Potential Impacts of Changes in Single Farm Payment (SFP) on Rural Economy in Northern Ireland (NI)

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Abstract

Agricultural support in particularly single farm payment (SFP) in the Common Agricultural Policy has encountered more and more challenges.

In this study, we have used two hypothetical policy impact scenarios, a SAM multiplier analysis and a static CGE model to mimic the knock-on impacts in the short term, and equilibrium impacts in the long term, of removing the single farm payment on the agri-food sector, rural and overall economy in NI. In the two policy impact scenarios, the production effects of the single farm payment is assumed to be under two extreme cases: either a pure government income transfer to rural households (Income Transfer Scenario) or SFP is still fully coupled to agricultural production (Fully Coupled Scenario), respectively.

Counterfactual analysis suggests that In NI removing SFP is likely to have limited impact on overall economy but it will improve the overall economic efficiency due to resource reallocation and savings from the exit of marginal agricultural production / farmers. For agri-food sector and rural economy, a strong effect will be felt in the short term and the effect will be diminishing via supply chain and in the long term the impact will be modest.

Keywords: Single farm payment, SAM, CGE model, welfare improvement

1. Introduction

Different factors have driven changes in agricultural support. In the past 30 years, the WTO negotiations have favoured agricultural support changing from deficiency payment to more market oriented decoupled payment at a global level. In Europe, a Single Farm Payment (SFP) scheme has been introduced since 2005 and its policy objectives have also changed from production and income support towards more on the provision of environmental and other public goods and services at the farm level and conditioned on the implementation of cross compliance measures.

Agricultural support in the EU however has been subject to different challenges. One of criticisms is on the support distributions at national and farm level due to large payment differences between different nations in the EU by different measuring criteria and between farmers in each country (Sckokai and Moro, 2009). At the macroeconomic level, it is also often linked to concerns on food security, welfare effect and sector competitiveness (Boulanger and Philippidis, 2015, Candel, Breeman, Stiller and Termeer, 2014).

The current debates have been mainly on how the support should be justified and how imbalance of the payment between different countries can be dealt with. In the UK, the Brexit has also brought forward a question if the SFP will be sustainable. Therefore, it is sensible to ask what likely impact is if the SFP is to be changed and what should be changed?

Agricultural support in particular SFP is regarded to have boosted farm productivity and subsequently capitalised into prices of scarce resources such as land rental and land price (Hennessy, 1998). The production effects are found even in the period when decoupled payment policy is implemented in the EU after 2005 (Weber and Key, 2012, Esposti, 2016). Surely, the production induced effect will further affected other economic sectors and overall economy.

In this study, based on literature review, we used a regional social accounting matrix (SAM) and Computer General Equilibrium (CGE) model developed to examine short term and long term effects of removing SFP on efficiency and competitiveness in agri-food, rural and overall economies in NI. This paper is organised as follows. In Section 2 a literature review of impact of agricultural support, a brief description of NIRUSAM and NICGE models and summary of agricultural support in NI are provided. The main empirical results of removing SFP from two models are discussed in Section 3. Section 4 concludes.

2. Literature review

SFP impacts

The impacts of the SFP in the EU are well researched in the literature. In general, it is believed that as a decoupled payment the SFP has supply inducing effect for various reasons including lowering production risks, relaxing farm's credit constraint to improve investment opportunities, altering the uses of major agricultural inputs such as labour and land and future support expectations (Weber and Key, 2012, Esposti, 2016, Antón, 2001). As most of farmers are risk averse, the SFP affects farm decision via insurance effect to low the production risk and wealth effect to make farmer less risk averse. Dynamically, it affects farm expectations on prices and future support, thus to change farm resource allocation in production in short term and consumption and investment in long term. It is also argued that the SFP production induced effect may have linked to the detailed policy practice such as eligibility conditions for subsidies (e.g. cross-compliance condition and greening measures) and some partial decoupling measures. Each of these individual impacts are believed to be insignificant but the overall impact is not clear (Rude, 2008).

Although the theory of the SFP impact has been well studied, the empirical estimations of SFP production impact at the farm or regional level are still rare. Sckokai and Moro (2009) used a dynamic dual model of farm decision-making under the price risk and the 1994-2002 FADN data in Italian arable farms to test investment and output impacts of the SFP. They found that the intervention price has more significant investment and output impact than the single farm payment. Using a linear programming approach, Acs, Hanley, Dallimer, Gaston, Robertson, Wilson and Armsworth (2010) compared farm income, production and cost structure of three policy scenarios (Headage Payment, Single Farm Payment and No Payment) in the Peak District in England. As expected, they found that No Payment scenario has resulted in less intensive land and other input uses. Compared to No Payment with Single Farm Payment, net farm incomes in all six types of farms studied reduced significantly and become negative except in more productive Inbye sheep and dairy farms. Between dairy, beef and sheep production, farms adopt a strategy of reducing animals first from those heavily subsidised

animals (i.e. beef in the case) then to the less subsidized ones (sheep). Dairy production is less affected as it is less subsidised. The livestock unit (LU) falls in most farm types in a range from -17% in Moor Sheep farm to no changes in Inbye beef farms and in Inbye dairy farms the LU increases by 21%.

Esposti (2016) used 2003-2007 FADN data and the treatment effect model to estimate the impact of the SFP on farm production in the change of the production mix and the investment decisions in Italian farms. He found that because of different farm circumstances, farm responses differ between production and investment decisions. Farms tend to respond positively and rapidly in changing product mix at the low level payment but the stimulus impact diminishing when the decoupled payment level raises to the high level (40%) or exhibit a lock-in effect. However, the investment effect of the SFP is in convex shape and more heterogeneous and weaker, suggesting that the investment response only occurs when the payment reach a high level (50%).

The agricultural payment has also capitalised into land sale and rental prices. Ciaian, Kancs and Swinnen (2010) examined the impact of the CAP on the EU land market. They found that land sale and rental prices are affected by many factors including agricultural support, production profitability, differences in land use, marketing and legal structure. The SFP has relatively modest impact on land sale price compared to other factors influencing land price such as urban expansion and it is more significant in the countries with low land prices but relatively higher impact on rental price. The SFP is also likely to create a redistribution effect that benefits more to the owners of marginal and low quality land though it is also relevant to the way the SFP was paid out. In general, it is agreed that the capitalisation ratio has increased with the change of the payment from animal entitlement type before 2005 to area based SFP. In Bavaria in Germany, Kilian, Anton, Röder and Salhofer (2008) found that one additional Euro of direct payment would increase rental price by 28-78 cents in the payment system prior to 2005 and with the SFP another 15-19 cents are capitalised into the rental price. In a study of Irish Conacre system, O'Neill and Hanrahan (2016) however suggested that in the period prior to the SFP some 58-80% of subsidies were capitalised into agricultural rent but declined after 2005 due to short term nature of the conacre system. In NI, Patton, Kostov, McErlean and Moss (2008) used Farm Business Survey data in 1994-2002 to test the capitalisation of agricultural support into land rent before the SFP was introduced. They found that about 80% of general subsidies, 41% of beef special premium, 42% of suckler cow premium and almost 100% of sheep premiums were capitalised into land rent price.

The SFP may also change labour allocation between leisure and work times in a household due to its wealthy effect. With agricultural support, farm households who receive more payments tend to supply less labour off the farm and work more hours on the farm (Key and Roberts, 2009). By compared an almost fully decoupled farming support in Switzerland in 2004 and mainly coupled farming support in France in 2003, Latruffe and Mann (2009) found that under the decoupled Switzerland model part-time farms were more easy to capture direct payment. In East German regions, Petrick and Zier (2012) found that CAP has very limited impact on job creation or maintenance in agriculture while investment aids have some impacts in maintaining agricultural labour, the changes in direct payment did cause labour shedding effect in farming sectors (7% in short run and 35% in long run) and a rise in general wage level reduce farm labour use.

Removal of CAP income support is likely to lower farmers' intention of farm expansion significantly. Under agricultural income support such as SFP in the CAP, farm expansion is

likely to be affected by age, current farm scale and education and skills. While with the elimination of CAP instruments, succession and farm income source become dominant (Bartolini and Viaggi, 2013).

Sckokai and Moro (2009) analysed farm investment behaviours under the price risks. It suggests that for risk averse farmers, capital adjustment rates are negative for both building and machinery. Crop output supplies and area allocations are positively affected by both prices and area payments, and negatively affected by an increase in price volatility, while wealth elasticities turn out to be quite important. There is a structural change in Italy that many livestock farmer has converted into specialised arable crop farmers due to increased higher price volatility for the livestock sector.

From a wide economy viewpoint, agricultural support tends to draw scare resources from more productive sectors to less productive sectors in an economy and created market distortion, thus potentially reduced overall efficiency in the economy (Evans, Grimes, Wilkinson and Teece, 1996).

SAM and CGE

Impact analysis based on social accounting matrix (SAM) and computable general equilibrium (CGE) appears to have covered slight different aspects of adjustment process of an exogenous shock. The SAM represents flows of all economic transactions that take place within an economy between economic sectors and institutions. It is a natural extension of input-output tables and describes detailed information of national account in an economy for a specific year. SAM analysis which is also called multiplier analysis provides a knock on impact of any exogenous changes on different economic sectors and overall economy. In the sense, impact covered in the analysis is a result of new technical equilibrium of the economy which does not capture the impact of response by different institutions (producers, consumers and governments), a situation similar to the short term equilibrium in an economy with exogenous shocks such as changes in policy, technology and other external factors. The CGE analysis, on the other hand, provides an impact estimation that has not only captured the technical adjustments through forward and backward linkages in IO tables but also economic (behaviour) adjustments in response to potential endogenous price changes associated to the external shocks including those adjustments in production inputs, household consumption and international trade. Therefore, it is a long term equilibrium effects with endogenous adjustments in the supply and demand of commodities and services.

Comparing the SAM and CGE models, most of studies tend to prove that the CGE model is more superior as it has not only considered the technical relationships between different economic sectors but also taken account of economic responses of different institutions in the economy. Seung, Harris and MacDiarmid (1997) analysed differences in using a supply determined social accounting matrix and a regional CGE model to analyse the economic impact of transferring surface water from irrigated agriculture to recreation use and suggested that CGE model is theoretically more appropriate for an impact analysis where productive capacity of rural sector is reduced. In analysing significance of the interregional CO2 trade balance, Gilmartin, Swales and Turner (2008) also indicated that in general, impact from SAM analysis tends to suffer from assumptions of infinite elastic supply and universal Leontief technology.

While the theory consistent CGE model is more appropriate and informative where a marginal analysis is needed.

By comparing partial input-output (IO), SAM and CGE modelling approaches in evaluate the economic impacts of an arts festival in a South Africa region, Van Wyk, Saayman, Rossouw and Saayman (2015) found that substantial differences observed among impacts estimated by different models, cares are needed to understand the assumptions used in model development and research purposes.

Large number of CGE models have also been used in examining impacts of agricultural support in particular the SFP in the EU agriculture (Boulanger and Philippidis, 2015, Psaltopoulos, Balamou and Thomson, 2006, Boysen, Miller and Matthews, 2016, Gohin, 2006, Gocht, Britz and Ciaian, 2013, Urban, Jensen and Brockmeier, 2016). Most of these studies have been focused on measuring different economic impacts (mainly production impacts) of changing agricultural support from coupled to decoupled payments with a few exceptions. Used a modified GTAP model, Boulanger and Philippidis (2015) found that reduction in CAP expenditure cuts would have muted impacts on EU and world agricultural markets, whereas changes in net transfer payments have implications for real income and macro trade balances in EU member states. In another study using an extended GTAP model, Urban, Jensen and Brockmeier (2016) proved that EU clearly gains from removing domestic support payments and the that the EU welfare gain clearly diminishes with increased decoupling, as decoupling reduced market distortion.

Farm Support in NI

Direct payment used in NI is reported in Table 1. In 2016, £323m of government support (excluding market measures which is used at the EU level) have been used in farming sector in NI, in which 86% has been used in single farm payment (Pillar 1 schemes). NI has used approximately 10% of total UK agricultural support, for 5.9% of agricultural land, 5.9% of farm employment, 11.4% of farms and 7.6% of gross market output.

The Single Farm Payment (SFP) Scheme was introduced in NI in 2005. The payment was initially based on a 'synthetic' model approach (i.e. a combination of flat rate which is based on land areas and a historic entitlement) to allocate to farm households. Since 2015, a new approach or so call Basic Payment Scheme (BPS), a Greening Payment and a Young Farmers' Payment, came into force. Farmers are eligible to receive the BPS with conditions: (1) with historic payment at €100 in 2013 or other approvals, (2) being an active farmer and (3) at least 3 hectares land.

In NI, 36707 beneficiaries have received single farm payment and its amount paid ranges from the highest £322182 to the lowest £1.55 in 2014. To include rural development program funding, some 38006 beneficiaries received payments from the highest £1,977,103 to the lowest £1.55 (NICVA, 2017). As dairy and beef production are dominated in NI agriculture, dairy and beef farmers have received more than 75% of total SFP in NI.

Table 1 Agricultural Support under the CAP in the UK and NI, 2016, £m

	England	Wales	Scotland	Northern Ireland	NI as % UK Total	United Kingdom
Coupled payments (linked to production)						
Livestock subsidies						
Scottish Upland Sheep support scheme	. .	. .	6	. .		6
Scottish Suckler Beef support scheme	. .	. .	35	. .		35
Total coupled payments	**. .**	**. .**	**42**	**. .**		**42**
Decoupled payments (not linked to production)						
Single Payment Scheme	1663	221	405	279	11	2568
Less Favoured Areas support schemes (a)	-	-	66	19	22	84
Agri-environment schemes						
Environmental Stewardship Scheme	324	-	-	-		324
Rural Priorities / Land Manager Options	. .	. .	16	. .		16
Glastir	. .	40	. .	. .		40
Countryside Management Scheme	. .	. .	. .	16	100	16
Organic Farming Scheme	-	. .	-	-	35	0
Environmentally Sensitive Areas Schemes	-		-	5	100	5
Sites and Areas of Special Scientific Interest	-	2	-	-	0	2
Other (b)	25	3	2	-	0	31
Animal disease compensation	11	4	-	5	24	20
Total decoupled payments	2024	269	490	323	10	3106
Total direct payments	**2024**	**269**	**532**	**323**	10	**3148**

Source: Agriculture in the UK

3. Model and Results

Models used in this analysis are rural-urban social accounting matrix for Northern Ireland (NIRUSAM) and a NI regional CGE model (NICGE). Based on NI IO table in 2010, NIRUSAM is developed to include output and consumption accounts for rural and urban areas in NI and monetary flows between commodity, factor, enterprises, households, government, rest of world and saving and investment accounts. It covers 230 activities (120 rural and 110 urban ones), 120 commodities accounts, 2 factors (labour and capital), 2 household groups (rural and urban ones), 2 governments (local and central), 6 taxes (direct taxes, value added taxes, import tariffs, duties, subsidies, and the tax less subsidies on production), saving and investment and 4 rest of world accounts (Rest of the UK, Republic Ireland, Rest of the EU, and Rest of World) (Wu and Pei, 2017).

NICGE model is developed based on NIRUSAM and followed IFPRI CGE model framework (Lofgren, Harris and Robinson, 2002). The model is created in a way that the behaviours of the economic agents are determined by a set of linear and nonlinear simultaneous equations. The model also includes a set of equations as macroeconomic constraints for factor and commodity markets, balances for government, current accounts and savings and investments. Distinguished from the IFPRI model, a CPI is chosen as a numéraire, it extends its trade structure between rest of the UK (RUK) and rest of the world (ROW) by utilising nested trade functions to reflect different trade conditions between RUK and ROW. Composite commodities are comprised of domestic sales and trades with external market, and the latter market is comprised of RUK and ROW. In addition, activities in the NICGE model are

distinguished by rural and urban, inheriting from its database NIRUSAM. Unlike activities, as a small open economy, we assume that there is no difference between rural and urban commodities, i.e., there is only one commodity market in NI, regardless of the production location of commodities (Pei, 2017).

As SFP capitalisation impacts on land and labour are not clear at the regional level, in this study, we have assumed that the capitalisation effects have already embodied in the Baseline data and fixed in the counterfactual analysis. To capture the impact of removing SFP, we have assumed the status quo (i.e. economy of NI in 2010) as a Baseline and developed two direct production impact scenarios: (1) assuming that the SFP is totally decoupled and the payment is just a transfer to rural households (Income Transfer Scenario) and (2) SFP is fully coupled to the production and its level of coupling is equivalent to those reported in Farm Business Survey (FBS) in Northern Ireland (Fully Coupled Scenario). The single farm payments (SFP) received by various types of farms and its proportion in its business income in NI in 2011-15 are reported in Table 2. It is clear that in NI the SFP contribution to farm business income in cattle farms are much higher than in other farms. It may suggest that reduction or elimination the SFP may have bigger impact on the cattle farms.

Table 2 SFP Received by different types of farms In NI (2011-15 average)

Farm Type	Farm Business Income (£/farm)	SFP (£ /farm)	SFP (%)
Cereal	26898.2	29596.8	110.0
General Cropping	38309.2	16202	42.3
Pigs	42365	12963	30.6
Dairy	41253	21189.6	51.4
Cattle and Sheep (LFA)	16434.4	29461.8	179.3
Cattle and Sheep (Lowland)	14957.4	24557.8	164.2
Mixed	38287	24310.4	63.5
All type	24606	25424	103.3

Source: Farm Incomes in Northern Ireland, 2011-15, various years

In the Income Transfer Scenario, the SFP is just a pure income transfer to rural households, rural households are expected to allocate the SFP between household consumption and production / investment (agricultural production inclusive). As saving / investment only accounts for less than 8% of rural household income in the Baseline, we are expecting that the SFP will not have a significant impact on agricultural and other production from the Baseline in both SAM analysis and CGE analysis. Therefore, in this study we will mainly focus our discussions on impact of the Fully Coupled Scenario. Table 3 reports the SAM results of the Fully couple scenario. For comparison purpose, a scenario that assumes only cattle support (about 46% of the SFP in 2010 in NI) is removed (i.e. SFP for all other sectors are still coupled)

is also reported in the table. As the impact of removing a key support in production process is concerned, a supply model of SAM analysis is used.

Table 3 Knock-on impacts of removing SFP in NI (%)

Changes	Only removing cattle support	Fully couple scenario
Cattle Output	-37.0	-39.0
Milk Output	-0.5	-17.3
Agricultural output	-8.9	-20.1
Rural Food output	-3.2	-6.2
Urban Food Output	-2.9	-6.3
Agri-food output	-4.6	-9.8
Rural Output	-1.3	-2.8
Urban Output	-0.3	-0.7
Total NI output	-0.6	-1.3
RHH income	-0.5	-1.1
UHH income	-0.4	-1.0

Note: SAM supply model results, measured in % changes against the Baseline

The result shows that under the Full coupled scenario (i.e. all decoupled SFP is removed) in the short term, two key agricultural sectors cattle and dairy sectors will suffer significantly and agricultural output in NI will fall as much as 20%. This will subsequently lead the smaller level reduction of food processing sector which is scattered in both rural and urban areas. But rural and urban output will fall unevenly as agricultural production is concentrated in rural area. Total economic output in NI is likely to fall by 1.3% as agri-food sector only accounts for less than 10% of total NI economic output. The income effect is fairly shared by rural and urban households as rural and urban areas are closely linked.

In contrast, in the case that only fully coupled beef support is removed, cattle production is severely affected but in a slightly smaller scale because dairy sector has contributed part of beef calves and meat production through its beef-dairy linkage in the production system. Impact on food processing is more in the rural area than in the urban area as beef processing is more located in rural region. Other indicators appears to follow the similar patterns as in the case of removing all SFP.

CGE model results for the two impact scenarios are reported in Table 4. As expected, long term impact on agricultural production in the Income Transfer Scenario is much smaller than in the Fully Coupled Scenario. The similar effect is for food processing sector. As agri-food sector is relatively small in NI economy, changes in total output, GDP and household incomes are quite small and they are quite similar in both cases. In the short-term SAM analysis, reductions in GDP are significantly lower than that for output. Assuming the SFP is full coupled, SAM analysis suggests that total output, GDP and household incomes in NI economy will reduce 1.1%, 0.4% and 1%, while the CGE model result suggested output, GDP and household incomes will only reduce 0.32%, 0.09% and 0.24%, respectively. Interestingly, reduction in

GDP is much less than that of total output, suggesting that economic efficiency for the economy has improved. There are two main sources related to this efficiency improvement. First, it is the reduction of agricultural production from marginal producers who tend to heavily relying on agricultural support to be economically viable. Second, it is related to resource movement from less productive sectors (happened to be highly subsidised sectors in this case) to more productive sectors. In NI, these are the sectors such as crop sector in agriculture, manufacturing, construction, telecommunication and information and financial and legal sectors.

Compared to short term Knock-on impact from NIRUSAM model to the long term equilibrium impact from the NICGE model simulation, output impact of removing SFP for agri-food sector is also much smaller. Taken the Fully Coupled Scenario as an example, in the Baseline year 2010, £273m were paid to farm households as the SFP in NI. The knock on impact of removing all SFP will reduce farm household income by £384m (including £119m from rural households), which will be bigger than the initial payment (£273m). With long term equilibrium impact, the reduction in household income will be £83.8m (including £55.2m in rural households), suggesting that removing SFP may have significant financial shock to both rural and urban households but its impact will gradually diminishing in the long term. In the case, the support itself will be sufficient to compensate the household losses in the case.

Table 4 long term impact of removing all SFP scenarios (%)

Scenarios	Income Transfer Scenario	Fully Coupled Scenario
Cattle Output	-0.09	-10.41
Milk Output	-0.07	-9.61
Agricultural Output	-0.07	-6.70
Food Processing Output	-0.14	-1.59
Agri-food output	-0.12	-3.25
Rural Output	-0.41	-0.48
Urban Output	-0.17	-0.17
Total Output	-0.24	-0.32
GDP	-0.07	-0.09
RHH Income	-0.50	-0.51
UHH Income	-0.11	-0.12

Note: CGE model results, measured in % changes against the Baseline

4. Conclusions and discussion

Based on a literature review, this study used SAM and CGE models developed for NI to compare short and long run impacts of removing SFP on agri-food, rural and overall economy. It is found that:

(1) Although the single farm payment is called a decoupled payment, agricultural support is still partially decoupled. The literature suggests that decoupled payments have not only had production effects in the short term but also affected land value and labour uses in the long

term. Its effects may also depend on the way the payment is paid and the level of payment. Therefore, its long-term effect may be more than the expected.

(2) As the regional production effects of direct support are not available, two SFP impact scenarios: pure income transfer to rural / farm households and fully coupled to production are used in the analysis. The results suggest that under fully coupled scenario removing the single farm payment will first have significant knock-on impact on the farming sectors particularly on those heavily subsidised i.e. beef and sheep sectors in Northern Ireland, then the impact will transmit via the input-output linkages in a diminishing manner to other economic sectors. As agriculture only accounts for less than 2% of total regional output and GDP contribution in NI, however, its overall economy wide impacts are not significant under all policy and modelling assumptions. For example, by the CGE modelling under the totally coupled case, the regional GDP will only reduce 0.09% from the Baseline.

(3) A SAM multiplier analysis which represents a short-term knock-on effect of the policy measure suggested that removing agricultural support will significantly reduce the agricultural production, then create waste of production resources and reduce the household incomes and GDP. As a CGE modelling process mimics the process of the resources movement to more efficient production sectors and market adjustments, the losses in farming production, income and GDP are much smaller.

(4) Results of the Fully Coupled Scenario in both models also suggest that its impact will be more strongly felt in rural areas and rural households as agriculture and a large part of food processing businesses are operated in rural areas. Between the two scenarios, the coupled payment scenario appears to have a bigger impact than the income transfer scenario in both the SAM and CGE analyses.

(5) Importantly, the support removal will improve production efficiency in the farming sector and overall economy through reducing marginal production or those with production losses in farming sector and moving resources to more efficient production sectors such as construction and rural tourism, therefore, it makes significant savings for the economy. Reductions in GDP are less than that in output imply that same output has generated more GDP and economic efficiency has improved. Measuring in household income, under the Fully Coupled Scenario, short term reduction will reach £354m while under in the long term, the losses will be reduced to £83m. Therefore, in the long run the saving from removing single farm payment would be much more significant than household income losses. This suggests that removing single farm payment may trigger big farm losses in the short term but in the long run its efficiency improvement effect would be greater than household income losses.

(6) As the SFP is likely to be only partially coupled, the real impact of removing the single farm payment is likely to be between these two extreme scenarios. The key policy implication of this study is that removal of production coupled support would improve production efficiency and overall societal welfare.

Study can be further improved in several aspects. First, the capitalisation impact may be incorporated into the model when it is available. Capitalisation of SFP into the factor prices (land and labour) is likely to affect long term production. However, as agricultural support is often included as a price premium in most of policy analysis models such as PE and CGE models when the support is fully coupled, the way that includes the capitalisation in both SAM and CGE model need to be studied further. Second, to separate farm households from rural households may help to more clearly identify the impact particularly its income effect on farm households. Finally, to include government revenue impact can help to provide a better picture of financial distributional effects of the removing SFP in NI.

This study has only captured economic impact of changing SFP. As indicated in various policy mandates, the SFP is likely to be used to serve multiple policy objectives such as maintaining good agricultural conditions and stick to cross compliance to rural environment, reducing GHG emissions etc. When it serves to different and sometimes conflicting policy objectives, policy impact measurement has become more difficult.

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