TINFORGE – Trade in the INterindustry FORecasting GErmany Model

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Abstract

INFORGE (INterindustry FORecasting GErmany) is a national macro-econometric input-output model for Germany. It is used by public and private institutes for impact analysis and forecasting of economic tasks.

Usually, in national models international trade is treated as exogenous. In early versions of INFORGE and in many other national models, foreign trade is an exogenous variable. The problem with this approach is that impacts of changes in the world economy (e. g. competitive advantages) and their rebound effects cannot be captured.

In later versions of INFORGE, foreign trade was derived from the global model GINFORS (Global INterindustry FORcasting System). The core of GINFORS is a bilateral trade module that comprises 50 countries plus two regions and their import and export goods as well as export and import prices. The economies of major German trade partners are modeled in detail using the input-output framework and additional economic data such as labour market and price data. Rebound effects were taken into account but updating the underlying data base and the evaluation of the complex model structure were time-consuming.

The most recent version of INFORGE is linked to the bilateral trade model TINFORGE. TINFORGE does not incorporate input-output-models but includes 60 macroeconomic country models (including a macroeconomic model for Germany) that are linked via bilateral trade. Each country model includes the demand-side components of GDP (consumption, investments etc.) as well as wages, employment, prices (e. g. export and import prices, consumer prices) and population by age groups. Imports are estimated with production in each country model and weighted sales prices of the exporting countries. The imports of each country are a share of total exports of the trade partners. Of course, the sum of all country imports is equal to the sum of all exports. The main advantages of this approach are that TINFORGE can be updated more quickly than the GINFORS model and that trade results for Germany now can be easily integrated into the national input-output model INFORGE.

In this paper, the general modeling approach of TINFORGE will be illustrated.

Keywords: forecasting, international trade

JEL classification: F17 - Trade Forecasting and Simulation, F43 – Economic growth of Open Economies

CONTENT

1 Introduction

INFORGE is a macro-econometric input-output model for Germany. For many years it is used for forecasting and scenario analysis in the fields of labour market (Maier, Mönnig, Zika 2013, 2015), industry analysis (Mönnig 2014, Bieritz 2013) and energy (GWS, EWI, Prognos 2014, Lutz et al. 2014).

INFORGE is a national model with exports given exogenously. In very early versions, world trade was derived from the INFORUM model system (http://www.inforum.umd.edu). Later, world trade was taken from the world model GINFORS (Lutz, Meyer, Jungnitz 2008, Meyer et al. 2013). GINFORS connects sophisticated country models which include IO tables (if available) and price mechanisms via trade. The advantage of this modelling approach is that direct, indirect and induced effects can be measured. Nevertheless, data processing, model maintenance and evaluation are very time consuming. Furthermore, the underlying datasets for foreign trade differ and cannot be easily linked to each other. INFORGE uses the bilateral trade matrices from the Organisation for Economic Cooperation and Development (OCED) while the current GINFORS version uses World Input Output Database (WIOD) data. Another aspect is that the updating procedures of INFORGE and GINFORS can hardly be synchronized in a timely manner.

Thus, an easy and satisfactory solution for forecasting foreign trade for INFORGE was needed. Initially, German exports relied on third party projections without any feedback effects. This approach has proven to be less suitable due to neglecting first and second round effects of world trade.

The TINFORGE model has been developed to replace the third party projections by a dynamic world trade model based on OECD data. This model includes 60 macroeconomic country models – without any industry detail – that are linked via trade. TINFORGE can be easily updated and synchronized with the national IO model INFORGE. The initial version of TINFORGE has been further improved and extended (Wolter et al. 2014, Mönnig et al. 2014):

[1] World trade has been extended to distinguish between 31 traded goods, and

[2] Trade shares has been endogenized.

This paper illustrates the current state of the modeling approach of TINFORGE.

2 TINFORGE Modelling Approach - Overview

TINFORGE consists of two parts: individual country models and a world trade model. The country models are linked via a bilateral trade.

The world trade module links 80 countries (including rest of world and world) and 31 traded goods (including total). For 60 out of these 80 countries, individual macro-economic country models exist that determine GDP growth by the expenditure approach.

TINFORGE country models include two important multipliers: income multiplier and investment accelerator. Both multipliers imply a perpetual growth path for all economies, albeit to different extent. The only factor having the ability to slow down the build-in growth process is population. If the level of unemployment reaches two percent, the economy has reached the stage of full employment. Only frictional unemployment persists. Growing demand cannot be satisfied due to scarcity in labour force. Technological progress and population dynamics are not determined endogenously. Therefore missing labour force cannot be substituted by technological progress or economic migration. In most cases, full employment cannot be observed. For the current simulation horizon (up to 2035), the multipliers hold and work in full.

The general construction of TINFORGE follows a pull-approach, whereby export demand of each country is determined by the import demand of each country's trading partners. Structural information only exists for world trade: export and import demand are distinguished by 31 product types. Within the country models, export and import demand are only available in total. Each country is price taker for imports, price setter for exports and offers export goods on the world market.

The model equations are solved yearly until 2035. As a result, TINFORGE produces growth paths for 80 countries and regions.

In the following, the two TINFORGE model parts are separately discussed.

2.1 Country models

In TINFORGE, 60 countries (see Table 1) are described by a purely macro-economic set of variables. The data set comprises GDP components (e. g. consumption, investment), labour market data (labour force, wages, unemployed and employed persons) and population. Data stem from Eurostat, International Labour Organization, Worldbank, OECD and United Nations.

Table 1: List of country models

1	AT	11	EE	21	HU	31	CA	41	NZ	51	ID
2	FR	12	IE	22	CZ	32	CL	42	CN	52	MY
3	IT	13	LU	23	DK	33	JP	43	SA	53	SG
4	DE	14	SK	24	PL	34	KR	44	ZA	54	TH
5	GR	15	SI	25	SE	35	NO	45	TR	55	VN
6	ES	16	LT	26	BG	36	MX	46	HK	56	PH
7	NL	17	CY	27	RO	37	BR	47	AR	57	DZ
8	BE	18	LV	28	HR	38	CH	48	RU	58	KW
9	FI	19	MT	29	US	39	IL	49	UA	59	IR
10	PT	20	GB	30	AU	40	IS	50	IN	60	TW

Source: *own illustration*
colour schema explanations: light blue shaded cells – EU countries with €; blue shaded cells – EU countries without €; dark blue shaded cells – other countries

All countries have the same data structure and they all lack structural information. All models include prices whereby all variables are disclosed in real and nominal terms. This allows controlling for inflationary processes in the observed economies. Figure 1 gives a schematic about the principle structure of each country model. As described further below, it is noticeable that demography has a major impact on the outcome of the model. Demography does not only describe the upper bound of labour force potential, it also defines the overall growth potential of an economy.

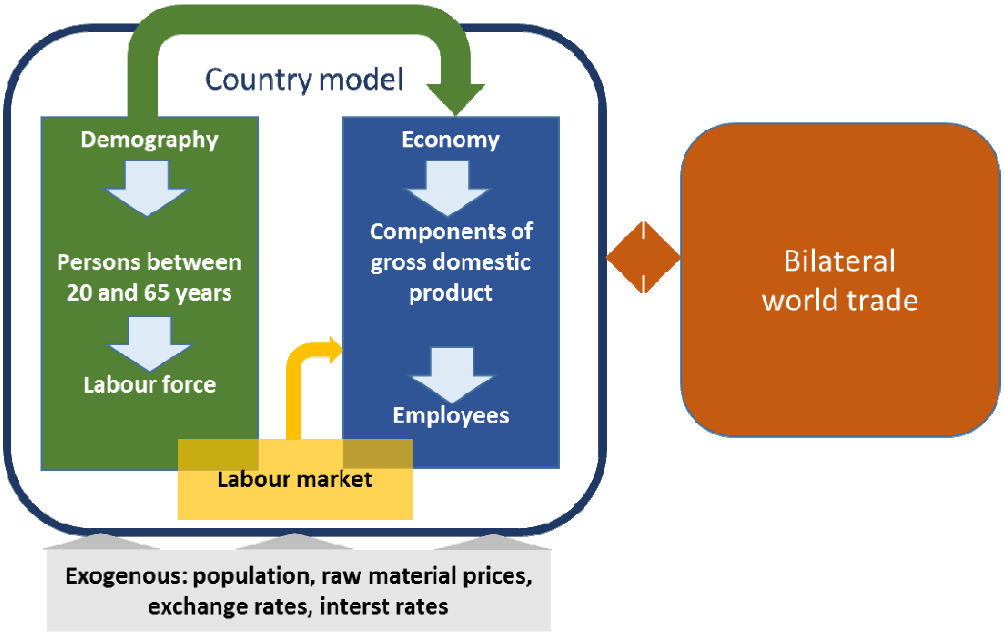

Figure 1: Schematic of country models

Source: own illustration

2.1.1 Types of variables

All country models consist of two different types of variables: exogenous and endogenous variables.

Exogenous variables are being determined outside the country models and are independent of other model variables. In TINFORGE exogenous variables are population, interest rates, exchange rates and raw material prices.

The future development of *population* depends in general on three fundamental assumptions: mortality rate, fertility rate and net migration. TINFORGE applies the middle variant of the United Nation's population projection (UN 2013a). A detailed description of the middle variant can be found in UN (2013b). Using a given population forecast denies the possibility of wealth-induced population movements. The exogenous specification of population limits the system to the extent that economies cannot attract migration through wealth and hence cannot enhance their growth potential.

Different theories on why *exchange rates* change exist. Prices (purchasing power parity), interest rates (interest rate parity) or income (balance on current accounts) are possible influential factors. The difficulty is that neither of those theories is applicable for determining exchange rate changes on its own. Above that, expectations on the future development of exchange rates are a powerful factor as well. TINFORGE uses constant exchange rates in future, but these can be varied exogenously.

The projection *of interest rates* displays the same principle problem as the projection of exchange rates. In macro-economic forecasting models, interest rates are generally being fixed on its last known value. Although different interest rates (long-term, short-term) exist, the leading interest rate indicator is the interest rate of the central bank. Interest rates are important input factors especially for determining investment decisions. They might play a role for private consumption expenditures as well.

TINFORGE does not predict *raw material price developments*. Too many factors are influencing the price building mechanism on raw material markets: resources, technology, demand, hedging or politics. Instead, TINFORGE adapts long-term price projections for major raw material prices from International Monetary Fund, International Energy Agency and Food and Agriculture Organization. Adjustments to short-term price developments that may deviate from those third party projections are implemented.

Endogenous variables rely on exogenous variables and/or other endogenously calculated variables. It can be distinguished between identities and behavioral equations. An identity is for example the calculation of GDP. The GDP is the sum of private and government consumption, consumption of non-profit institutions serving households, gross capital formation and foreign trade. Furthermore, in TINFORGE, all nominal variables are calculated by multiplying real-term variables and prices.

Behavioral equations are estimated using econometric methods. The results are coefficients that show the strength of the relation between the dependent variable and independent variable(s). TINFORGE applies causal regression analysis. First, expected relations between variables are identified. Second, the strength of correlation is derived by applying econometric methods. The estimations are based on a time series starting from 1990.

It is assumed that reactions that are seen in the past are also effective in future. In contrast to time series analysis, regression analysis is not used to predict changes between the dependent and independent variable over time.

2.1.2 Labour market

On the labour market two different forces clash: labour supply and labour demand with major consequences on prices, productivity and consumption. The upper bound of labour supply is given by the population forecast of the UN. Especially the population between 20 and 65 years of age (*POPU20_65*) determine the development of labour force (*LFCE*). This bounded age group refrains from countries with a higher retirement age than 65 years or from countries with a higher labour force participation rate of persons below an age of 20 years. Still, as a general approach, labour force is estimated with the population forecast for those between 20 and 65 years.

$$LFCE_{cc}[t] = f\{POPU20\_65_{cc}[t]\} \quad [1]$$
$$cc \in [1,60]$$

As mentioned above, the population forecast is unbiased by economic developments. The same is valid for the labour force. In contrast to labour supply, the demand for labour depends on two competing driving forces representing a Philip curve approach: On the one hand, labour demand (*EMPL*) is positively influenced by a raise in domestic demand. On the other hand, labour demand is hampered by real wage increases. Domestic demand is represented by real GDP (*GDPTR*) and real wages are the quotient between wages (*WAGE*) and domestic prices, respectively GDP deflator (*GDPD*). In general, private decisions react with a time lag on changing economic conditions due to regulation and labour standards prevailing in some economies. For those cases, dull adaptation reactions are implemented in the regression equation.

$$EMPL_{cc}[t] = f\left\{GDPTR_{cc}[t], GDPTR_{CC}[t-1], \frac{WAGE_{CC}[t]}{GDPD_{CC}[t]}\right\} \quad [2]$$
$$cc \in [1,60]$$

Wages are a fundamental steering tool in the economy. On the one hand they represent a cost factor for enterprises and affect domestic price formation. On the other hand, wages are the major input factor for disposable income and define the scope of consumption within an economy. In TINFORGE, nominal wages depend on three divergent factors: labour productivity (*GDPTR/EMPL*), consumption prices (*HCESP*) and labour scarcity (*LFCE/EMPL*). Whereas growing productivity and consumption prices have a positive influence on prices, a growing labour scarcity factor negatively correlates with wages. The growing scarcity factor implies either an increase in labour force or a decline in labour demand. Both factors ease the labour market situation and reduce the need of employers to attract employees via higher wages. This scarcity factor is especially important for those countries that face a significant decline in population and/or an ageing of society.

$$WAGE_{cc}[t] = f\left\{\frac{GDPTR_{cc}[t]}{EMPL_{CC}[t]}, HCESP_{CC}[t], \frac{LFCE_{CC}[t]}{EMPL_{CC}[t]}\right\} \quad [3]$$
$$cc \in [1,60]$$

2.1.3 Price mechanism

Domestic prices (*PRICE*) are positively influenced by wage developments (*WAGE*) and import prices (*IGSSP*).

$$PRICE_{cc}[t] = f\{WAGE_{CC}[t], IGSSP_{CC}[t]\} \quad [4]$$
$$cc \in [1,60]$$

The variable *PRICE* in equation [4] is a place holder for all price indices of the components of GDP. The explanatory variables are tested for all price indices. Usually, import prices are more significant for the determination of export prices, consumption prices and investment prices, but less significant for state consumption deflator.

Import prices that are a function of a domestic price building mechanism are described in more detail in section 2.2.2.

2.1.4 Determining GDP and components

GDP is defined by using the expenditure approach. GDP itself is given by definition. All components of GDP are estimated in real terms and depend on the overall economic development – expressed by real GDP (*GDPTR*). It is assumed that private households (*HCESR*) and investors (*GFCFR*) react on changing growth dynamic with a certain time lag. The regression function uses a weighted moving average (*WMA*) of real GDP that implies latest GDP changes having a higher impact on consumption decisions that the one from previous year.

[5]
$$\begin{aligned} &HCESR_{cc}[t] = f\{WMA(GDPTR_{CC}[t])\} \\ &GFCFR_{cc}[t] = f\{WMA(GDPTR_{CC}[t])\} \\ &cc \in [1, 60] \end{aligned}$$

Government consumption (*GCESR*) is slightly different to private consumption and investment. Not economic dynamics determine government consumption but population growth (*POPU*). This approach implies that a growing population demands for more public infrastructure such as provision of education, administration services, social security etc.

[6]
$$\begin{aligned} &GCESR_{cc}[t] = f\{POPU_{CC}[t]\} \\ &cc \in [1, 60] \end{aligned}$$

Import demand (*IGSSR*) is strongly correlated to domestic demand (*DDNDR*) which is the aggregation of equation [5] and [6] plus changes of inventories. Depending on the degree of openness of an economy, the elasticity of domestic demand can be well above 1. An additional explanatory variable is real export demand (*EGSSR*). This represents the positioning of a country within the global value chain. Export-induced import demand is one globalization aspect that implies offshoring of production processes and the necessity of importing intermediate products such as raw materials or components.

[7]
$$\begin{aligned} &IGSSR_{cc}[t] = f\{DDNDR_{CC}[t], EGSSR_{CC}[t]\} \\ &cc \in [1, 60] \end{aligned}$$

Export demand is derived via world trade and depends on all trading partners' import demand. Accordingly, equation [7] represents the transition from the country model to the world trade model. Import demand enters the bilateral trade matrices and determines export demand for all other countries. The detailed description is given in the following section.

2.2 World trade model

The individual country models are connected via the world trade model in two directions: On the one hand, export demand in each country is determined via the "received" import demand of all other countries. On the other hand, each country delivers export prices to the world market, signaling the price to which they want to sell their products. This defines the import price for all other economies.

Core of the world trade model are the bilateral trade matrices (*BTM*) that represent the trade flows between 80 countries. Table 2 shows the additional number (+20) of countries represented in the world trade module in the orange shaded cells. The columns of the BTM represent the importing countries (*ic*), the rows show exporting countries (*ec*).

Table 2: List of countries in the world trade model

1	AT	11	EE	21	HU	31	CA	41	NZ	51	ID	61	QA	71	RW
2	FR	12	IE	22	CZ	32	CL	42	CN	52	MY	62	AE	72	WW
3	IT	13	LU	23	DK	33	JP	43	SA	53	SG	63	BH	73	BN
4	DE	14	SK	24	PL	34	KR	44	ZA	54	TH	64	EG	74	AL
5	GR	15	SI	25	SE	35	NO	45	TR	55	VN	65	JO	75	BA
6	ES	16	LT	26	BG	36	MX	46	HK	56	PH	66	LB	76	KH
7	NL	17	CY	27	RO	37	BR	47	AR	57	DZ	67	MA	77	MK
8	BE	18	LV	28	HR	38	CH	48	RU	58	KW	68	OM	78	MD
9	FI	19	MT	29	US	39	IL	49	UA	59	IR	69	SY	79	MN
10	PT	20	GB	30	AU	40	IS	50	IN	60	TW	70	TN	80	SR

Source: own illustration
colour schema explanations: light blue shaded cells – EU countries with €; blue shaded cells – EU countries without €; dark blue shaded cells – other countries; orange shaded cells – countries without an individual country model

Bilateral trade matrices exist for 31 product groups. Table 3 shows product groups used in TINFORGE.

Table 3: List of product groups in the world trade model

1	Agriculture, Hunting, Forestry and Fishing	17	Fabricated Metal Products
2	Mining of coal and lignite; extraction of peat	18	Machinery and Equipment, not elsewhere classified
3	Extraction of crude petroleum and natural gas	19	Office, Accounting and Computing Machinery
4	Mining of metal ores	20	Electrical Machinery and Apparatus, not elsewhere classified
5	Other mining and quarrying	21	Radio, Television and Communication Equipment
6	Food products, Beverages and Tobacco	22	Medical, Precision and Optical Instruments
7	Textiles, Textile Products, Leather and Footwear	23	Motor Vehicles, Trailers and Semi-Trailers
8	Wood and Products of Wood and Cork	24	Building and Repairing of Ships and Boats
9	Pulp, Paper, Paper Products, Printing and Publishing	25	Aircraft and Spacecraft
10	Coke, Refined Petroleum Products and Nuclear Fuel	26	Railroad and Transport Equipment, not elsewhere classified
11	Chemicals excluding Pharmaceuticals	27	Manufacturing not elsewhere classified; Recycling
12	Pharmaceuticals	28	Electricity, Gas and Water Supply
13	Rubber and Plastics Products	29	Other Activities
14	Other Non-Metallic Mineral Products	30	Waste
15	Iron and Steel	31	Confidential and unallocated
16	Non-Ferrous Metals		

Source: *OECD*

2.2.1 Determining trade volume

Per definition, the imports of country x from country y have to be equal to the exports of country y to country x. Due to price measurements and statistical errors, this is not always given in the historical dataset. In TINFORGE, transportation costs or cost of duty are ignored, which means that there is no need for bilateral trade matrices representing imports and exports. Only export-based bilateral trade matrices from the OECD are used.

Accordingly, export demand is retrieved by using trade shares (*SBTM*) and multiplying it with the aggregate import demand from equation [7] (see also Figure 2). The syntax is applied for all 31 trade matrices representing 31 product groups.

[8]
$$EGSSR_{cc}[t] = \sum_{g=1}^{31}\sum_{ec=1}^{80}\left(SBTM_{ec,ic}[t] \cdot IGSSR_{cc}[t]\right)$$
$$ec, ic \in [1,80],\ g \in [1,31], cc \in [1,60]$$

Equation [8] represents one linkage between country models and world trade model. It is a transfer between a world without structural information (country models) and a world with structural information (world trade model). The world trade model explicitly considers trade on the level of 31 different product groups. The country models are solely based on macro-level information.

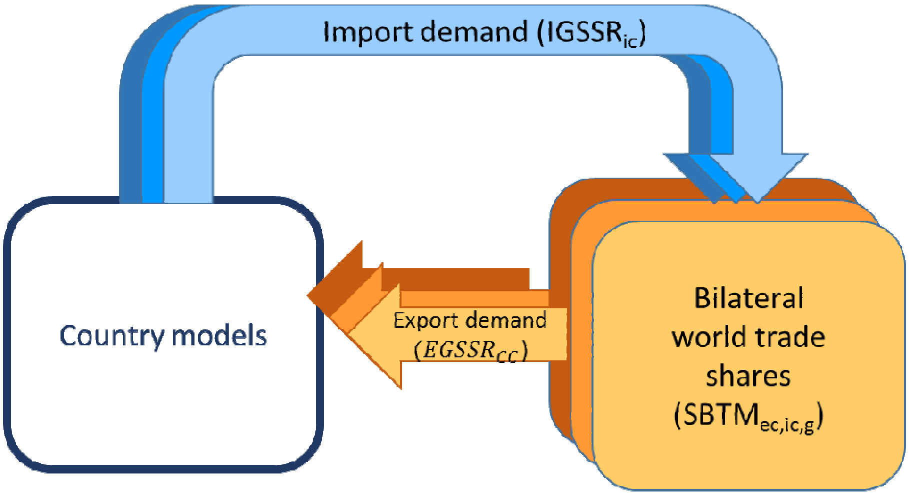

Figure 2: Linking country models and world trade model via trade volume

Source: own illustration

The trade share matrix (*SBTM*) represents the share of each importing country on the export demand of each exporting country. The principle structure of each *SBTM* matrix is shown in Figure 3.

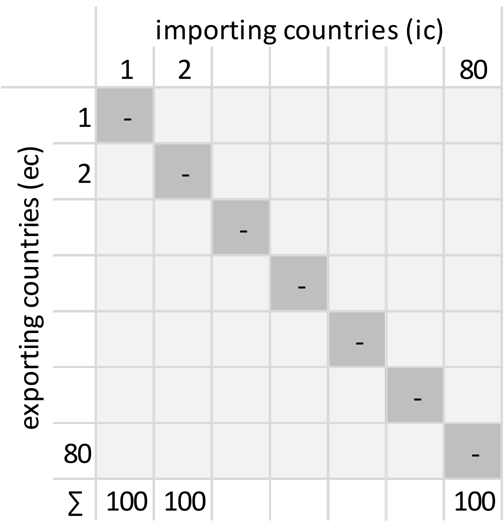

Figure 3: Structure of the trade share matrix SBTM

Source: own illustration

In total, 193,471 trade shares (excluding world) are considered. In preliminary versions of TINFORGE, these trade shares remained constant. In the current version, the attempt was made to estimate trade shares and account for changing patterns of world trade. The high amount of trade shares suspends the option of individual estimation. Also, it was not feasible to run automatic regression functions over all 193,471 trade shares. Instead, the absolute largest 1,000 trade relations of preferential goods *(pg)* were selected and these trade shares (*esbtm*) were estimated automatically. All other trade shares remain constant.

The explanatory variable is a time trend (*TIME*) with different specification. Using the time trend as denominator, the long-term slow-down of the trend impact on the trade share and its approach towards a small but still positive value can be marked. The specification differs in the slope of the time trend and imputes the speed of changing trade shares.

[9] $$esbtm_{pg}[t] = f\left\{\frac{1}{TIME}, \frac{1}{(TIME-60)}, \frac{1}{(TIME-80)}\right\}$$
$$pg \in [1,1000]$$

2.2.2 Determining export and import prices

Another linkage between country models and the world trade model is the derivation of import prices. The import price ($IGSSP_{CC}$) of each country is a result of the weighted export prices ($EGSSP_{cc}$) of those countries the products are bought from.

[10] $$IGSSP_{cc}[t] = \sum_{ic=1}^{80} SBTM_{ec,ic}[t] \cdot EGSSP_{cc}[t]$$
$$ec, ic \in [1,80]; \quad cc \in [1,60]$$

The average export price ($EGSSP_{cc}$) varies significantly in relation to the country's specific position on world market and competitiveness. Mainly, raw material exporting countries like Russia and Saudi-Arabia mostly set their export prices depending on world market prices for these products rather than e. g. wages. In contrast, Germany exports mostly final and intermediate processed products. Their prices depend on domestic cost factors such as wages.

TINFORGE considers the difference between raw material producing economies and other economies. A country is classified as a raw material producing economy, if its export share of raw materials exceeds 90 %. Table 4 shows an excerpt of the raw material export shares. The first ten countries listed mostly export other goods than raw materials and are accordingly classified as non-raw material producing economies. Their export prices are mostly defined by a domestic price building mechanism. The last ten countries listed in Table 4 are economies with a very high share of raw material-specific export shares. Those countries' export prices are correlated strongly to the development of these exogenous given raw material prices.

Table 4: Excerpt from export shares

	Agriculture	Forestry	Fishery	Cole	Crude oil	Ore (Thorium, Uran)	Iron ore	Other mining	Other export goods	Total exports
Switzerland	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	99,9	100
Japan	0,1	0,0	0,0	0,0	0,0	0,0	0,0	0,1	99,8	100
Korea	0,1	0,0	0,1	0,0	0,0	0,0	0,0	0,0	99,8	100
Chinese Taipei	0,1	0,0	0,2	0,0	0,0	0,0	0,0	0,0	99,7	100
Singapore	0,3	0,0	0,0	0,0	0,0	0,0	0,0	0,0	99,7	100
Hong Kong, China	0,5	0,0	0,1	0,0	0,0	0,0	0,0	0,3	99,1	100
Ireland	0,7	0,0	0,1	0,1	0,0	0,0	0,4	0,0	98,7	100
China	0,8	0,01	0,1	0,1	0,2	0,0	0,03	0,2	98,7	100
Malta	0,2	0,0	1,2	0,0	0,0	0,0	0,0	0,0	98,6	100
Germany	0,9	0,0	0,0	0,0	0,4	0,0	0,0	0,1	98,5	100
Moldova	23,8	0,1	0,0	0,0	0,0	0,0	0,0	0,1	76,0	100
Argentina	18,0	0,0	0,0	0,0	4,1	0,0	2,7	0,1	75,1	100
Canada	4,4	0,1	0,3	1,6	17,0	0,0	1,5	0,9	74,2	100
South Africa	4,1	0,0	0,2	7,7	0,0	0,0	13,6	2,3	72,2	100
Chile	6,3	0,0	0,5	0,0	0,0	0,0	22,8	0,2	70,2	100
Brazil	12,3	0,0	0,0	0,0	8,3	0,0	15,6	0,4	63,4	100
Indonesia	6,8	0,1	0,4	11,7	15,1	0,0	5,2	0,0	60,7	100
Russian Federation	0,7	0,5	0,0	2,3	43,9	0,0	0,5	0,9	51,3	100
Australia	5,1	0,1	0,3	18,7	8,7	0,0	27,0	0,2	40,1	100
Norway	0,1	0,1	3,3	0,0	57,0	0,0	0,1	0,3	39,2	100
Saudi Arabia	0,2	0,0	0,0	0,0	76,0	0,0	0,0	0,0	23,7	100

Source: *Own calculations based on STAN Bilateral Trade Database*

Considering the bilateral world trade shares, the export prices of each exporting country determine the aggregated import prices for each importing country. Figure 4 shows the linkage between country models and world trade model.

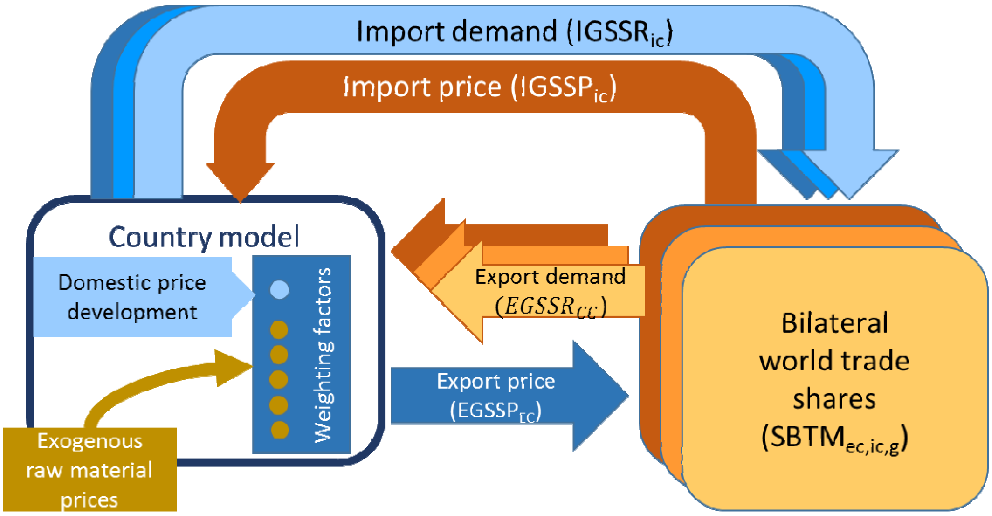

Figure 4: Linking country models and world trade model via prices

Source: *own illustration*

3 Conclusions and outlook

TINFORGE has proven to be a suitable tool for forecasting foreign trade for Germany (Mönnig et al. 2014). Using small macroeconomic country models instead of comprehensive IO models reduce the time that is needed for updating. Economic growth can be explained endogenously from the domestic demand as well as from world import demand. Connecting all countries via trade ensures consistency and takes feedback effects into account. Export data from TINFORGE can be easily integrated into the national model INFORGE due to harmonized data. Additionally, other country models (e. g. the Austrian (e3.at, Stocker et al. 2011), Tunisian (e3.tn) Russian (e3.ru, Großmann et al. 2011) model) can make use of export data from TINFORGE.

In INFORGE, German exports are still exogenous and calculated top-down. Further improvements of TINFORGE can be the endogenization of exports. The small German macroeconomic country model could be replaced by the comprehensive IO model INFORGE.

4 Appendix

Appendix 1: Country codes and descriptions

AT	Austria	HU	Hungary	NZ	New Zealand	QA	Qatar
FR	France	CZ	Czech Republic	CN	China	AE	United Arab Emirates
IT	Italy	DK	Denmark	SA	Saudi Arabia	BH	Bahrein
DE	Germany	PL	Poland	ZA	South Africa	EG	Egypt
GR	Greece	SE	Sweden	TR	Turkey	JO	Jordan
ES	Spain	BG	Bulgaria	HK	Hong Kong, China	LB	Lebanon
NL	Netherlands	RO	Romania	AR	Argentina	MA	Morocco
BE	Belgium	HR	Croatia	RU	Russia	OM	Oman
FI	Finland	US	United States of America	UA	Ukraine	SY	Syria
PT	Portugal	AU	Australia	IN	India	TN	Tunesia
EE	Estonia	CA	Canada	ID	Indonesia	BN	Brunei
IE	Ireland	CL	Chile	MY	Malaysia	AL	Albania
LU	Luxembourg	JP	Japan	SG	Singapore	BA	Bosnia and Herzegovina
SK	Slovak Republic	KR	Korea	TH	Thailand	KH	Cambodia
SI	Slovenia	NO	Norway	VN	Vietnam	MK	Macedonia
LT	Lithuania	MX	Mexico	PH	Philippines	MD	Moldova
CY	Cyprus	BR	Brazil	DZ	Algeria	MN	Montenegro
LV	Latvia	CH	Switzerland	KW	Kuwait	SR	Serbia
MT	Malta	IL	Isreal	IR	Iran	RW	Rest of World
GB	United Kingdom	IS	Iceland	TW	Chinese Taipei	WW	Total World

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