



MIDAS includes the descriptions of models in use by the Commission in support to the policy cycle. MIDAS is developed and managed by the **Competence Centre on Modelling** of the European Commission.

Find out more at https://ec.europa.eu/knowledge4policy/modelling_en

Contact: EU-MIDAS@ec.europa.eu

Factsheet

SWD/2018/289 final

Impact assessment accompanying the document Proposal for a Regulation of the European Parliament and the Council on: the European Social Fund Plus (ESF+) and; Proposal for a Regulation of the European Parliament and the Council on: the European Globalisation Adjustment Fund (EGF)

Supporting model(s)

RHOMOLO

Impact assessment SWD/2018/289 final

Fact sheet on model contributions

Source: Commission modelling inventory and knowledge management system (MIDAS)

Date of Report Generation: 12/10/2020

© European Union, 2020

The Commission's reuse policy is implemented by the [Commission Decision of 12 December 2011 on the reuse of Commission documents](#). Unless otherwise indicated (e.g. in individual copyright notices), content owned by the EU on this website is licensed under the [Creative Commons Attribution 4.0 International \(CC BY 4.0\) licence](#). This means that reuse is allowed, provided appropriate credit is given and changes are indicated. You may be required to clear additional rights if a specific content depicts identifiable private individuals or includes third-party works. To use or reproduce content that is not owned by the EU, you may need to seek permission directly from the rightholders. Software or documents covered by industrial property rights, such as patents, trade marks, registered designs, logos and names, are excluded from the Commission's reuse policy and are not licensed to you.

Disclaimer: The Commission accepts no responsibility or liability whatsoever with regard to any and all information made available on or accessible through MIDAS website. The information, including but not limited to models, impact assessments, models' input and output data, and metadata, modelling exercises and policy contributions, is of a general nature only and is not intended to address the specific circumstances of any particular individual or entity, and may not be regarded as comprehensive, complete, accurate or up-to-date. The Commission furthermore does not assume any responsibility for content of any external websites to which links maybe provided on this website. Any and all information provided may not be regarded as professional or legal advice. Information available through the website may not be referenced as officially adopted text of European Union regulatory or policy documents or sources. Their authentic versions can only be accessed through the Official Journal of the European Union (the printed edition or, since 1 July 2013, the electronic edition on the EUR-Lex website).

Overview

Title

Impact assessment accompanying the document Proposal for a Regulation of the European Parliament and the Council on: the European Social Fund Plus (ESF+) and; Proposal for a Regulation of the European Parliament and the Council on: the European Globalisation Adjustment Fund (EGF)

Document ID

SWD/2018/289 final

Year of publication

2018

Led by

EMPL

Model(s) used

RHOMOLO

RHOMOLO

Full title

Regional Holistic Model

Run for this impact assessment by

European Commission

Contributed to

Baseline and assessment of policy options

Helped to assess the following impacts

<i>Impact area</i>	<i>Impact category</i>	<i>Impact subcategory</i>
Economic impacts	Innovation and research	Innovation for productivity/resource efficiency
Economic impacts	Specific regions or sectors	Impact on regions
Economic impacts	Macroeconomic environment	Investments and functioning of markets
Social	Employment	Impact on jobs
Social	Employment	Impact on jobs in specific sectors, professions, regions or countries
Social	Employment	Indirect effects on employment levels
Social	Employment	Factors preventing or enhancing the potential to create jobs or prevent job losses
Social	Education and educational systems	Level of education and training outcomes

RHOMOLO - Regional Holistic Model

Fact sheet

Source: Commission modelling inventory and knowledge management system (MIDAS)

Date of Report Generation: 12/10/2020

Overview

Acronym RHOMOLO

Full title Regional Holistic Model

Main purpose:

RHOMOLO is a model used to simulate the impact of EU policies at the regional level (NUTS 2), providing policy support in the evaluation of investments, reforms, and structural changes in the economy.

Summary

RHOMOLO is a recursively dynamic spatial computable general equilibrium (spatial CGE) model used to simulate the sector-, region-, and time-specific impact of EU policies and to provide support to policy makers in the evaluation of investments, reforms, and structural changes in the economy.

The current version of RHOMOLO (v3) covers 267 EU NUTS 2 regions and one residual Rest of the World region, disaggregating their economies into ten NACE rev.2 sectors entailing a constant effort on data updating and maintenance. All the monetary transactions in the economy are included in the model resulting from agents taking optimising decisions. Goods and services are consumed by households, governments, and firms, and are produced in markets that can be either perfectly or imperfectly competitive. Spatial interactions between regions are captured through costly trade matrices of goods and services and factor mobility through migration and investments. This makes RHOMOLO particularly well suited for analysing policies related to investments in human capital, transport infrastructure, and innovation.

The RHOMOLO model has been developed by the JRC in collaboration with the Directorate-General for Regional and Urban Policy (DG REGIO). The explicitly modelled spatial dimension makes it a unique tool for territorial impact assessment.

An up-to-date list of policy applications and publications of the model [can be found here](#).

The latest RHOMOLO Newsletter containing the most recent activities of [the Regional Economic Modelling group](#) can be found [here](#).

The RHOMOLO webtool (a simplified version of the model to carry out some simple policy exercises) [can be found here](#). Please note that the webtool should not be used for real policy analysis, only the fully-fledged RHOMOLO model can be used for that purpose.

Keywords

Dynamic spatial general equilibrium model , endogenous growth , innovation , human capital , econometrically estimated parameters , macroeconomic model , spatial computable general equilibrium

Model category (thematic)

Commission modelling inventory and knowledge management system (MIDAS)

Report generation date 12/10/2020

Economy

Model home page

<https://ec.europa.eu/jrc/en/rhomolo>

Ownership & license

Ownership

Sole copyright [European Union]

Ownership details

A prototype was developed by an external consultant in 2009.

Licence type

Non-Free Software licence. The license has one or more of the following restrictions: it prohibits creation of derivative works; it prohibits commercial use; it obliges to share the licensed or derivative works on the same conditions.

Details

RHOMOLO structure and approach

In the tradition of Computable General Equilibrium (CGE) models, RHOMOLO relies on an equilibrium framework à la Arrow-Debreu where supply and demand depend on the system of prices. Policies are introduced as shocks. After a shock, the system moves to a new equilibrium with adjustments driven by optimal supply and demand behaviours. RHOMOLO, as all CGE models, therefore provides an evaluation of the interaction effects between all agents through markets, imposing full system consistency. The type of analysis is a scenario analysis, in which the results of simulations including policy shocks are compared to a baseline scenario with no shocks.

Given the regional focus of RHOMOLO, particular attention is devoted to the explicit modelling of spatial linkages, interactions, and spillovers between regional economies. For this reason, models such as RHOMOLO are referred to as Spatial Computable General Equilibrium (SCGE) models.

Each region is inhabited by households aggregated into a representative agent with preferences characterised by love for variety. Households derive income from labour (in the form of wages), physical capital (profits and rents), and other financial assets, as well as from government transfers (both national and regional). Factor mobility can be either switched off or on depending on the needs of the analysis to be carried out. The income of households is spent on savings, consumption, and taxes.

Firms in each region produce goods that are sold in all regions and consumed by households and governments. Other firms --either in the same or in other sectors-- can also use such goods as inputs in their production processes. Transport costs for trade between and within regions are assumed to be of the iceberg type and are sector- and region-pair specific. The market structures of the industrial sectors in each region can be modelled as either perfectly competitive or imperfectly competitive (the latter can be characterised as monopolistic competition, Cournot oligopoly, or Bertrand oligopoly). The number of firms in each sector and region is empirically estimated through the national Herfindahl indices, assuming that all the firms within one region share the same technology. Given their higher weight in the price index, firms with higher market shares are able to extract higher mark-ups from consumers than their competitors, and, since market shares vary by destination market, also mark-ups vary by destination market.

Moreover, a simplified version of RHOMOLO equivalent to the Leontief Input-Output model is available: RHOMOLO-IO is a linear version of the model capable of delivering a multipliers' analysis at a sectoral level potentially more detailed than that of the full RHOMOLO model.

Input and parametrization

RHOMOLO requires a number of calibrated inputs and exogenous parameters in order to function. For example, the interest rate is set to 0.04 and the rate of depreciation of private capital is set to 0.15. More in general, the parameters related to the elasticities of substitution both on the

consumer side and on the producer side are either based on similar models or derived from the econometric literature.

More information on model inputs and parametrisation is available in section 4 "Data, calibration and elasticities" of the latest model description written by Lecca et al. (2018) and [available here](#).

Main output

All RHOMOLO output variables are produced by region, sector and year.

- Households-related output variables:
 - Factor supply by household (real); Income of household (value); Taxes paid on income by household (value); Savings of household (value); Aggregate consumption of household (real); Price of aggregate consumption of household; Consumption of each good by household (real); Transfers from household to rest of the world; Net disposable income of household.
- Firms-related output variables:
 - Price of exports; Lerner index of monopoly power; Market share; Average sales price; Average production cost; Profits (value); Fixed cost of production (real); Marginal cost of production; Aggregate intermediate input (real); Aggregate input of primary factor (real); Price of aggregate intermediate input; Intermediate demand for each good (real); Total factor productivity (index); Aggregate labour-factor demand; Price of aggregate labour-factor demand; Price of aggregate input of primary factor; Demand of each factor; Taxes paid on demand of each factor; Taxes paid on sales.
- Investment-related output variables:
 - Income of investor (value); Aggregate investment (real); Investment of household (value); Investment of Government (value); Price of investment.
- Government-related output variables:
 - Factor supply by Government (real); Income of Government; Aggregate consumption of Government (real); Price of aggregate consumption of Government; Consumption of each good by Government (real); Transfers from Government to household (value); Savings of Government (value).
- Import-related output variables:
 - Demand for composite of each good (real); Price of each composite good's demand; Exports (real, single firm); Price of the rest of the world.
- Other variables:

- Price of each factor; Unemployment rate of each factor; Sales of each goods (real); Number of firms in each sector; Price of national R&D services; National knowledge capital (index).

Spatial - temporal extent

The output has the following spatial-temporal resolution and extent:

Parameter	Description
Spatial Extent / Country Coverage	NUTS2 regions, ten economic sectors, 3 skill/education levels (low, medium, high), EU28 regions
(Spatial) resolution	NUTS2 (NUTS1, country-level and EU28-level results are also available depending on the type of analysis)
Temporal extent	up to 2050
Temporal resolution	annual

Quality & transparency

Quality

Question	Answer	Details
Models are by definition affected by uncertainties (in input data, input parameters, scenario definitions, etc.). Have the model uncertainties been quantified? Are uncertainties accounted for in your simulations?	not_applicable	The type of analysis carried out with RHOMOLO, that is scenario analysis, can take care of uncertainties by simulating several alternative scenarios to be compared with the baseline one.
Sensitivity analysis helps identifying the uncertain inputs mostly responsible for the uncertainty in the model responses. Has the model undergone sensitivity analysis?	yes	A member of the Regional Economic Modelling team is in charge of carrying out sensitivity analysis for RHOMOLO. For more details see Diukanova (2018).
Has the model undergone external peer review by a panel of experts, or have results been published in peer-reviewed journals?	yes	In 2017 a panel of experts evaluated RHOMOLO. The report Boeters, S., Hordijk, L., Korzhenevych, A., Przeor, M., Swales, K., Vandyck, T., Varga, A., Varga, J., and Wolski, M (2017). Review of the RHOMOLO model, is available at: https://ec.europa.eu/jrc/sites/jrcsh/files/review_of_the_rhomolo_model_final.pdf
Has model validation been done? Have model predictions been confronted with observed data (ex-post)?	not_applicable	Model projections cannot and should not be confronted with observed data because RHOMOLO is not a forecast model.

References related to external peer-review and publication in scientific journals:

- Brandsma A, Kancs D, Persyn D. Modelling Migration and Regional Labour Markets: An Application of the New Economic Geography Model RHOMOLO. EUR EUR 25956. Luxembourg (Luxembourg): Publications Office of the European Union; 2013. JRC80825
- Brandsma, A., Kancs, d'Artis, Monfort, P., & Rillaers, A. (2015). RHOMOLO: A dynamic spatial general equilibrium model for assessing the impact of cohesion policy. *Papers in Regional Science*, 94, S197–S221. doi:10.1111/pirs.12162
- Brandsma, A., & Kancs, D. (2013). RHOMOLO: A Dynamic General Equilibrium Modelling Approach to the Evaluation of the European Union's R&D Policies. *Regional Studies*, 49(8), 1340–1359. doi:10.1080/00343404.2015.1034665
- Brandsma A, Di Comite F, Diukanova O, Kancs D, Lopez Rodriguez J, Persyn D, Potters L. Assessing Policy Options for the EU Cohesion Policy 2014-2020. *INVESTIGACIONES REGIONALES* 29; 2014. p. 17-46. JRC91374
- Di Comite, F., Kancs, d'Artis, & Lecca, P. (2017). Modeling agglomeration and dispersion in space: The role of labor migration, capital mobility and vertical linkages. *Review of International Economics*, 26(3), 555–577. doi:10.1111/roie.12313
- Kancs, d'Artis, & Lecca, P. (2018). Long-term social, economic and fiscal effects of immigration into the EU: The role of the integration policy. *The World Economy*, 41(10), 2599–2630. doi:10.1111/twec.12637

- Christensen, M., Weiers, G. and Wolski, M., The 2019 assessment of the macroeconomic effects of the European Fund for Strategic Investments with the RHOMOLO-EIB model, INVESTIGACIONES REGIONALES, 2019, ISSN 1695-7253 (online), 2019/3 (45), p. 5-15, JRC119227.
- Lecca, P., Christensen, M., Conte, A., Mandras, G. and Salotti, S., Upward Pressure on Wages and the Interregional Trade Spillover Effects under Demand-Side Shocks, PAPERS IN REGIONAL SCIENCE, ISSN 1056-8190 (online), 99 (1), 2020, p. 165-182, JRC116572.
- Persyn, D., Díaz-Lanchas, J., & Barbero, J. (2020). Estimating road transport costs between and within European Union regions. Transport Policy. doi:10.1016/j.tranpol.2020.04.006

Transparency

Question	Answer	Details
Is the model underlying database (i.e. the database the model runs are based on) publicly available?	not_applicable	As of June 2020, work is in progress to update the base year to 2015. The plan is to make the new dataset publicly available together with the data of the FIGARO project (Spring 2021).
Can model outputs be made publicly available?	yes	Model outputs are publicly available through the publications made by the members of the Regional Economic Modelling team. Full results are available upon request.
Is the model transparently documented (including underlying data, assumptions and equations, architecture, results) and are these documents available to the general public?	yes	All the model equations are transparently documented in Lecca et al. (2018) "RHOMOLO V3: A spatial modelling framework". As of June 2020, work is in progress to update the base year to 2015. The plan is to make the new dataset publicly available together with the data of the FIGARO project (Spring 2021).
Is the model source code publicly accessible or open for inspection?	no	The model code is not publicly available and there are no plans to make it so.

References related to documentation:

- Lecca, P., Barbero Jimenez, J., Christensen, M., Conte, A., Di Comitè, F., Diaz Lanchas, J., Diukanova, O., Mandras, G., Persyn, D. and Sakkas, S., RHOMOLO V3: A Spatial Modelling Framework , EUR 29229 EN, Publications Office of the European Union, Luxembourg, 2018, ISBN 978-92-79-85886-4, doi:10.2760/671622, JRC111861.
- Diukanova, O., Multivariate Sensitivity Analysis with a Very Large CGE Model, EUR 29148 EN, Publications Office of the European Union, Luxembourg, 2018, ISBN 978-92-79-81031-2, doi:10.2760/046529, JRC111144.

The model's policy relevance and intended role in the policy cycle

The model is designed to contribute to the following policy areas

- Institutional affairs
- Education and training
- Economy, finance and the euro
- Taxation
- Employment and social affairs
- Regional policy
- Transport
- Business and industry
- Research and innovation
- Single market
- Trade

The model is designed to contribute to the following phases of the policy cycle

- Formulation
- Evaluation

The model's potential

The RHOMOLO model is designed for policy impact assessment. The explicitly modelled spatial dimension at the NUTS2 regional level makes it a unique tool for territorial impact assessment. Spatial interactions between regions are captured through trade of goods and services (which is subject to trade costs), income flows, factor mobility and knowledge spillovers, making RHOMOLO particularly well suited for simulating human capital, transport infrastructure, R&D and innovation policies.

RHOMOLO has been used for the impact assessment of the European Regional Development Fund (ERDF), Horizon Europe, the European Social Fund (ESF), and the portfolio of the European Investment Bank (including EFSI that is the first pillar of the Investment Plan for Europe). Also, the model has been recently used to evaluate the economic impact of the third pillar of the Investment Plan for Europe including the legislative proposals related to the Capital Markets Union, the Single Market Strategy, the Energy Union, and the Digital Single Market.

Moreover, RHOMOLO is used for the evaluation of specific investment projects and other reforms depending on the requests made by Member States, regional authorities, and interested DGs.

Previous use of the model in ex-ante impact assessments of the European Commission

In the Year	RHOMOLO contributed to the Impact assessment called	Led by	By providing input to the	The model was run by	Details of the contribution
2018	Impact assessment accompanying the document Proposals for a Regulation of the European Parliament and of the Council on: the European Regional Development Fund and on the Cohesion Fund and; Proposal for a Regulation of the European Parliament and the Council on: a mechanism to resolve legal and administrative obstacles in a cross-border context and; Proposal for a Regulation of the European Parliament and the Council on: specific provisions for the European territorial cooperation goal (Interreg) supported by the European Regional Development Fund and external financing instruments SWD/2018/282 final	REGIO	Baseline and assessment of policy options	European Commission	The model helped to assess the following impacts: - Investment cycle - Affects on individual Member States - Stimulation of research and development - Innovation for productivity/resource efficiency - Impact on regions - Disproportionately affected region or sector - Economic growth and employment
2018	Impact assessment accompanying the document Proposal for a Regulation of the European Parliament and the Council on: the European Social Fund Plus (ESF+) and; Proposal for a Regulation of the European Parliament and the Council on: the European Globalisation Adjustment Fund (EGF) SWD/2018/289 final	EMPL	Baseline and assessment of policy options	European Commission	The model helped to assess the following impacts: - Innovation for productivity/resource efficiency - Impact on regions - Investments and functioning of markets - Impact on jobs - Impact on jobs in specific sectors, professions, regions or countries - Indirect effects on employment levels - Factors preventing or enhancing the potential to create jobs or prevent job losses - Level of education and training outcomes
2018	Impact assessment accompanying the document Proposal for a Regulation of the European Parliament and the Council on: establishing Horizon Europe - the Framework Programme for Research and Innovation, laying down its rules for participation and dissemination and; Proposal for a Decision of the European Parliament and the Council on: establishing the specific programme implementing Horizon Europe - the Framework Programme for Research and Innovation and; Proposal for a Regulation of the European Parliament and the Council on: establishing the Research and Training	RTD	Baseline and assessment of policy options	European Commission	The model helped to assess the following impacts: - Investment cycle - Affects on individual Member States - Stimulation of research and development - Innovation for productivity/resource efficiency - Impact on regions - Disproportionately affected region or sector - Economic growth and employment

	Programme of the European Atomic Energy Community for the period 2021-2025 complementing Horizon Europe - the Framework Programme for Research and Innovation				
	SWD/2018/307 final				
2016	Impact assessment accompanying the document Proposal for a Directive of the European Parliament and of the Council: amending Directive 2012/27/EU on Energy Efficiency	ENER	Problem definition	European Commission	Evaluation of energy costs at regional level

Bibliographic references

- Persyn, D., Díaz-Lanchas, J., & Barbero, J. (2020). Estimating road transport costs between and within European Union regions. *Transport Policy*. doi:10.1016/j.tranpol.2020.04.006
- Lecca, P., Christensen, M., Conte, A., Mandras, G. and Salotti, S., *Upward Pressure on Wages and the Interregional Trade Spillover Effects under Demand-Side Shocks*, PAPERS IN REGIONAL SCIENCE, ISSN 1056-8190 (online), 99 (1), 2020, p. 165-182, JRC116572.
- Christensen, M., Weiers, G. and Wolski, M., *The 2019 assessment of the macroeconomic effects of the European Fund for Strategic Investments with the RHOMOLO-EIB model*, INVESTIGACIONES REGIONALES, 2019, ISSN 1695-7253 (online), 2019/3 (45), p. 5-15, JRC119227.
- Lecca, P., Barbero Jimenez, J., Christensen, M., Conte, A., Di Comite, F., Diaz Lanchas, J., Diukanova, O., Mandras, G., Persyn, D. and Sakkas, S., *RHOMOLO V3: A Spatial Modelling Framework*, EUR 29229 EN, Publications Office of the European Union, Luxembourg, 2018, ISBN 978-92-79-85886-4, doi:10.2760/671622, JRC111861.
- Alvarez Martinez, M. and Lopez Cobo, M., *WIOD SAMs adjusted with Eurostat data for the EU-27*, ECONOMIC SYSTEMS RESEARCH, ISSN 0953-5314, 30 (4), 2018, p. 521-544, JRC103968.
- Di Comite, F., Diukanova, O., Mandras, G. and Gomez Prieto, J., *The RHOMOLO economic impact assessment of the Randl and Low-Carbon ERDF Investment programme in Apulia, Italy*, European Commission, 2018, JRC114302.
- Christensen, M., Conte, A., Di Pietro, F., Lecca, P., Mandras, G. and Salotti, S., *The third pillar of the Investment Plan for Europe: An impact assessment using the RHOMOLO model*, European Commission, 2018, JRC113746.
- Christensen, M., *Assessing the regional socio-economic impact of the European Randl programme*, European Commission, 2018, JRC114347.
- Conte, A., Christensen, M. and Salotti, S., *SWD(2018) 307 final - COMMISSION STAFF WORKING DOCUMENT - Impact Assessment Accompanying the document Proposals for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL establishing Horizon Europe – the Framework Programme for Research and Innovation, laying down its rules for participation and dissemination DECISION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on establishing the specific programme implementing Horizon Europe – the Framework Programme for Research and Innovation COUNCIL REGULATION establishing the Research and Training Programme of the European Atomic Energy Community for the period*

2021-2025 complementing Horizon Europe – the Framework Programme for Research and Innovation, 2018, JRC114489.

- Conte, A., Lecca, P. and Salotti, S., SWD(2018) 282 final - COMMISSION STAFF WORKING DOCUMENT - *Impact Assessment Accompanying the document Proposals for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on the European Regional Development Fund and on the Cohesion Fund on a mechanism to resolve legal and administrative obstacles in a cross-border context on specific provisions for the European territorial cooperation goal (Interreg) supported by the European Regional Development Fund and external financing instruments*, 2018, JRC114490.
- Conte, A., Diukanova, O., Christensen, M., Lecca, P. and Salotti, S., European Commission - *Press release IP/18/4469 Juncker Plan exceeds original €315 billion investment target*, 2018, JRC114491.
- Conte, A., Sakkas, S., Salotti, S. and Mandras, G., SWD(2018) 289 final - COMMISSION STAFF WORKING DOCUMENT - *IMPACT ASSESSMENT Accompanying the document Proposal for a Regulation of the European Parliament and the Council on the European Social Fund Plus (ESF+) Proposal for a Regulation of the European Parliament and the Council on the European Globalisation Adjustment Fund (EGF)*, 2018, JRC114488.
- Conte, A., Salotti, S., Lecca, P., Christensen, M., Di Pietro, F. and Mandras, G., COM(2018) 771 final *COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN CENTRAL BANK, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE, THE COMMITTEE OF THE REGIONS AND THE EUROPEAN INVESTMENT BANK Investment Plan for Europe: stock-taking and next steps*, 2018, JRC114493.
- Lecca, P., Persyn, D., Conte, A. and Salotti, S., *Cohesion Policy 2007-2015: The RHOMOLO ex-post assessment*, 2018, JRC114185.
- Christensen, M., Conte, A., Di Pietro, F., Lecca, P., Mandras, G. and Salotti, S., *The third pillar of the Investment Plan for Europe: The RHOMOLO assessment*, 2018, JRC114088.
- Sakkas, S., Conte, A. and Salotti, S., *The impact of the European Social Fund: The RHOMOLO assessment*, 2018, JRC113328.
- Di Comite, F., Lecca, P., Monfort, P., Persyn, D. and Piculescu, V., *The Impact of Cohesion Policy 2007-2015 in EU regions: Simulations with the RHOMOLO Interregional Dynamic General Equilibrium Model*, European Commission, 2018, JRC114044.
- Kancs, d'Artis, & Lecca, P. (2018). *Long-term social, economic and fiscal effects of immigration into the EU: The role of the integration policy*. *The World Economy*, 41(10), 2599–2630. doi:10.1111/twec.12637

- *Diukanova, O., Multivariate Sensitivity Analysis with a Very Large CGE Model, EUR 29148 EN, Publications Office of the European Union, Luxembourg, 2018, ISBN 978-92-79-81031-2, doi:10.2760/046529, JRC111144.*
- *Conte, A., EIB Group macroeconomic impact assessment, European Commission, 2017, JRC109996.*
- *Di Comite, F., Kancs, d'Artis, & Lecca, P. (2017). Modeling agglomeration and dispersion in space: The role of labor migration, capital mobility and vertical linkages. Review of International Economics, 26(3), 555–577. doi:10.1111/roie.12313*
- *Di Comite F, Kancs D. Macro-Economic Models for RandD and Innovation Policies. EUR 27080. Luxembourg (Luxembourg): Publications Office of the European Union; 2015. JRC94323*
- *Di Comite F, Kancs D, Torfs W. Macroeconomic Modelling of RandD and Innovation Policies: An application of RHOMOLO and QUEST. EUR 27084. Luxembourg (Luxembourg): Publications Office of the European Union; 2015. JRC89558*
- *Brandsma A, Kancs D. RHOMOLO: A Dynamic General Equilibrium Modelling Approach to the Evaluation of the EU's RandD Policies. EUR 27318. Luxembourg (Luxembourg): Publications Office of the European Union; 2015. JRC95421*
- *Brandsma, A., Kancs, d'Artis, Monfort, P., & Rillaers, A. (2015). RHOMOLO: A dynamic spatial general equilibrium model for assessing the impact of cohesion policy. Papers in Regional Science, 94, S197–S221. doi:10.1111/pirs.12162*
- *Brandsma A, Di Comite F, Diukanova O, Kancs D, Lopez Rodriguez J, Persyn D, Potters L. Assessing Policy Options for the EU Cohesion Policy 2014-2020. INVESTIGACIONES REGIONALES 29; 2014. p. 17-46. JRC91374*
- *Persyn D, Torfs W, Kancs D. Modelling regional labour market dynamics: Participation, employment and migration decisions in a spatial CGE model for the EU. EUR 26979. Luxembourg (Luxembourg): Publications Office of the European Union; 2014. JRC89537*
- *Di Comite F, Kancs D. Modelling of Agglomeration and Dispersion in RHOMOLO. EUR 26352. Luxembourg (Luxembourg): Publications Office of the European Union; 2013. JRC81349*
- *Brandsma A, Kancs D, Monfort P, Rillaers A. Rhomolo: A Dynamic Spatial General Equilibrium Model for Assessing the Impact of Cohesion Policy. EUR 25957. Luxembourg (Luxembourg): Publications Office of the European Union; 2013. JRC81133*
- *Potters L, Conte A, Kancs D, Thissen M. Data Needs for Regional Modelling: A Description of the Data used in Support of RHOMOLO . EUR EUR 25955. Luxembourg (Luxembourg): Publications Office of the European Union; 2013. JRC80845*

- *Brandsma, A., & Kancs, D. (2013). RHOMOLO: A Dynamic General Equilibrium Modelling Approach to the Evaluation of the European Union's R&D Policies. Regional Studies, 49(8), 1340–1359. doi:10.1080/00343404.2015.1034665*
- *Brandsma A, Kancs D, Persyn D. Modelling Migration and Regional Labour Markets: An Application of the New Economic Geography Model RHOMOLO. EUR EUR 25956. Luxembourg (Luxembourg): Publications Office of the European Union; 2013. JRC80825*