Report of the 24th Meeting of the OECD Network for Farm-Level Analysis

Paris, 28-29 October 2019

Participants

1. The meeting was attended by 30 participants from 16 countries: Australia, Canada, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Ireland, Italy, Latvia, the Netherlands, Norway, Sweden, Switzerland, and from the European Union. Participants include contact persons from ministries and research institutions, nominated by their delegation, and four invited experts from Germany, England and Northern Ireland.

Content and structure of the meeting

2. The objectives were to:

- Discuss progress with the implementation of the network project on drivers of farm performance and next steps (Session 1).
- Discuss various studies analysing farm-level sustainable productivity performance (Session 2).
- Discuss various studies on structural and land issues (Session 3).
- Discuss possible future activities of the network (Session 4).
- Discuss various studies on income and price issues (Session 5).

3. The agenda of the meeting and the list of participants are available on the network website.

Session 1. Drivers and dynamics of farm performance

4. **Johannes Sauer,** Technical University of Munich, reported on progress with the implementation of the network project on drivers of farm performance, which aims to analyse correlations between farm characteristics and farm performances, to more accurately predict farm responses to policy measures. He reminded participants of the objectives and methodology used in the project on drivers of farm performance, as well as the variety of sectors, systems and farm types in country case studies undertaken so far. He also presented plans for completing the analysis. The final report will be presented to the OECD Working Party on Agricultural Policies and Markets (APM) in March 2020 and should be in the public domain shortly after [TAD/CA/APM/WP(2018)16/REV1]. Since May 2019, the method has been applied to seven farm types in Australia (dairy, crop, sheep for meat, sheep for wool, beef, beef and sheep, and mixed farms), crop farms and dairy farms in Sweden and crop farms in the United Kingdom. The plan is to include additional estimates for UK pig farms and sheep farms, for French and Irish dairy farms, crop farms and pig farms, and maybe wine farms for France. The analysis of the case studies since

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March 2019 will be integrated in the report for the APM working party, allowing more robust policy implications.

5. Pr. Sauer then presented in more detail the results of the Australian, Swedish and UK case studies. For Australian dairy farms, the most productive group (20% of all dairy farms) includes larger farms with more hired labour and lowest sustainability, while the least productive farms have the lowest environmental impacts. For Australian crop farms, the more productive farms are relatively sustainable (medium) so the trade-off found for dairy farms does not exist. Sheep-meat farms can be grouped in three classes with very close productivity performance but very different technical change. The most productive group, which accounts for three-quarters of farms includes larger farms with hired labour, and most sustainable, so again, there is no trade-off between productivity and sustainability, as measured by the selected indicators. Over half of sheep wool farms are in the most productive group, which displays average performance on all indexes. Most productive beef farms are also larger but have the lowest productivity. For sheep-beef farms there is also a trade-off between productivity and sustainability. In summary, the relationship between productivity and sustainability differs by farm type. In all cases, there is a strong link between innovation and productivity.

6. Half of Sweden's dairy farms are in the most productive group. They are larger, less sustainable, more innovative farms. The same trade-off between productivity and sustainability is found for dairy farms in the United Kingdom (and Australia). Crop farms in Sweden can be classified in three very different groups with one very productive, and also quite sustainable. As in Australia, there is no trade-off between productivity and sustainability in crop farms.

7. The new project on the dynamics of farm performance will consider the impact of policy changes (e.g. deregulation). To estimate the effect of the policy change, the situation before and after needs to be compared, as well as with and without. This requires finding a change that does not affect all farmers in a country or comparing with a country with similar conditions that did not implement the policy change (e.g. New Zealand for Australia). Voluntary contributions from participating countries would be most welcome.

8. In the discussion, participants reiterated the need to interpret the result carefully, taking into account the limited choice of sustainability indicators in the database, which may explain the lower sustainability performance of large farms in some farm types. It was argued that larger farms can be more sustainable because of better managerial capacity. The conclusions on trade-offs between productivity and sustainability, which differ by farm type, were found for both the previous and new cases. There were also comments on the fact that technical efficiency leads to future productivity. For example, higher technical efficiency in the lower productivity performance group indicates the difference between groups will decline. While identifying entry-exit is difficult in the data, the next phase will look at farms that change class. The unequal distribution of farm numbers across groups was also noted, which is partly due to the method applied (Latent Class Analysis).

9. **Swetlana Renner,** Agroscope in Switzerland, presented an analysis of the productivity and efficiency of Swiss dairy farms, based on the method developed in the network project on drivers of farm performance. Authors adapted the model to the Swiss dairy sector and data availability by considering specific single separate variables rather than composite indicators. Moreover, the approach used allows to evaluate farm performance in terms of efficiency, additionally to productivity, and to analyse the technology adaptation decision. Using a latent class model, the analysis examines productivity differentials of dairy farms in Switzerland by taking into account differences in the underlying technology. It includes more than 1 500 farms for the period 2003 to 2013. According to the results, three classes of farms with different technological

characteristics can be identified for the investigated period. Considerable differences in productivity levels are found between larger farms using a more capital-intensive technology and smaller labour-intensive farms located in mountainous regions. Less productive farms fail to generate sufficient income from agricultural activities and thus are more dependent on direct payments and additional income sources from non-agricultural activities. The efficiency scores estimated with respect to the individual stochastic frontiers of the corresponding latent technological class were shown to be higher than those estimated against a single common frontier. Thus, the efficiency of farms would be underestimated if differences in production technologies are neglected. The identified technologies seem on average well-adapted to local natural production conditions with low potential for efficiency and productivity increases. For those few farms that changed production technology over time, two different strategies were observed: 1) a substantial increase in intensification and output levels (intensification strategy), and 2) the increased provision of environmental goods in order to generate income from direct payments (extensification strategy). While intensification seems to result in sufficient income levels, this seems not to be the case with the extensification strategy.

10. Most participants appreciated that the Swiss researchers used the methodology developed in the common network project on drivers of farm performance. An alternative approach is meta-frontier analysis but this requires *a priori* information to distinguish between technology groups, while the latent class analysis tries to identify whether there are differences and what they are. The presentation prompted requests for further explanations on the findings. For example, the lower farm income in smaller farms could explain why the share of subsidies in farm income and off-farm income in total income is higher than in larger farms, but in fact, data show that smaller farms in the least productive class receive more of the environmental services payments. Explanations for switches between classes would be interesting, and future work on the dynamics of farm performance to estimate the probability of switches is envisaged in the next phase proposed by Johannes. For example, moving towards less productive classes could reflect a retirement strategy. The relevance of excluding farms in the extremes of the size distribution was discussed.

Session 2. Sustainable productivity

11. **Will Chancellor** presented an ABARES analysis of climate adjusted Total Factor Productivity (TFP) for Australian broadacre farms from 1989 to 2018. A new series of climate adjusted total factor productivity (TFP) indexes were made possible by the micro-simulation model (*farmpredict*) developed by Hughes et al. (2019).[1] First, the motivation for the work is provided and includes a discussion on the impact of seasonal volatility on TFP estimation as well as the relationship between climate and broadacre production systems in Australia. An overview of previous ABARES work (to estimate a climate adjusted TFP index for the cropping industry) was then discussed to provide a methodological contrast to the new estimation approach. In the new approach, a micro-simulation model is used to adjust farm level input and output variables according to climate scenarios. The data, method and practical approach is then outlined in detail.

12. The results highlight the sensitivity of crop production to seasonal variability – and imply that crop farmers appear to be adapting, despite worsening climatic conditions. The effect of seasonal variability on livestock farms (beef and sheep) is subtle and may reflect

[1] See Neal Hughes, Wei Ying Soh, Chris Boult, Kenton Lawson, Manann Donoghoe, Haydn Valle and Will Chancellor (2019), *Farmpredict*: A micro-simulation model of Australian farms, ABARES report, September, at www.agriculture.gov.au/abares/research-topics/working-papers/farmpredict.

the resilience of these farming systems to rainfall deficiencies. Future work is aimed at estimating climate adjusted dairy TFP and producing annual estimates of climate adjusted broadacre TFP.

13. Participants enquired further about the motivations for using this method rather than just smooth the TFP indicator. The interest was to look at the specific climate effect. OECD work on resilience, which includes a case study of resilience to natural disasters in Australia, also considers variability in TFP. Changes in practices to improve resilience are shown by improvements in TFP. Participants suggested looking at changes in the location of production to cope with changing climatic conditions, as well as at differences between northern and southern beef industries, which are very different.

14. **Francisco Areal**, Newcastle University, presented an approach developed to measure farm level sustainable intensification. The approach involves combining the use of a stochastic frontier analysis framework and composite indicators for farm provision of environmental goods. The approach taken advocates for obtaining a farm level composite indicator that accounts for a multidimensional market and all information available on non-market outputs (i.e. positive and negative environmental externalities). This approach was applied to 106 cereal farms in England and Wales during the period 2010–12. It integrates three different indicators for the provision of environmental goods into a stochastic frontier analysis: 1) agri-environmental payments; 2) the ratio of rough grassland and permanent pasture area to total utilised agricultural area; and 3) land use diversity, as measured by the Shannon Index. The analysis shows that obtaining sustainable intensification measures based on single environmental impact indicators is suboptimal since results vary substantially and do not provide a try reflection of the environmental performance of farms. The holistic approach used (building a set of sustainable intensification composite indicators) produced a distribution of farm level sustainable intensification scores with a greater depth of information than traditional approaches based on the generation of a single sustainable intensification score. Once farm level sustainable intensification distributions are obtained, their dimensionality can be reduced in different ways to adapt policy aims. One example is where farms can be classified into four distinct groups according to the shape of this distribution. This can help policy makers to identify where to allocate efforts (e.g. supporting farms under-achieving their potential). Future steps will be to investigate further spatial aspects associated to sustainable intensification.

15. Participants suggested investigating farm dynamics, in addition to spatial aspects. For example, a longer time period could be used to monitor the future of the few farms showing weak performance in all the environmental aspects. It would be interesting to know whether they catch up or disappear. Another suggestion was to identify the worst performers, so that policy makers could target them, rather than identifying the best performers and their location. In fact, farms are allocated in the four quartiles based on performance with different weights. All possible weights are tried, allowing identification of farms with best performance is all cases. In the network project on drivers of farm performance, the weights are determined by the Latent Class Analysis, but a sensitivity analysis could also be performed.

16. **Kehinde Oluseyi Olagunju**, Agri-Food and Bioservices Institute, Northern Ireland, presented an analysis of trends and drivers of productivity growth in the dairy sector in Northern Ireland. Productivity growth is an essential element in sustaining international competitiveness of the Northern Ireland dairy farm sector. In light of the evolving challenges facing this sector, including increasing pressure on- and limitations to-the factors of production, climate change and rising cost of inputs, growing competition from outside agriculture for the same production factors, long term growth of the sector largely depends on continues gains in productivity. The aim of this study is to gain an

improved understanding of productivity trends and drivers in the Northern Ireland dairy sector. Productivity growth is calculated using the index method developed in ABARES and applied in a previous Network project.[2]

17. The study concludes that the Northern Ireland dairy sector experienced a moderate productivity growth in terms of efficiency in the use of inputs to produce output, and this was is driven by output growth. Considering the effect resource allocation on sector-level productivity growth, findings show that the sector productivity growth has been driven by on-farm technology progress. The main drivers of farm-level productivity of dairy farm sector include: farm size, milk yield, stocking density, capital to labour ratio and shared of hired labour, purchased feed per cow, labour input per cow, and share of direct payment in farm output. Overall, the findings of this study have shown a variety of pathways to improving productivity growth of dairy sector in Northern Ireland. For example, promoting on-farm innovation technology and farm management, and also providing a policy environment that will facilitate better efficient resource allocation between Northern Ireland dairy farms as a whole.

18. Participants commented on the differences with the findings of the OECD analysis of productivity growth in England and Wales, which using the same method, found that gains in productivity were due to entry-exit and farm consolidation, while for Northern Ireland, resource reallocation has a negative impact. This is because Northern Ireland dairy farms are mainly large farms that have reached their threshold so they do not expand further. The leasing system of land is different. To enlarge farms, only short-term leasing contracts can be used. A recommendation from the Northern Ireland analysis was for the government to encourage long-term leasing. In response to question, the speaker explained that all farm outputs, including other sources of income, are taken into account in the analysis.

Session 3. Structural and land issues

19. **Will Chancellor** presented an ABARES experimental analysis of the drivers of Australian broadacre farmland value from 1975 to 2018. The purpose is to establish statistical infrastructure for farmland prices to inform farmers of the value of their asset, and help assess their viability, and to better understand drivers of land values. This would also provide an opportunity to inform policy makers, including on possible land market bubbles. The relationship between price per hectare and explanatory variables is tested economy by size category. Land price data come from administrative records of land transactions, while explanatory variable come from a variety of national, state or farm level sources. The analysis is conducted at the national level, by ABARES zones (high rainfall; wheat-sheep and pastoral), by size quantiles and by price per hectare quantiles (using simultaneous quantile regression). According to the results, the presence of a house on the farm is a positive driver in all models, as is the proximity of other buildings. Higher rainfall also tends to be a positive driver of land value and the presence of a mine site or wind turbines is positively correlated with farmland value. Positive drivers also include generic variables such as TFP and rural debt. Negative drivers include land size (larger properties demand lower prices on a 'per hectare' basis), and multi-sale (land parcels 'grouped' for sale demand lower prices). Distance and transport cost to towns indicates a negative correlation with farmland value, and high average maximum temperature tends to be a negative driver. Mixed results are found for soil conditions (e.g. acidification tends to be

[2] The method is explained in Kimura, S. and J. Sauer (2015), "Dynamics of dairy farm productivity growth: Cross-country comparison", OECD Food, Agriculture and Fisheries Papers, No. 87, OECD Publishing, Paris, https://doi.org/10.1787/5jrw8ffbzf7l-en.

positively correlated with land value); Land clearing (small negative), suggesting only minor improvement in land value with tree clearing; and Land slope (flatter land appears to be only slightly positive in main cropping zone. This is still work in progress. Further work is envisaged to generate hedonic estimates of farmland value based on models in this study; to use biophysical modelling to determine optimal land areas based on hedonic factors; and to link to *farmpredict* to run simulations (e.g. the effect of drought on farmland values, relationship between profit and farm value).

20. Participants found the results interesting and asked about data potential use in practice. It can be used by farmers, who usually do not know the value of their land. There might be commercial interest, for example from banks. It can facilitate farmers' access to credit. Hobby farms were removed from the analysis. These are self-declared, but the high land value can be an indicator. While all land transactions are reported, even when within the family, the price may then not be reliable in this case.

21. **Andrés Garzon Delvaux and Laura Riesgo**,[3] European Commission Joint Research Centre (JRC), presented the results of a wide review of the literature on the relationship between farm size and performance conducted with S. Gomez y Paloma. The JRC engaged with the existing debate on whether small farms are more performant than larger ones in developing countries through a meta-regression of its peer-reviewed literature (about 600 cases over the 1997-2018 period). Initial results indicate that the relationship between land area and output per unit of land strongly depends on the methodological choices regarding the indicators assessed. The use of efficiency indicators shows that larger farms tend to be more performant than smallholders while, the ubiquitous but less recommendable gross output indicators support an inverse relationship (IR). Also, the simple logit model used points to differences among the main crops studied where rice can comparatively be both efficient and profitable at small scale (IR) but maize performance is positively associated with land size. Moreover, studies with higher and wider ranges of farm size are less likely to report IR, even less for those published in the higher quality publications (Journal quartile rankings). However, this does not suggest policy abandoning smallholders given the critical justifications for improving their living conditions but questions the assumption qualifying IR as a stylised fact of development agriculture. This is work in progress and future refinements are considered, including weighting by the quality of papers. Moreover, the views expressed are purely those of the authors and may not in any circumstances be regarded as stating an official position of the European Commission. Network members will be alerted when the report is published.

22. During the discussion, the JRC analysts indicated that only peer reviewed literature was considered, but other studies give similar results. Further investigation on the reasons for IR and on sustainability issues would be interesting. Crop diversity was considered as an indicator of sustainability but it is difficult to identify. Participants asked how the different scale of the studies and the data collection method was taken into account, and pointed to the risks of considering together different studies done in different context with different data. Further discussion took place on the theoretical foundations of the relationship between farm size and performance, the interpretation of the different indicators of performance, farmers' constraints in accessing land and capital in developing countries, and the consideration of family labour. There is often no alternative use to labour. As a result, farms have a high labour intensity but that labour is not well used.

23. **Vladimír Kostlivý** from the Institute of Agricultural Economics and Information (IAEI), Czech Republic, presented an analysis of Czech organic farming in two parts, firstly

[3] Also from Universidad Pablo de Olavide, Seville, Spain.

structure and production development over 2011-18, secondly Technical Efficiency (TE) and its determinants over 2011-16 for Czech livestock farms.

24. To estimate the TE of Czech livestock farms over 2011-16, a parametric Stochastic Frontier Analysis (SFA) "True" Random Effects model was used, assuming farms heterogeneity and time variant determinants of inefficiency. The farming methods and type of farming influences the TE significantly. For livestock farming, the average estimated TE is lower for organic than conventional farms, but for farms in the fourth quartile, which mainly contains dairy farms, there is no difference. The economic size of farms does not have a significant influence on the economic results in organic farming, unlike in conventional agriculture. Farms with growing TE show a decline in the ratio of operating subsidies to production, irrespective of their classification in quartiles by the TE estimate. Subsidies supporting investment and innovation activity positively influence overall competitiveness by increasing TE. Differences in the TE of organic versus conventional farms are related both to the different farming methods and to the production conditions, with less favoured area and agri-environmental payments compensating for these differences in conditions. These payments have a significant but negative impact on TE.

25. The discussion focused on the need to develop specific marketing chains and organisations for organic products and on the role and need for subsidies. Some countries, including the Czech Republic, provide organic support for the environmental benefits organic farming generates. A significant share of organic production is sold as conventional in the Czech Republic as in Latvia and Estonia, because the marketing chain not developed enough and getting organic certification is too complicated for some farmers. There is also pressure because the slaughterhouses specialised in organic livestock production are too few and distant. Another topic was about organic farms conversion back to the conventional farming, and how some criteria of the Czech Action plan for development of organic farming 2016–20 has been already fulfilled according to FADN indicators. New work in Germany found that out of ten farmers who convert to organic farming, two disappear, four reverse to conventional and only four continue. It may be because the conversion to organic farming is a last resort for smaller farmers.

Session 4. Current OECD work and future work for 2021-22

26. **Catherine Moreddu** provided an overview of OECD on-going work in areas of possible interest for network members, including taxation in agriculture, farmers' participation in value chains and the design of agri-environmental schemes. A report on taxation in agriculture is close to completion [TAD/CA/APM/WP(2018)30/REV2], and follow-up work to estimate the impact of tax measures on low income, income variability, or land transfer could be envisaged in collaboration with the network. As discussed at the May 2018 Network meeting, differences in farmers' marketing strategies could be investigated. Work to improve the design of agri-environmental schemes includes a review of the literature on best practices and choice experiment, simulation of alternative policy design using a farm-level model, and a pilot choice experiment survey to test farmers' preferences for alternative agri-environmental policy design.

27. In addition to the network project on farm performance dynamics and policy effect presented in Session 1, the Network may be interested in further work on the relationship between productivity and sustainability, tax impact, income and structural change issues, or risk management practices at the farm level. For example, OECD work foresees for 2020 a project on how resilience affects investment on the farm. Diversification of income sources, for example in the bioeconomy, is generally found good for resilience. Finance and savings are important too. Indicators of resilience and investment would be needed to

investigate whether resilience improves after investment. Indicators of diversity (Shannon index) could also be used.

28. Participants mentioned a number of topics they would be interested in. They include the growing complexity of farm operations, which affects taxation, income and policy efficiency; changes in labour and skills; changes in land markets (leasing contracts, increasing non-farm investors); migration and impact on productivity; financial aspects and credit markets, including tax regulations and investment; and more generally evaluation of public policy (as in the dynamics of performance project).

Session 5. Prices and income

29. **Hans Vrolijk**, Wageningen Economic Research in the Netherlands, presented the results of a paper[4] analysing the composition and volatility of the income and wealth of dairy farmers in the Netherlands using an unbalanced panel of dairy farms for 2001-17. Farmers' incomes show strong fluctuations over time due to fluctuations in prices and yields. Fluctuations in yields, caused by natural conditions such as drought, heavy rain, frost and animal diseases, result in even stronger price fluctuations. Fluctuations in farmers' incomes is a theme of interest for policy makers. The results confirm some existing findings on the stabilising impact of CAP subsidies and off-farm income on the total income of farm households. The paper extends the analysis of total income by exploring the impact of taxes on income volatility and the important role of savings in stabilising the consumption of farm households. Personal taxes do not result in a lower volatility of disposable income, however, it does have a clear effect on the levels of disposable income over time. The analysis show that farmers are well able to maintain their consumption levels with savings in good years and un-saving in more challenging years. Real problems occur with persistent low income levels.

30. The message to policy makers is that farming is a risky business, but in situations with efficient capital markets, farm-friendly tax regimes and risk-management by households that involves non-farm activities and income, farm households have several tools to cope with price and yield risks. Policy evaluations should take all these aspects into account.

31. Participants found the results very interesting and asked many questions. They enquired about possible structural changes in the time series. The abolition of the dairy quota is an obvious change, but while there is structural change in dairy farming, it is less than in other sectors. They remarked that off-farm labour income is limited in dairy farming, although there are other source of off-farm income, which can be used for risk management. Labour income includes the income from the spouse, but not from other family members. Taxation increases income volatility because of the time lag. It would be interesting to investigate the link between price risk and price support policy although price support for milk has been very low since the last reform. In the farm data, savings and consumption are not residuals, but observed information. The speaker also explained about incentives for farmers to give data, which include asking permission to use existing sources to collect data in order to minimise information directly asked to farmers, and providing benchmark reports to surveyed farmers on economic and environmental performance.

[4] Hans C.J. Vrolijk and Krijn J. Poppe (2019), "Impact of off-farm income and paid taxes on the composition and volatility of incomes and wealth of dairy farmers in the Netherlands", paper prepared for presentation at the 171th EAAE Seminar 'Measuring and evaluating farm income and well-being of farm families in Europe - Towards a shared and broader approach for analysis and policy design?', Taenikon, Switzerland, 5–6 September 2019, http://edepot.wur.nl/500004.

32. It would be interesting to have the same analysis for other sectors and other countries. It is increasingly difficult to match the farm and the family, which is why studying the complexity of farming would be interesting.

33. **Heiko Hansen**, Thünen Institute of Farm Economics in Germany, gave an overview of the relationship between factor income of farmland and its rental price in Germany. The motivation for this study comes from significantly increasing German land (rental) prices over the past years. Given that farmland is a key production factor in agriculture, there is a debate about the need of policy interventions. Drivers of these rapid developments on the land market are, among others, low interest rates, non-agricultural demand for land (e.g. settlement purposes), and more stringent fertiliser regulations. The analysis uses factor income of farmland as a proxy for the maximum willingness-ability to pay for this resource, based on the farmer's productive capacity. The study region is Lower Saxony in Germany with a focus on dairy farms. Lower Saxony is characterised by a high stocking density, on average, and key regions of dairy and granivores farms. It accounts for one-fifth of the milk produced, one-third of the pigs and laying hens, and two-thirds of the broilers kept in Germany.

34. The results of the analysis show strong fluctuations in factor income and steadily rising rental prices of farmland. Besides, a wide dispersion of factor income of farmland is found across dairy farms. The larger the dairy farm, the higher the factor income of farmland. Small dairy farms have a negative factor income on average (over the last ten years). The inter-quartile range of factor income of farmland has increased over the past ten years, i.e. the difference between the more successful and the less successful farms has become larger. During the period analysed the rental price of farmland (slightly) exceeded on average its factor income for dairy farms in Lower Saxony. However, the top 25% of these dairy farms generate a factor income of farmland that more than twice as high as its rental price. In general, land (rental) prices are shaped by the more successful (dairy) farms, while less successful or competitive farms disappear.

35. Non-agricultural income and/or farm household income can have a considerable impact on the ability and willingness to pay for farmland, but cannot be taken into account in the present analysis (due to the lack of data). It is to be noted that assumptions on the imputed costs for unpaid labour and equity capital are crucial and have a strong impact on the results presented. Finally, it should be pointed out that high and increasing land (rental) prices indicate a high profitability and competitiveness of the farming sector. Increasing land prices are, however, accompanied by higher costs for renting land, but its share in total farm expenditures is relatively low. Higher (rental) prices for farmland expand the assets of the farm as the value of owned land increases. This results in two opposing impacts on farms and structural change: 1) less successful farms have better/more attractive exit options, 2) increasing value of owned land improves access to finance.

36. Participants asked about whether land quality was considered, but this cannot be controlled for. Permanent grassland dominates but some areas also have good quality arable land. Land prices are affected by the demand for land, linked to limits on nitrogen applications per ha and more stringent farming requirements, but not so much by the price of concentrates. They also asked about differences between East and West Germany. One reason is that Eastern Germany has mainly arable farms, so there is no pressure on manure application. Excess manure influences land prices, as farmers have to pay for exporting manure in other regions. In the Netherlands, there is both a free and a regulated land market and the earning potential determines the rental price. It would be interesting to look at differences between old and new lease agreements, but this is not possible with FADN data. It could however be investigated using the EU Farm Structural Survey, which includes a question about new leases.

37. **Szilárd Keszthelyi,** National Agricultural Research and Innovation Centre (NAIK) in Hungary presented work supporting the Setting up a Farm Income Stabilisation Tool in Hungary. Under Article 39 of Council Regulation No 1305/2013, EU Member States can use Common Agricultural Policy (CAP) second pillar funds to support the implementation of an Income Stabilisation Tool. This tool provides compensation payment to farmers in the event of crises to stabilise farm income. Due to its complexity no Member State has introduced this system so far. Hungary has started to set up this tool with a view to introduce it in 2021.

38. Since available financial information differs between farms, three different methodologies have been developed. Holdings with double entry bookkeeping can directly provide their data to the system. For the other two groups, the National Agricultural Research and Innovation Centre will compile information on costs and subsidies. Detailed data on stocks and changing of stocks will also be collected. This procedure is needed to mitigate the risk of system evasion.

39. An income index will be applied for the assessment of changing the income on farm level (income/standard output). It does not aim to show the effect of changes in the production structure on the change of income. This index must be calculated for the reference period and the current year. If the current year income is 30% lower than the reference income, then the Hungarian Treasury can intervene and reimburse 70% of the loss. Some subsidies are excluded to avoid over compensation, e.g. compensation payments, exceptional grants and investment subsidies, but this is still under discussion.

40. Participants asked whether the tool would remain available in future CAP programming periods, which seems to be the case, and whether other Member States envisage to implement a similar tool (Spain and Italy were mentioned). They also enquired about the operation of the tool. For example, whether farmers can enter the system at any time or only at the beginning of the programming period; How do you ensure farmers use best practices? Is the budget open ended? Some suggested that building self-managed tools, like taxation, would be easier than designing an income stabilisation tool. It was also suggested that the system is likely to be pro-cyclical because of the payment delay. Finally, the persistence of farmers that do not establish farm account to support their decisions was questioned. While there are other risk management tools such as crop insurance, the government wants to implement a more general system. The banks would provide loans more easily if they know payments will arrive later.

Summary of next steps

41. The OECD Secretariat will undertake the following:

- Send the Summary Record to participants for comments. Contributions by speakers are welcome.
- Prepare a written report including the Summary Record, Agenda and List of participants for the meeting of the Working Party on Agricultural Policies and Markets (APM) on 3-5 December 2019.
- Organise the next meeting of the Network in May 2020.

42. Participants were invited to:

- Continue to liaise with Johannes Sauer regarding the project on analysing drivers and dynamics of farm performance.
- Continue to suggest farm-level work of interest for their government.

43. Concerning the website:

- The final Agendas, Lists of Participants, and Summary Records will be posted on the website: www.oecd.org/agriculture/farm-level-analysis-network/.
- Presentations made at the meeting will be posted if the authors send a version to be shared.