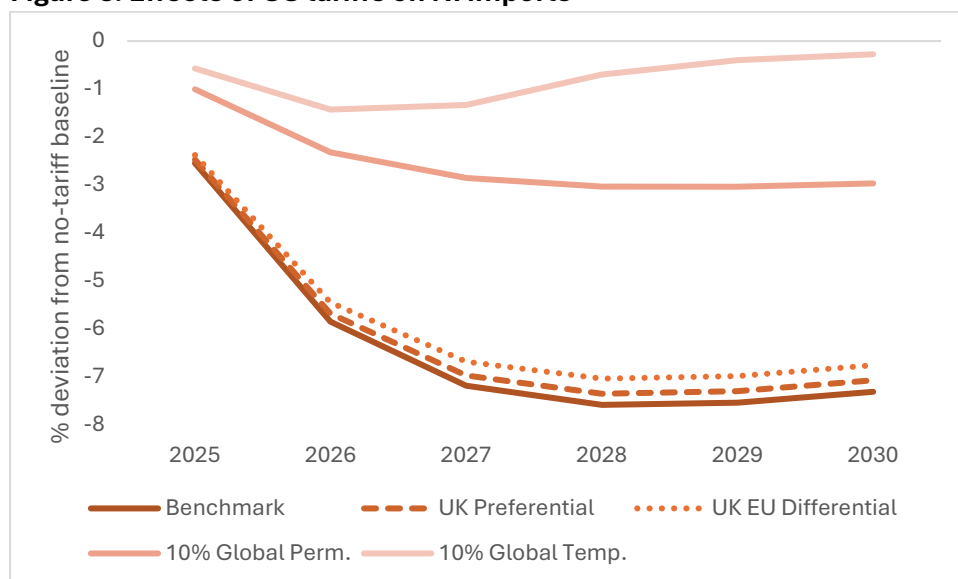
Union, disruptions affecting these partners generate disproportionate effects on NI output.

5.1.2 Trade

We now examine trade, the main channel through which tariffs propagate through the NI economy. Higher tariffs raise the cost of traded goods and reduce external demand. As we showed in the simple model, they also lead to a fall in the terms of trade, resulting in lower imports. Both effects happen quickly before subsequently feeding through to broader macroeconomic outcomes. Consistent with this mechanism, NI trade responds more sharply than output, with imports and exports adjusting more quickly across all scenarios. Trade volumes respond to targeted reductions in tariff, reflecting the concentration of effects on Northern Ireland's key trading partners, though again 'across-the-board' reductions in tariffs have much larger effects. Tariff shocks enter the model as changes in import costs, affecting import prices and competitiveness, which then influence both domestic trade and exports. These effects propagate through both direct price effects and indirect macroeconomic spillovers across linked UK, Irish, EU, and global markets.

The simulation results show that Northern Ireland's imports contract sharply relative to the no-tariff baseline under the benchmark scenario, where imports fall by 2.5 per cent in 2025, deepening to around 7.6 per cent below the no-tariff baseline in 2028 before moderating slightly by 2030. Reducing tariffs on the United Kingdom under the UK Preferential scenario moderates this contraction slightly, with imports declining by 2.5 per cent in 2025 and by 7.1 per cent by 2030, while a further reduction in tariffs on goods produces a further moderation, with imports peaking at 6.8 per cent below baseline. Ten per cent global tariffs generate smaller declines in imports, with imports in the ten per cent global tariff permanent scenario falling 3.0 per cent below baseline by 2030, while the temporary ten per cent global tariff produces the smallest and briefest contraction, with imports effectively returning to baseline by the end of the horizon.

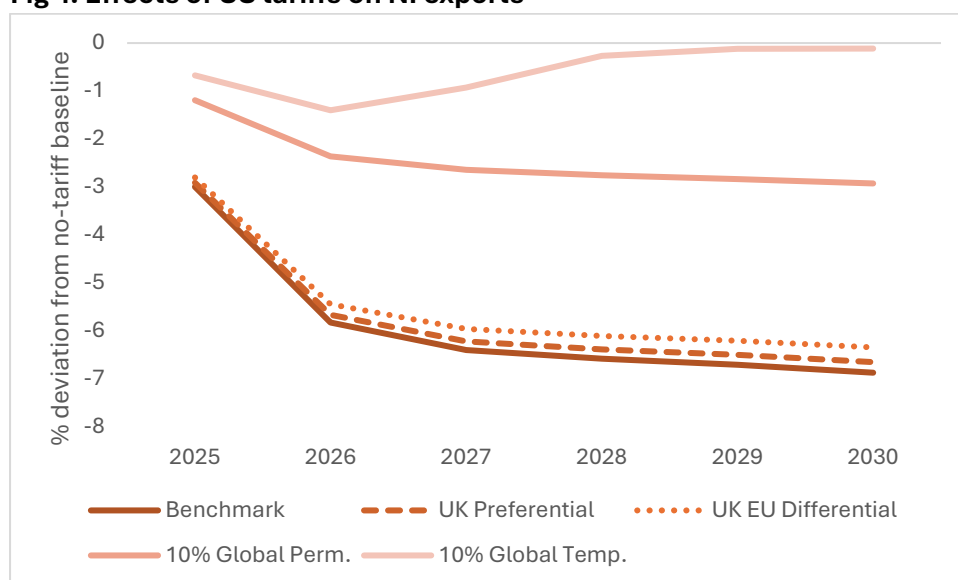
Figure 3: Effects of US tariffs on NI imports



Source: AMNIE simulations

Exports follow a comparable trajectory (figure 4). Under the benchmark scenario, NI exports fall by 3.0 per cent in 2025 and continue to decline to 6.9 per cent below baseline by 2030. The UK Preferential and UK-EU Differential scenarios slightly mitigate these losses, with exports ending 6.7 per cent and 6.4 per cent below baseline, respectively. Permanent global tariffs of ten per cent reduce exports by 2.9 per cent at the end of the horizon, while the temporary global tariff produces only minimal deviations, returning essentially to baseline by 2030.

Fig 4: Effects of US tariffs on NI exports



Source: AMNIE simulations

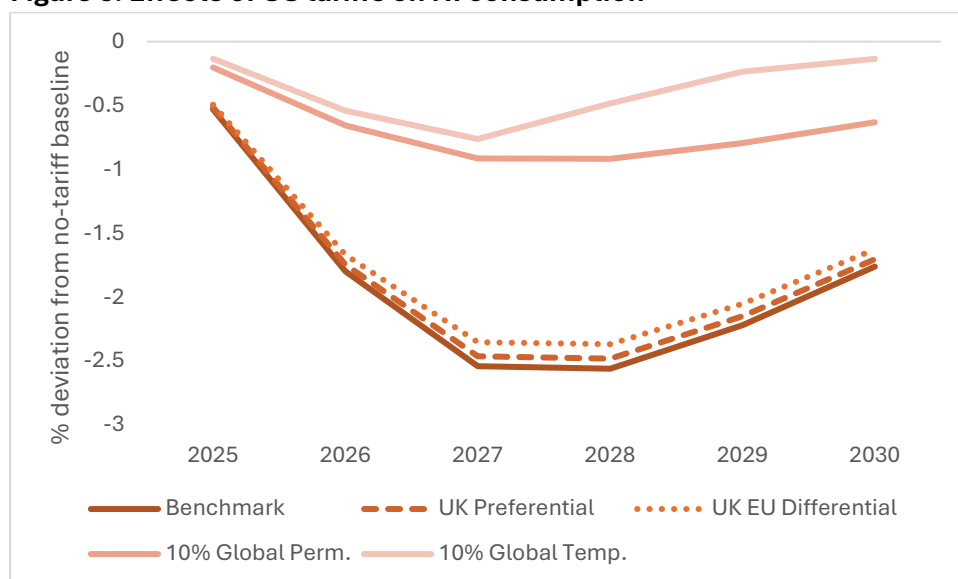
These results indicate that trade is the dominant channel through which US tariffs affect Northern Ireland. Targeted tariff reductions on key trading partners reduce their negative effects, while across-the-board tariff reductions lead to smaller and more evenly distributed impacts. The faster adjustment of imports and exports relative to output

amplifies the macroeconomic effects of tariff shocks, reflecting the full general equilibrium interactions captured by AMNIE.

5.1.3 Consumption

As was the case for the simple model, personal consumption declines across all scenarios, reflecting real income compression and weaker economic activity as a result of the fall in the terms of trade (figure 5). As with output, the magnitude of the decline increases with tariff intensity and the targeting of tariffs on key trading partners. Under the benchmark scenario, NI consumption falls by 0.5 per cent in 2025, reaching a trough of around 2.6 per cent in 2027/28, before moderating to 1.8 per cent below baseline by 2030. Reducing tariffs on the United Kingdom and European Union provides only modest mitigation, with the overall path of consumption largely unchanged. A uniform reduction in global tariffs results in smaller effects. Under a permanent ten per cent tariff, consumption declines by 0.2 per cent in 2025 and by just under 0.9 per cent in the medium term. The temporary global tariff generates a more muted and short-lived response, with consumption recovering close to baseline by the end of the horizon. Overall, consumption closely tracks output, indicating that domestic demand reinforces the trade shock rather than offsetting it.

Figure 5: Effects of US tariffs on NI consumption



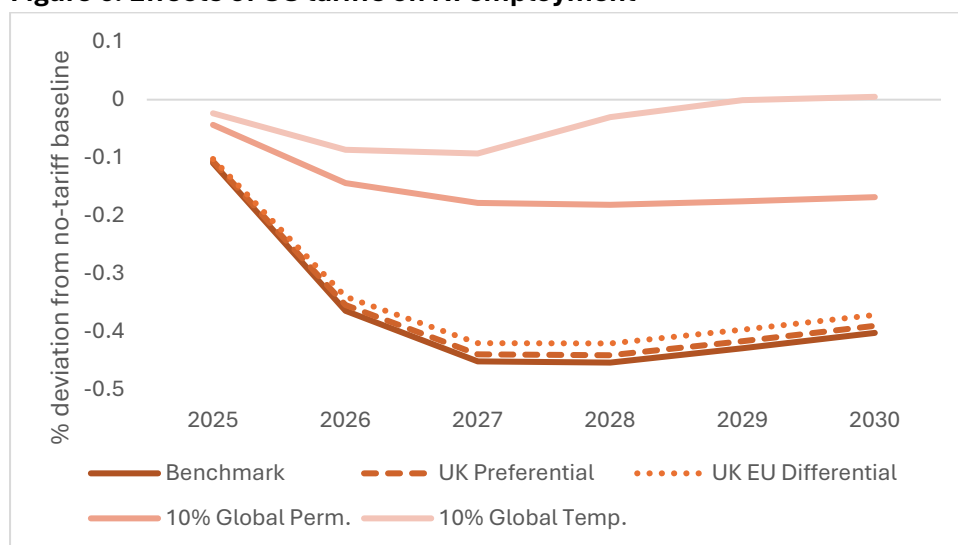
Source: AMNIE simulations

5.1.4 Labour Market Response

The weakening in trade and domestic demand feeds through to labour market outcomes. Real personal disposable income falls below its no-tariff baseline, reflecting both higher import prices and weaker labour market conditions, which in turn reinforces the lower level of consumption. Employment declines modestly relative to the no-tariff baseline across all scenarios, with the largest effects observed in the benchmark scenario (figure 6). Here, employment falls by around 0.1 per cent in 2025, reaching a trough of approximately 0.5 per cent below baseline in 2027/28, before recovering slightly but remaining below baseline through to 2030. Preferential treatment for the United Kingdom

and European Union provides only limited mitigation, while uniform global tariff reductions lead to smaller and more short-lived effects.

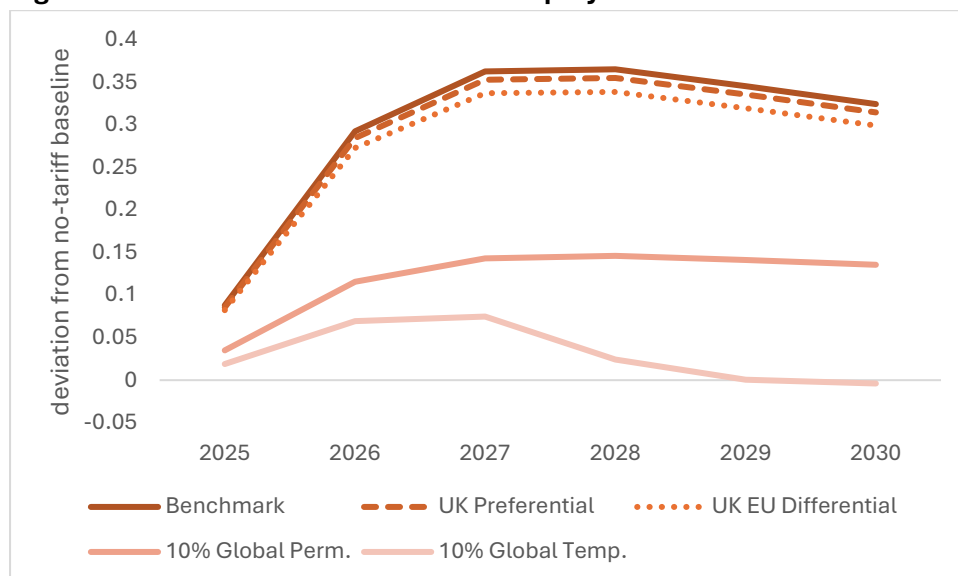
Figure 6: Effects of US tariffs on NI employment



Source: AMNIE simulations

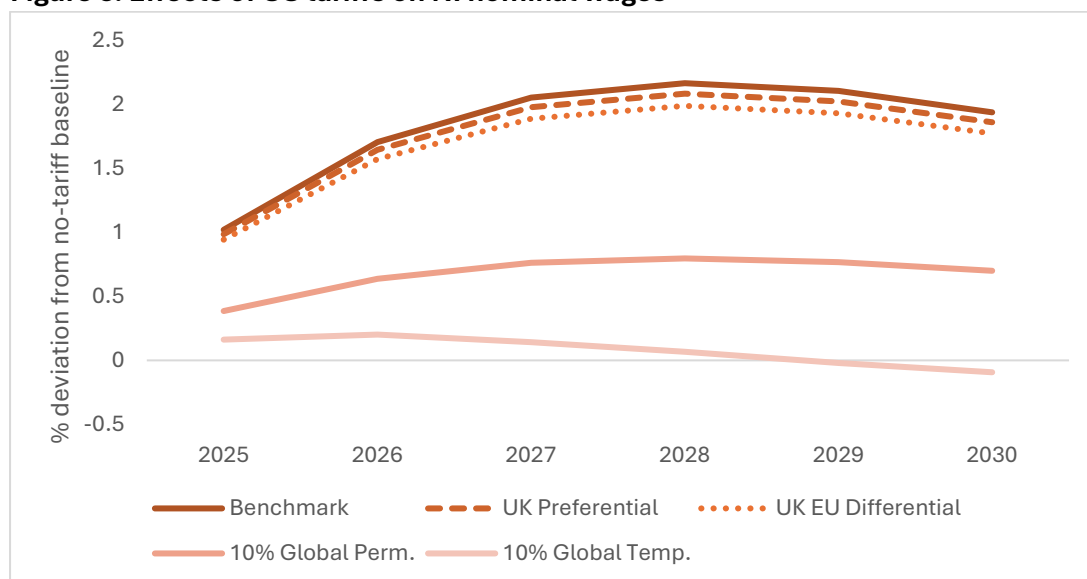
These developments are mirrored in the unemployment rate, which rises gradually in response to weaker labour demand (figure 7). Under the benchmark scenario, unemployment increases by around 0.1 percentage points in 2025, peaking at approximately 0.4 percentage points above baseline in 2027/28 before easing somewhat thereafter. As with employment, differences across scenarios reflect both the scale and distribution of tariff shocks.

Figure 7: Effects of US tariffs on NI unemployment rate



Source: AMNIE simulations

Figure 8: Effects of US tariffs on NI nominal wages



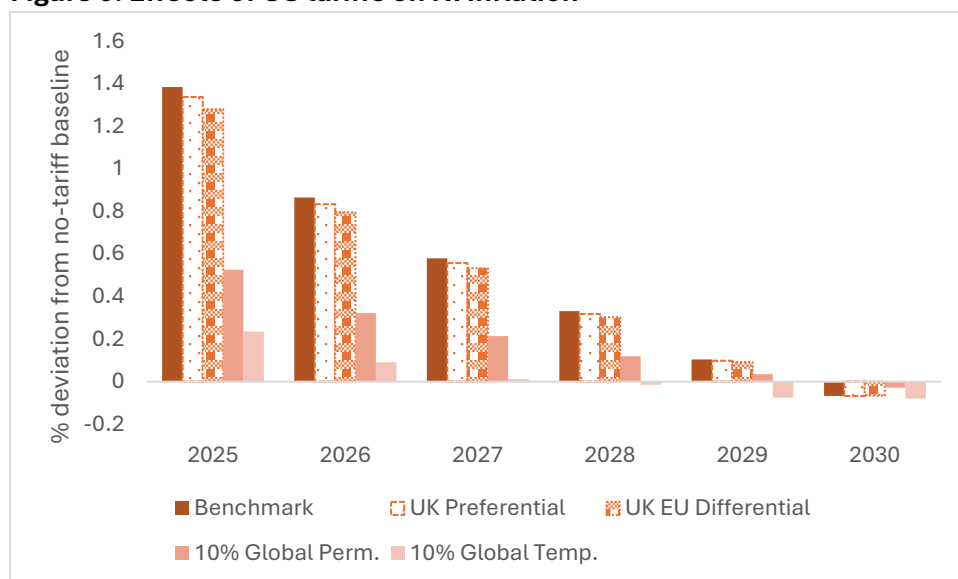
Source: AMNIE simulations

Nominal wages increase in the short term across all scenarios, driven primarily by higher consumer prices, but this masks a decline in real wages as inflation outpaces nominal earnings growth (figure 8). Wage growth peaks in the early years of the shock before moderating as weaker labour demand takes hold. As a result, real household incomes are compressed, contributing to the decline in consumption and overall domestic demand. The overall labour market response is negative but relatively contained compared with the larger adjustment in output. This reflects the gradual adjustment of employment and wages in response to demand conditions, as well as the role of price effects in shaping real income dynamics.

5.1.5 Inflation

Tariff shocks generate a front-loaded increase in inflation, driven by higher import prices (figure 9). The effect is stronger the larger are the tariffs and diminishes over time as weaker demand takes hold. In the benchmark scenario, NI inflation rises by around 1.4 percentage points in 2025, falling steadily thereafter and turning slightly negative by 2030. The UK Preferential and UK-EU Differential scenarios produce similar but slightly smaller effects. Under the lower permanent 10% global tariff, inflation increases by about 0.5 percentage points initially, before gradually declining and becoming slightly negative by the end of the period. The temporary tariff generates the smallest and least persistent response, with inflation returning quickly to baseline. Overall, while tariffs raise inflation in the short term, the effect fades as lower economic activity dampens price pressures.

Figure 9: Effects of US tariffs on NI inflation



Source: AMNIE simulations

5.2 Comparison with the United Kingdom, Ireland and the European Union

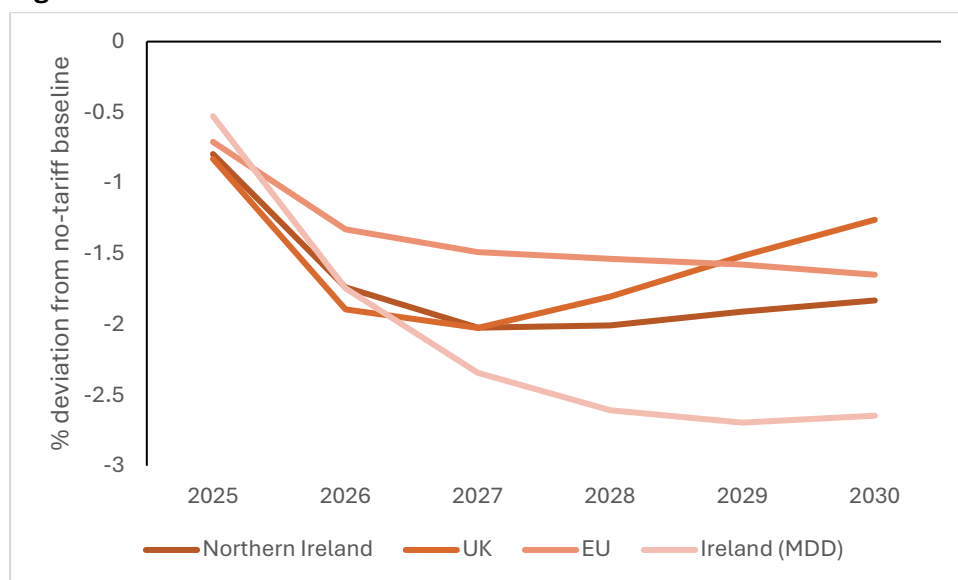
While the primary focus is Northern Ireland, comparing responses across economies provides useful context for interpreting the scale and transmission of tariff shocks. Under the benchmark scenario, all economies experience negative and persistent output effects, but the magnitude and profile of the adjustment differ (figure 10). Northern Ireland sees output decline by around 0.8 per cent in 2025, deepening to just over 2.0 per cent by 2027. As was the case with the simple model, the United Kingdom as a whole exhibits larger declines in the short run, with output falling by around 1.9 per cent at its trough, reflecting its greater exposure to global trade flows and the larger absolute scale of affected exports. The European Union experiences somewhat smaller but still sustained declines, with output falling by approximately 1.5 per cent in the medium term, reflecting its diversified trade structure and lower relative exposure to the US market. For Ireland, Modified Domestic Demand² (MDD) experiences a more gradual but persistent adjustment with MDD falling by around 0.5 per cent in 2025, deepening to 2.7 per cent by 2029, slightly exceeding the losses in Northern Ireland at the peak. This pattern reflects the transmission of trade shocks into domestic demand through income and investment channels, consistent with Ireland's strong trade linkages with both the United Kingdom and European Union.

The comparison highlights that while Northern Ireland is significantly affected by US tariffs, its exposure lies between that of the United Kingdom, which experiences larger declines, and the European Union, where impacts are somewhat more moderate. Differences across economies are driven by variations in trade openness, sectoral

² Modified Domestic Demand is a measure of underlying economic activity in Ireland that excludes the transactions of foreign-owned multinational enterprises that have a negligible impact on the domestic labour market.

composition, and the strength of linkages to the United States and other affected markets.

Figure 10: Effects of US tariffs on GDP in the Benchmark Scenario



Source: NiGEM, COSMO and AMNIE simulations

5.3 Interpreting Tariff Measures

An important consideration in interpreting these results is that the simulations are based on statutory (nominal) tariff rates, while effective tariff rates in practice are typically lower. Effective rates measured as tariff revenue relative to imports are reduced by exemptions, product exclusions, and firm-level responses such as sourcing changes or trade re-routing. Recent evidence from US tariff collections shows that realised tariff revenues often fall short of what would be implied by headline rates, reflecting these adjustments in practice.³ As a result, the scenarios presented here can be interpreted as an upper bound on the potential macroeconomic impact of tariffs. Nonetheless, modelling nominal tariffs provides a transparent and consistent basis for scenario analysis. In addition, the modelling structure captures adjustment mechanisms and so partially bridges the gap between nominal and effective tariff outcomes.

5.4 Trade Diversion and the Windsor Framework

A key question is whether Northern Ireland's dual-market access under the Windsor Framework allows it to benefit from tariff differentials through trade diversion or tariff-jumping behaviour. In principle, lower tariffs on UK exports relative to the EU create incentives to re-route trade or shift production toward Northern Ireland. However, evidence from recent trade tensions suggests that such rerouting responses are most pronounced when tariff differentials are large and sustained. This implies that the more modest tariff differentials considered here are likely to generate only limited trade deflection effects. The results reported so far provide only limited support for this at the

³ See <https://www.piie.com/research/piie-charts/2025/trumps-tariff-revenue-tracker-how-much-us-collecting-which-imports-are> for a recent discussion on this topic.

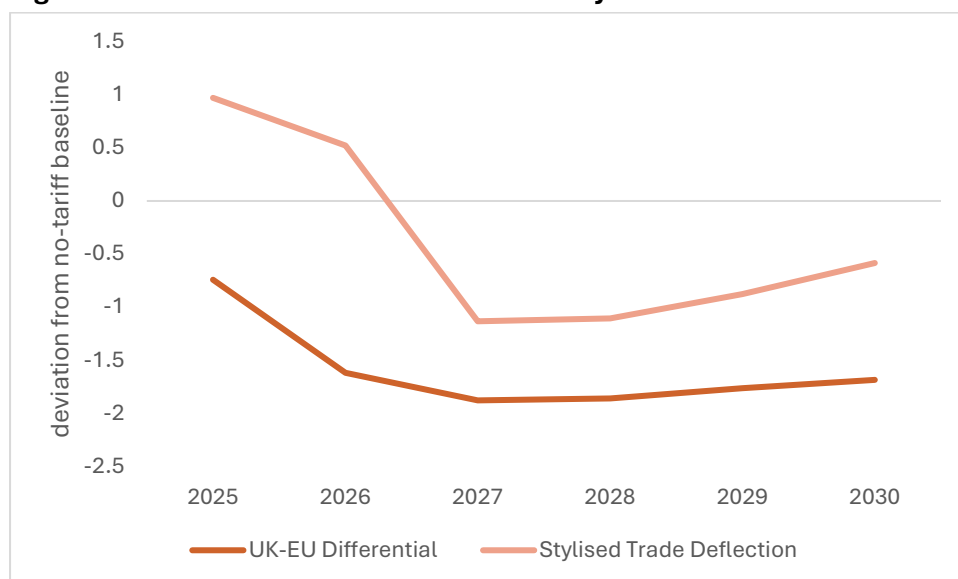
aggregate level. Preferential UK treatment yields only modest improvements, which are outweighed by the broader effects of weaker global trade and reduced EU demand. Given Northern Ireland's strong integration with both UK and EU markets, any relative tariff advantage is offset by negative spillovers from key trading partners. Overall, while the Windsor Framework creates the conditions for trade diversion, it does not generate significant macroeconomic gains in the presence of widespread trade restrictions, nor does it insulate Northern Ireland from global shocks.

That said, AMNIE does not currently capture the possibility of firms using FDI to relocate their export production in Northern Ireland so as to take advantage of differentials in the tariffs faced by Ireland and Northern Ireland. To examine the potential role of trade deflection in mitigating tariff shocks, we augment the UK-EU Differential scenario with a stylised, temporary increase in NI's trade volumes. Specifically, we model trade deflection as a 10 per cent increase in both exports and imports over a two-year period, applied within the UK-EU Differential tariff scenario. This shock captures short-run adjustments in trade flows, reflecting the rerouting of exports and imports but without assuming permanent relocation of productive capacity. In the absence of direct empirical evidence for Northern Ireland, this scenario should be interpreted as illustrative and not as reflecting observed developments to date.

The magnitude of the shock lies within the central range of empirical estimates for trade deflection, which suggest that exports to alternative markets often rise by 5-20 per cent following the imposition of trade barriers (Bown and Crowley, 2007; Cheng et al., 2021). In the Northern Ireland context, such adjustments are plausible given strong integration with Ireland, cross-border production linkages, and dual-market access under the Windsor Framework. In reduced form, the shock reflects the combined effects of export rerouting, import substitution, and short-run trade adjustments rather than firm-level investment decisions.

The results indicate that trade deflection can temporarily offset the negative impact of tariffs. In 2025, GDP rises by around 1.0 per cent relative to the no-tariff baseline, followed by a 0.5 per cent increase in 2026, reflecting the surge in trade activity. As the shock dissipates, the underlying tariff-induced contraction reasserts itself, with GDP falling to approximately 1.1 per cent below baseline in 2027. Compared with the UK-EU Differential scenario without trade deflection, this represents a substantial moderation of output losses in the medium term, with the peak decline reduced by roughly one-third to one-half.

Figure 11: Effects of US tariffs on GDP in a Stylised Trade Deflection Scenario



Source: AMNIE simulations

The effects operate primarily through the trade channel. The temporary increase in trade volumes reflects firms' rerouting of exports and imports through Northern Ireland in response to tariff differentials. This intensification of trade activity supports output in the short term, partially mitigating the contraction caused by tariffs. Once the two-year period ends, trade volumes revert toward baseline, and the macroeconomic gains diminish.

Inflation is affected to a lesser degree. The short-term expansion in trade moderates the initial, tariff-driven rise in import prices, with inflation peaking at around 1.5 percentage points above the no-tariff baseline in 2025 before declining over time. By the end of the simulation horizon, inflation turns marginally negative, reflecting weaker demand conditions as trade deflection effects unwind.

Overall, the results suggest that trade deflection and tariff-jumping behaviour can provide partial short-run mitigation under differential trade barriers, but they do not fully counteract the broader economic costs of a severe protectionist shock. In practice, the magnitude and duration of such effects are stylised and may be smaller than our scenario indicates. These mechanisms should therefore be interpreted as partial offsets rather than sources of sustained net gains.

Key Takeaways

- US tariffs lead to persistent economic losses for Northern Ireland, with output, consumption and trade remaining below baseline across all scenarios over the full simulation period.
- Trade is the main transmission channel of tariff shocks, as higher tariffs reduce exports through weaker external demand and imports through higher prices and lower domestic demand, with trade volumes adjusting more sharply than output.

- Tariff impacts are much larger when they are targeted at key trading partners, with scenarios affecting the United Kingdom and European Union generating substantially greater declines than uniform global tariffs.
- Northern Ireland's exposure lies between that of the United Kingdom and the European Union, reflecting differences in trade linkages, with the United Kingdom experiencing larger declines and the European Union smaller, more moderate effects.
- Trade deflection can temporarily mitigate the impact of tariffs through increased trade flows, but these effects are short-lived and do not offset the overall negative impact of sustained trade restrictions.

6 Conclusions

In this paper, we have used AMNIE to examine quantitatively the effects of differential US tariffs on EU and UK exports. In particular, we were interested in how the NI economy responds to this shock, given that Northern Ireland is part of both the EU and UK single markets.

Three main conclusions emerge. First, Northern Ireland experiences persistent output losses across all tariff scenarios, with trade acting as the primary transmission channel. Second, targeted tariffs on major trading partners generate substantially larger effects than uniform global tariffs, reflecting Northern Ireland's strong integration with UK and EU markets. Third, while Northern Ireland is significantly affected, cross-country comparisons show that its exposure lies between that of the United Kingdom, which experiences larger declines, and the European Union, where impacts are somewhat more moderate.

One caveat is that AMNIE does not allow for the possibility of firms 'tariff-jumping' by a reallocating foreign direct investment toward jurisdictions offering preferential market access. This may be particularly important in Northern Ireland, given the close geographical proximity to, and cultural and economic links with, Ireland. If Irish firms were faced with higher tariffs than Northern Irish firms, we might expect to see them increase their investment north of the border to take advantage of the lower tariffs applying to goods exported from there. Incorporating a stylised trade deflection mechanism indicates that Northern Ireland's dual-market access could provide a modest adjustment margin, partially offsetting some of the negative effects of tariffs. The scale of this effect is uncertain, depending on the extent to which firms can realistically re-route trade or temporarily shift production.

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