



# REMOVING TRADE BARRIERS IN BRAZIL A QUANTITATIVE ANALYSIS USING METRO

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# Quantifying the Effects of Trade Liberalisation in Brazil

A COMPUTABLE GENERAL EQUILIBRIUM  
MODEL (CGE) SIMULATION

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JEL Classification: F13, F47, F61, F62, F66



# Motivation

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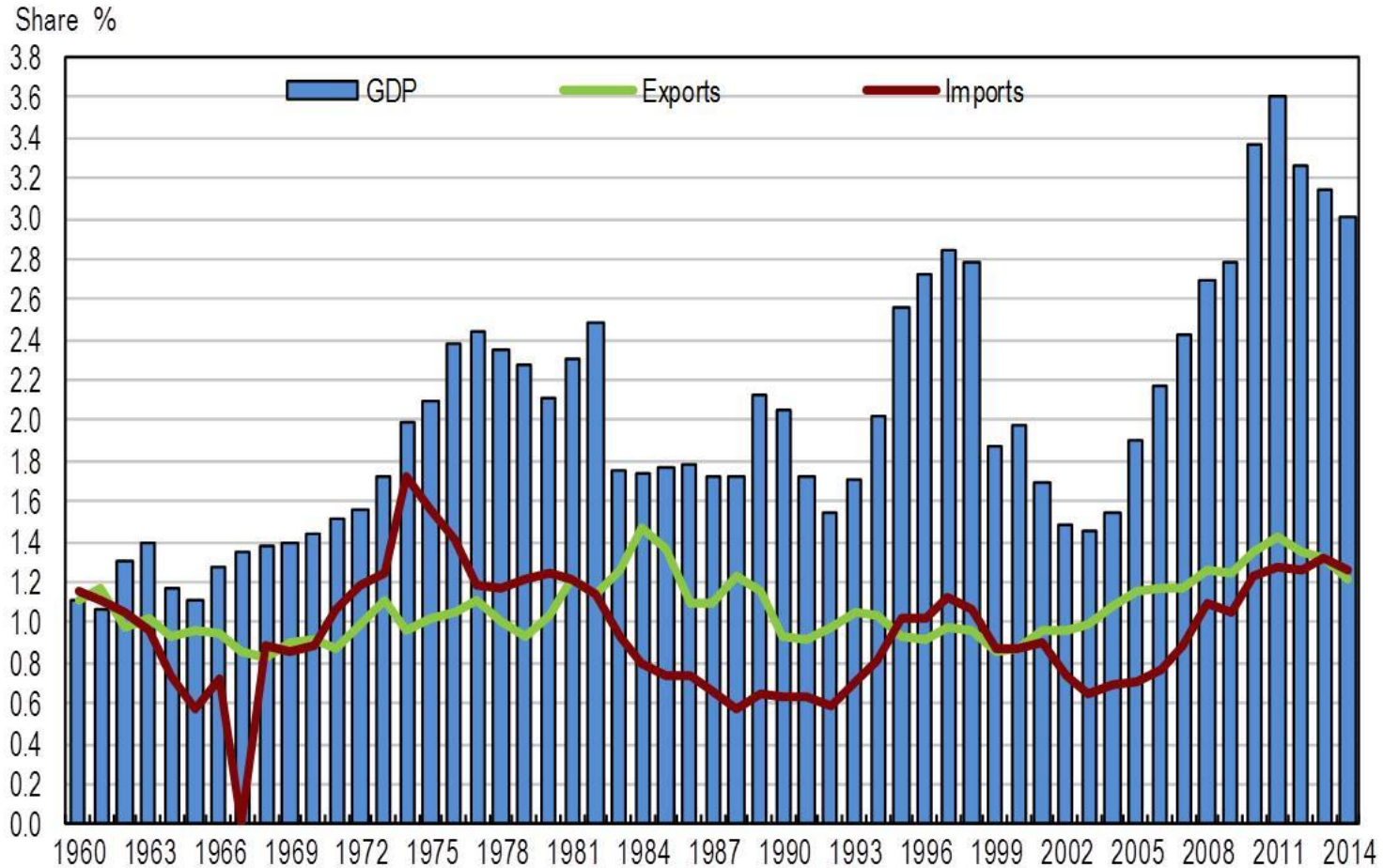
- **OECD Economic Survey of Brazil: raising industrial performance -> trade policy used as an instrument of industrial development in Brazil**
- **Brazil is a fairly closed economy**
- **Brazil's industrial sector is small for a middle income country**
  - **Share of manufacturing declined in the past 10 years**
  - **Labour productivity in manufacturing has stayed constant at very low levels**



# Brazil remains a fairly closed economy (1)

Figure 1. **Brazil's share of world trade is low relative to its GDP**

Share of exports and imports on world's total exports and imports, respectively





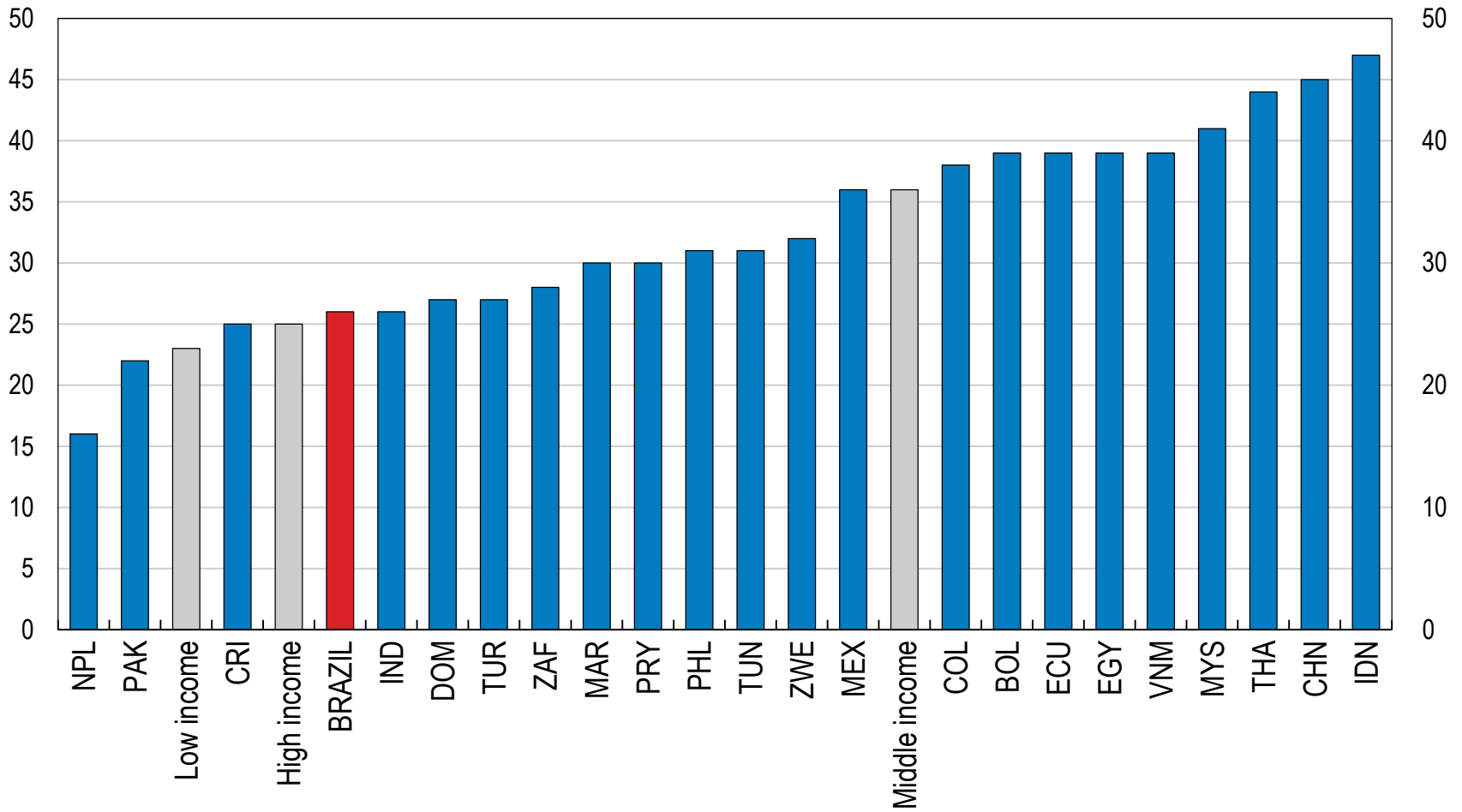
# Brazil remains a fairly closed economy (2)

Total trade to GDP, 2014





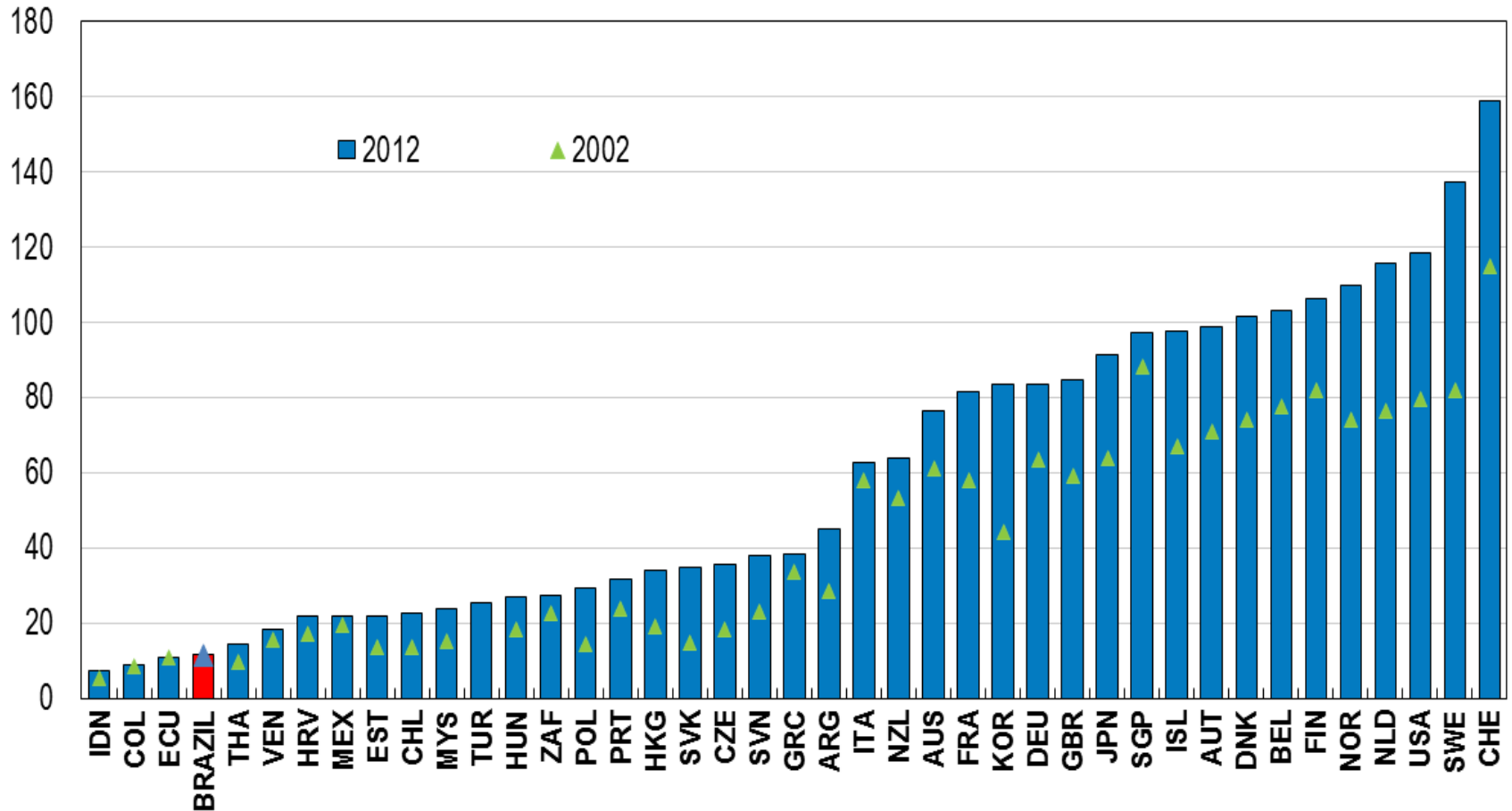
# Brazil has a small industrial sector





# Manufacturing Productivity is Low and Stagnant

Labour productivity in thousands of constant 2005 USD per employee





# The study:

## Motivation:

- **How to raise industrial performance -> trade policy used as an instrument of industrial development in Brazil**
- **What are the economy-wide effects of an unilateral reduction of trade protection? What are the effects on manufacturing?**

## Methodology:

- **OECD METRO is a multi-region CGE model: captures the economy wide effects of a policy shock (and also international spillovers)**





# The OECD Trade Model: METRO

- Countries are linked through trade flows. Focus on trade linkages and trade policies
- Detailed trade patterns: captures Global Value Chains (GVCs)
- 57 sectors, 56 countries/regions (including all G20 countries); 4 factors of production, 5 categories of labour
- Disaggregation of the labour market into job categories allows for differentiated impact of a policy shock
- Contribution to WTO/OECD/UNCTAD monitoring of G20 trade policy actions



# What Trade Policies?

- **Import tariffs**
  - Among BRICS, Brazil applies the highest mean import tariffs on non-agricultural products and the second highest overall (at the time of the study)
  - Modal tariff was 14% and the median 12% in 2015
  - Several manufacturing sectors with tariffs above 10%
- **Import tariffs on intermediate inputs**
- **Local Content Requirements**
  - Brazil is second to Indonesia in the number of LCRs imposed since the onset of the global crisis (17)
- **Zero rating of exports in indirect taxes**
- **Full liberalisation**



# Policy Shocks and Macroeconomic Effects

	OECD minimum import tariffs on intermediate goods and no LCRs	OECD minimum import tariffs and no LCRs	Zero rating of exports	Full liberalisation
<b>Exports</b>	11.70	7.69	5.88	<b>18.75</b>
Intermediates	6.16	10.79	5.65	<b>17.55</b>
Household consumption	7.55	10.97	-0.14	<b>10.93</b>
<b>Imports</b>	12.80	8.28	6.06	<b>19.98</b>
Intermediates	14.25	10.02	6.27	<b>17.44</b>
Household consumption	-6.29	15.81	6.22	<b>23.43</b>
<b>Household Income</b>	0.70	0.69	0.83	<b>1.62</b>
<b>Production</b>	0.41	0.62	<b>1.16</b>	<b>1.74</b>
<b>Investment</b>	1.05	0.59	0.99	<b>2.13</b>
<b>Labour demand</b>	0.61	0.53	0.89	<b>1.53</b>
<b>Investment Price Index</b>	-0.64	0.00	-0.89	<b>-0.88</b>
<b>Producer Price Index</b>	-0.08	0.00	-0.03	<b>-0.03</b>



# Global Value Chains: Imports

Full liberalisation scenario, increase in imports of at least 40%

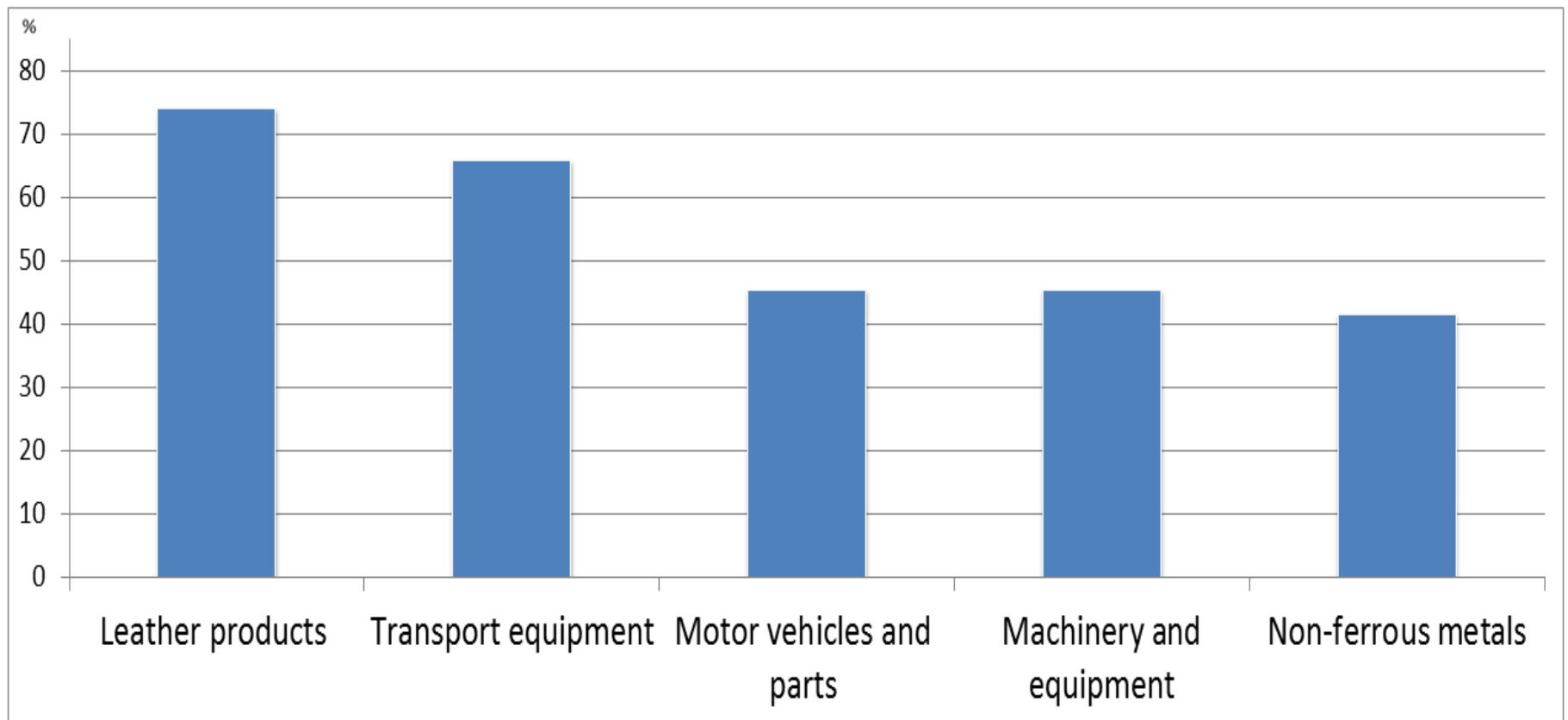




# Global Value Chains: Exports (1)

Full liberalisation scenario, % change

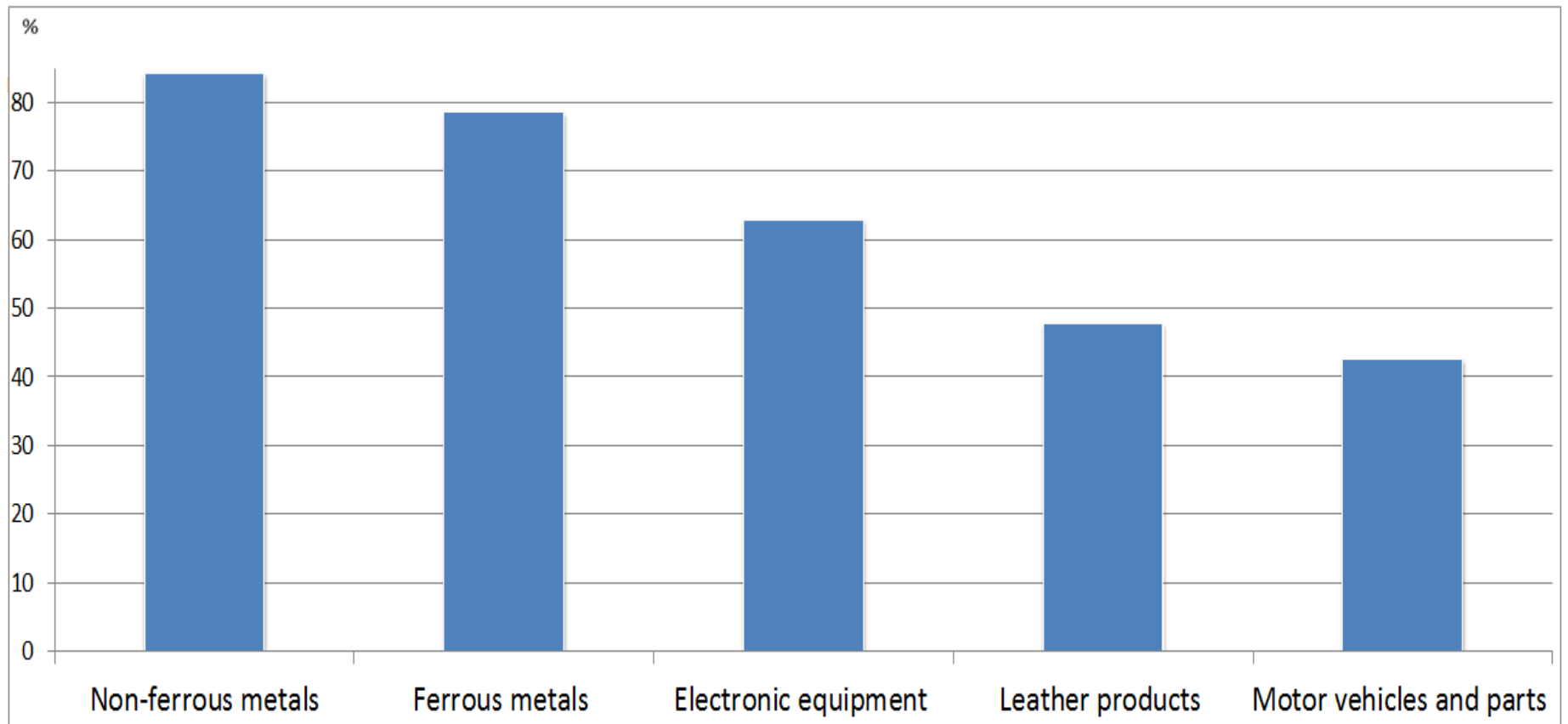
## A. Intermediate Goods





# Global Value Chains: Exports (2)

Full liberalisation scenario, % change  
B. Final Consumption Goods





# DISTRIBUTIONAL IMPACT



# Distributional Impact

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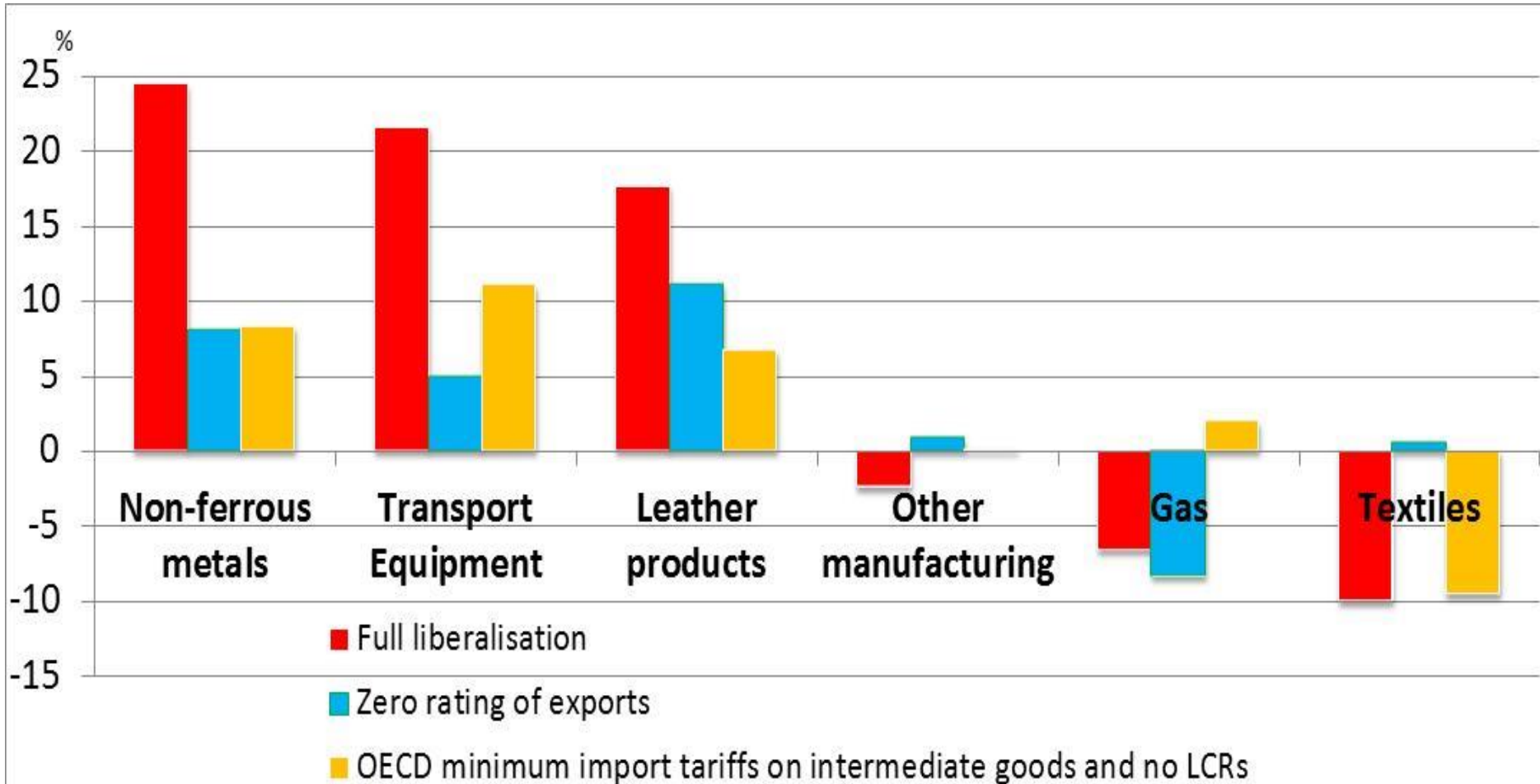
- Employment:
  - Sectoral distribution
  - Occupations/skills
- Income:
  - Labour income
  - Other factor income: land, capital





# Employment Effects: sector level

Largest employment effects, % change





# Employment Effects: macro level

## Policy scenarios

	OECD minimum import tariffs on intermediate goods and no LCRs	OECD minimum import tariffs and no LCRs	Zero-rating of exports	Full liberalisation
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## Job categories

change number of workers (millions)

Technicians	0.06	0.05	0.10	0.16
Officials and Managers	0.09	0.07	0.16	0.25
Clerks	0.06	0.04	0.09	0.14
Service/Shop workers	0.20	0.16	0.27	0.46
Agriculture and unskilled	0.18	0.19	0.24	0.46
<b>Total</b>	<b>0.59</b>	<b>0.51</b>	<b>0.86</b>	<b>1.47</b>



## Distributional impact: summary

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- Employment increases in all labour categories
- Job creation is larger among unskilled sectors
- But there is reallocation between sectors (“transaction costs”)
- Household income increases
- Income of unskilled workers increase by less than that of skilled workers



# Conclusion

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- Overall positive effects of trade integration:
  - Increase in production, employment, household income
  - Increase in efficiency
- Effects are likely to be larger:
  - Imperfect *vs* perfect competition, dynamic effects
  - Many trade policies are not covered – easy to model? NTBs, restrictiveness to trade in services, LCRs...
  - Trigger trade negotiation agenda
- Redistribution effects and transition costs matter



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***Thank you!***

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