HOW COUPLED ARE DECOUPLED PAYMENTS?
AN EVOLVING MODELLING FRAMEWORK FOR AN EVOLVING POLICY.

Pierre Boulanger[a], Kirsten Boysen-Urban[b], George Philippidis[a,c]

[a] *European Commission, Joint Research Centre (JRC) (Seville, pierre.boulanger@ec.europa.eu).*
[b] *Hohenheim University, Department of International Agricultural Trade and Food Security (Stuttgart, kirsten.urban@uni-hohenheim.de).* [c] *Aragonese Agency for Research and Development (ARAID), Unit for Agrifood Economics and Natural Resources, Centre for Food Research and Technology (CITA) (Zaragoza, gphilippidis@aragon.es)[1]*

Abstract: Decoupled payments are a key instrument of the European Common Agricultural Policy (CAP). There are theoretically not linked to production and thus should not create incentives to produce. This research work simulates (and compares outcomes of) a set of baseline scenarios covering different representations of decoupled payments within a general equilibrium modelling framework. Decoupled payments are treated either as fully or partially (de)coupled, and are allocated differently to factors based on relevant literature and confidence interval (low, medium and high estimates). Results reveal that a sound understanding and quantification of coupling factor remain critical for any rigorous ex-ante analysis of a complex CAP.

Keywords: Common agricultural policy, decoupled payments, economic modelling, parametrisation

1. Introduction

Decoupled payments are the predominant instrument of the European Common Agricultural Policy (CAP), both in terms of the number of recipients and share of CAP expenditure. Initiated with the 1992 CAP reform and deepened with the 2003 reform, nowadays decoupled payments account for two-thirds of CAP budget and will represent approximately 63% of the CAP budget by 2020 or 42% if one excludes "green payments". Decoupled payments are theoretically not linked to production and thus should not create incentives to produce.

However it remains inconclusive whether these European payments are fully decoupled from production or whether they still create incentives to produce via other coupling channels such as land markets, risk, credit constraints, future expectations and labour markets. Based on comprehensive literature review and latest parameter estimates, the aim of this research work is to better understand and quantify the representation (and multiple effects such as macroeconomic and environmental) of European decoupled payments (i.e., both basic payment scheme (BPS) and single area payment scheme (SAPS)) in economic simulation models.

2. Methodology

Scientific literature reveals different coupling channels (e.g., Bhaskar & Beghin, 2009; Moro & Sckokai, 2013). For each of these channels the relevant literature introducing theoretical and empirical assessments is evaluated with the aim of deriving plausible behavioural parameters that improve the representation of decoupled payments in economic simulation models. To capture completely decoupled production behaviour, many Computable General Equilibrium (CGE) models typically represent decoupled payments as a uniform subsidy rate to the land factor using (agricultural) sectors.

This research expands Boulanger, Philippidis & Urban (2017) by simulating a set of baseline scenarios covering the whole set of plausible distribution scenarios of decoupled payments in CGE models, i.e., fully decoupled (100% on land) and allocated according to factor usage, based on the most recent available estimation results for the post-2013 CAP reform considering also the confidence interval.

Scenarios are built as follows. As a starting point, central estimates are taken from Ciaian et al. (2018) for the share of decoupled payments capitalised into the value of land by member state which range from 22.5% to 84.7% (medium estimates). The remaining 77.5% to 15.3% of payments are then distributed as a uniform subsidy payment across the GTAP database classification of all four factors of production (i.e., land, unskilled- and skilled-labour and capital) in the agricultural sectors. Thus, in effect, remaining decoupled payments are distributed as a function of the primary factor share in agricultural sectors in each


EU member state. In order to consider uncertainty intervals we follow the same procedure for low, central and high estimates.

The CGE model which is used is the Modular Applied GeNeral Equilibrium Tool (MAGNET) (Woltjer & Kuiper, 2014). As an economy-wide model, MAGNET is well placed to examine the costs and benefits of policy scenarios via changes in input and output prices and allocation of competing (agricultural and non-agricultural) uses of primary factors and intermediate inputs. Indeed, as opposed to partial equilibrium models with a narrower sector focus, CGE models are particularly well placed to tackle policy questions which have economy-wide (e.g., structural change) implications (e.g., GHG emissions reductions). A key strength of MAGNET is its modular structure which allows activating those relevant to this work, especially the CAP module (Boulanger & Philippidis, 2014). Then we provide a comprehensive baseline that depicts a well-researched representation of the CAP at the horizon 2030 and therefore forms a reliable basis for future ex-ante policy analysis.

3. Results

Most of the available literature uses conceptual methodologies to evaluate decoupled payments' representation rather than empirical and numerical approaches. Nevertheless modelling results provide sound information (Figure 1). The baseline trends are heavily influenced by the drivers of real GDP growth, trends in labour and capital endowments, land productivities. Policy has an effect but is only one of many drivers and not even the strongest. However if one assumes differing degrees of coupling, it does have some implication for output (including GHG emissions) results when conducting policy analysis.

Figure 1. Output changes in the baseline compared to scenarios (low, medium and high capitalisation estimates)
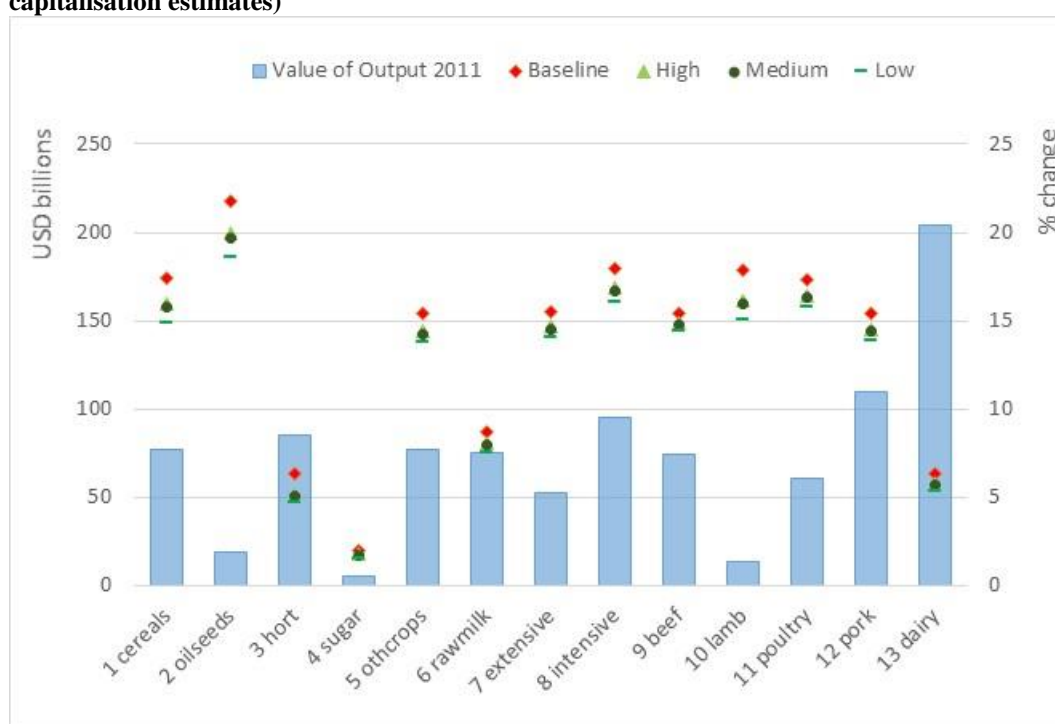
Source: Own computations using MAGNET

With an equal reduction in decoupled payments over the period 2011-2030 on all factors of production, the larger share of decoupled payments on non-land factors, the larger is the production reduction due to the mobility assumptions regarding agricultural labour and capital. Actually the factor land is treated as sluggish in the model and can only move slowly between agricultural sectors. Consequently, a reduction of product specific subsidies would lead to a slight re-allocation of land to other sectors. In case of a reduction of uniform payment on land, land use of different agricultural sectors would not change, nor agricultural output. Hence, distributing payments at a homogenous rate across all agricultural sectors to land reflects fully decoupling in the model (see Frandsen, Gersfelt, & Jensen, 2003; Urban, Jensen, & Brockmeier, 2014).

Capital and labour are mobile factors in the model. If payments allocated to capital and labour are reduced, factors of production move to more efficient sectors also outside of agriculture and consequently, mitigate the production changes observed in the baseline scenario.

Beyond this, the impacts of reductions in remaining coupled payment, which are not uniformly distributed across sectors (or EU regions) also present impact for some commodities. In tandem with the relatively output falls in agriculture, the effect on GHG emission also moves in the same direction. Of the total fall (14.7million tonnes of CO_2e), 9.2 come from the agricultural sector (6.3 from livestock). In the non EU regions, GHG emissions rise, as agricultural output rises.

4. Concluding remarks

Better understanding and quantifying the representation and effects of European decoupled payments remain a critical issue, both from a theoretical and empirical perspective. Beyond political sensitiveness, the literature reveals different coupling channels such as the capitalisation in land rents and land sale prices, farmers' risk behaviour, credit accessibility, uncertainty about future policies and labour use. Through all these channels, European decoupled payments influence directly and indirectly farm decisions and output. For each of these channels relevant literature introducing theoretical and empirical assessments has been evaluated with the aim of deriving plausible behavioural parameters that enable an improved representation of decoupled payments in economic simulation models.

Most of the available literature uses conceptual methodologies to evaluate such a representation rather than empirical and numerical approaches. Other studies are based on surveys collecting farmers' intentions and thus are more qualitative in nature. In addition, empirical studies are generally based on case studies using farm level data of a specific region, either at member state or regional level, or a specific type of production. Absence of data and aggregation challenges jeopardise the emergence of a common procedure to generalize estimated values. Furthermore many of the studies focus on specific aspects of decoupled payments such as the implementation of payment regimes, eligibility criteria or base period.

Beyond methodological challenges, the progressive and dynamic implementation of the CAP is a central obstacle when comparing different empirical analysis results. It is worth mentioning the increasing diversity of decoupled payments within the CAP (this study emphases both BPS and SAPS). Hence additional research is necessary in view with the growing emphasis given to "green" or more targeted decoupled payments.

5. References

Bhaskar, A. & Beghin, J. C. (2009). How Coupled Are Decoupled Farm Payments? A Review of Evidence. *Journal of Agricultural and Resource Economics*, 34(1), 130–153.

Boulanger, P. & Philippidis, G. (2014). "The EU budget battle: Assessing the trade and welfare impacts of CAP budgetary reform". *Food Policy*, 51(February): 119-130.

Boulanger, P., Philippidis, G. & Urban, K. (2017). "Assessing potential coupling factors of European decoupled payments with the Modular Agricultural GeNeral Equilibrium Tool (MAGNET)". *JRC Technical Report,* EUR 28253 EN. Luxembourg: Publications Office of the European Union.

Ciaian, P., Kancs, d'A., Espinosa, M. (2018). "The Impact of the 2013 CAP Reform on the Decoupled Payments Capitalisation into Land Values". *Journal of Agricultural Economics*, 69(2): 306-337.

Frandsen, S. E., Gersfelt, B. & Jensen, H. G. (2003). "The impacts of redesigning European agricultural support". *Review of Urban and Regional Development Studies*, 15(2), 106–131.

Moro, D. & Sckokai, P. (2013). "The impact of decoupled payments on farm choices: Conceptual and methodological challenges". *Food Policy*, 41(August), 28–38.

Urban, K., Jensen, H. G. & Brockmeier, M. (2014). "Extending the GTAP Database and Model to Cover Domestic Support Issues using the EU as Example". *GTAP Technical Paper Series*, 35. Purdue University, WL: Center for Global Trade Analysis.

Woltjer, G. & Kuiper, M. (eds.)(2014). The MAGNET model - Module description. *LEI Wageningen UR Report,* 14-057. The Hague. http://edepot.wur.nl/310764