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Artificial Intelligence and The Labor Market:

A Cross-Country Panel Analysis

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Statement

I Filopoimin Tsimogiannis certify that the work prepared and presented to the submitted thesis is solely and individually mine. Any information and material contained have been drawn from other sources, and have duly mentioned in this thesis. I further understand that in the event of finding that what is confirmed by me is not the case my work will be zeroed out.

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Common abbreviations

Artificial Intelligence	AI (or A.I.)
Artificial Intelligence Hiring Index	AIHI
Gross Domestic Product	GDP

Abstract

This thesis investigates the factors influencing AI developments in the labor market in a panel of 18 Western countries for the period 2016-2022. Specifically, it examines the role of a variety of macroeconomic variables for the cross-country and time-series evolution of the Artificial Intelligence Hiring Index (AIHI) developed by Stanford University. The AIHI captures whether hiring of AI talent is growing faster than, equal to, or more slowly than overall hiring in a particular country or region. Hence, it can be viewed as a proxy of the relative importance of AI skills for the labor force of a specific country. The main findings are that the investment rate, the level of education, and the degree of income inequality affect the AIHI positively, whereas the corporate tax rate and the innovation index affect the AIHI negatively.

Keywords: Artificial Intelligence, AI, Artificial Intelligence Hiring Index, Employment, Unemployment, GDP per capita, cross-sectional country differences

1. Introduction

The computerized unrest is changing reality at a speeding-up pace, and artificial intelligence remains at the front of this change. Artificial intelligence vows to alter various businesses, from medical services and transportation to manufacturing and finance.[1] However, its impact on society extends far beyond mere efficiency gains. One of the most pressing concerns encompassing artificial intelligence is its capability to disturb the work market, uprooting laborers and prompting inescapable joblessness. Additionally, the ability of different countries to adopt and integrate AI technology raises concerns about widening development gaps. This thesis investigates the factors influencing AI developments in the labor market in a panel of 18 Western countries for the period 2016-2022.

Specifically, the thesis leverages as a dependent variable the Artificial Intelligence Hiring Index (AIHI) developed by Stanford University. The AIHI captures whether hiring of AI talent is growing faster than, equal to, or more slowly than overall hiring in a particular country or region. Hence, it can be viewed as a proxy of the relative importance of AI skills for the labor force of a specific country. The thesis then investigates the role of a variety of macroeconomic variables in the evolution of the AIHI across countries.

The main findings of the paper are as follows. First, the investment rate and the percentage of the workforce with a tertiary education degree are positively correlated with the AIHI. This means that countries with higher investment needs and with higher average educational attainment have started hiring more intensely in jobs that require advanced AI skills, compared to other types of jobs. Second, the innovation index in a country negatively affects the AIHI of the country. One reason for this potentially surprising relationship might be that the innovation index captures the level of innovation embedded in the capital stock of a country, whereas the AIHI captures the level of innovative skills embedded in human capital. At the initial stages of AI development, physical and human capital appears to be substituted in production. Third, the corporate income tax rate affects the AIHI negatively. This may be because low taxes on corporate profits operate as an incentive for hiring AI-skilled labor. Finally, income inequality, as proxied by the Gini coefficient, positively affects the AIHI. This is because English-speaking countries, which are the front-runners in AI-intensive labor hiring, are also characterized by higher income inequality.

The paper is organized as follows. Section 2 presents the related literature. Section 3 presents has data description. Section 4 presents the econometric analysis of the variables.

[1] Fields of impact will analized in 6.3

Section 5 presents the robustness tests that are done. Section 6 presents a further discussion of AI developments. Section 7 presents the conclusion. Finally, the references and the appendixes are presented.

2. Related Literature

In this thesis, different kinds of help are used in terms of bibliography and existing research which helped to hold the thesis together. Minhaj & Ahmed (2023) mention in their recent publication that at the current time, human capital development is a priority in all well-developed economies. That makes the application of Artificial Intelligence look less important. This impediment may also arise from cultural attitudes in the occupational environment (Sovacool & Griffiths, 2020). This brings to the surface cultural values' entrenched nature within the organizations, which can lead to such technologies being deemed as hard to accept by such bodies. Moreover, the study that explored developing economies with lower technological human resources structures by Ore & Sposato (2021) identified that standard-setting tasks within the recruitment process might be especially marketable for automation accompanied by simulated intelligence penetration into respective economies at a faster speed.

Although parity of expenditure on AI among countries with striking wage inequalities aligns with the negative concerns of Alonso et al. (2020), growing the access and skills of low-skilled workers will provide a sustainable solution. In their analysis, AI's impact on this division is highlighted: there is a chance of richer countries being the main beneficiaries and of the gap between poorer and richer countries widening even more. This apprehension, however, suggests the need for further investigation of the limiting resources in pre-industrial nations, as Mikalef et al. (2023) do, which in turn may prevent any transformation or preparation programs made to put artificial intelligence in action. Moreover, AI discriminates against people to a greater extent among those who are already poor, identified as unfair because the rich ones have the resources to acquire the skills demanded by AI for automation.

The ethical issues connected with possible biases in AI algorithms are the subject of discussion by other authors (Yapo et al., 2018). The scholar believes that without strong ethical systems just based on bias in recruitment, she can agree with a wider discussion of effective artificial intelligence development (Chen, 2023). This work shows us how it is crucial to the evolution of AI to have a human element. Human supervision is crucial because it results in close monitoring of the developments of AI.

The menacing future AI can bring in terms of job dislodging and pay disparity is a headache we cannot solve with our bare hands. Alonso et al. (2020) and Kelly (2021) equally

express pessimism, but on the other, these call for thorough research on AI roles in hiring in different countries. Using the work of Chen (2023) and Frey and Osborne (2017) as a reference, it shows that there will be demand for certain jobs while others are eliminated by AI. However, there will be great career possibilities in newer job positions. That emphasis on strategic mediation, as proposed by Fitch and Muir (2020), is established by this fact. These panels can be of significant value for preventing adverse worker issues such as job losses, reskilling programs, and distribution of the benefits of artificial intelligence as stressed by Morandini et al. (2023).

Articulating the full consequences entails embracing a more detailed discernment of the effect of artificial intelligence on economic growth. It comprises Trabelsi, M (2024). It is for such work that researchers have to study aspects like the rate of development and wage differences when determining the effect of artificial intelligence on economic growth. Similarly, exploring the possibility of efficiency becoming one of the main forces of Artificial Intelligence, addressed by Serge, L. (2020) could add an outstanding layer when trying to compare localities' general economic impact of Artificial Intelligence. Moreover, it is indicated by Chen (2023) that AI is no longer a field in which only experts can take part, but instead an area in which experts, AI, and computer systems can cooperate, enabling higher performance levels to be achieved.

This section utilizes the aforementioned inputs, with the sector of organizational culture in AI implementation as the subject of the work of Minhaj & Ahmed (2023). Bearing a general basis involving multiple important factors for the use of AI in hiring processes in a diversified international context.

3. Data Description

This section describes the data sources and presents some important descriptive statistics for the overall panel database of 18 countries, on a quarterly basis over the period 2016-2022, for a total of 1080 country-quarter observations.

3.1 Databases

This thesis draws upon data from various reputable sources to examine the intricate relationships between economic indicators and their collective impact on the global socio-economic landscape. To be more specific about the Databases, The Organization for Economic Co-operation and Development (OECD) provides data on the unemployment rate, employment rate, population, and tertiary education attainment rate. The Federal Reserve Economic Data

(FRED) offers information on the GDP growth rate. CEIC Data contributes data on investment (% of GDP) and the GINI index. The Innovation Index (0-100) is obtained from a collaborative effort by Cornell University, INSEAD, and the World Intellectual Property Organization (WIPO). Finally, the OECD also provides data on corporate income tax rates.

This thesis uses carefully cited data from various sources to analyze how economic indicators impact society and the economy. This in-depth data, spanning several countries over six years, allows for a thorough analysis of these complex economic relationships.

3.2 Countries

This thesis statement aims to provide a comprehensive understanding of the global socio-economic problem by analyzing data from 18 diverse nations across several key geographical regions. To achieve this encompassing view, data is drawn from both established and developing economies, offering a more nuanced perspective on the complex interplay between social and economic factors.

The Americas are represented by the United States and Canada, two nations with longstanding economic power and established social structures. These countries offer valuable insights into the challenges and opportunities faced by high-income nations in navigating the complexities of the global socio-economic landscape.

Turning to Europe, a selection of countries spanning the continent from north to south is included. This diverse group encompasses Norway, Sweden, Finland, Ireland, the United Kingdom, Denmark, Belgium, the Netherlands, Germany, France, Portugal, Spain, and Italy. Analyzing data from this range of European nations allows for a deeper understanding of how cultural, historical, and economic factors influence the socio-economic landscape in different regions within the continent.

While Asia is a vital region in the global economy, the inclusion of specific countries requires careful consideration due to data availability. Despite their significant global influence, the absence of major economies like China and Japan is primarily due to potential data limitations. Including data from these nations, without comprehensive and reliable information, could introduce unwanted biases and skew the overall analysis. Therefore, only India, another major Asian economy with readily available and pertinent data, is included in this study.

Finally, the analysis incorporates data from Australia and New Zealand, the two leading economies in Oceania. These nations, often considered developed economies with unique socio-economic characteristics, provide valuable insights into the specific challenges and opportunities faced by island nations and geographically isolated regions.

3.2.1 Countries' Categorization

The categorization framework allows for a more focused analysis by grouping countries with similar economic structures and potential technology adoption patterns. The countries are grouped into four different groups based on their economic growth and geographical position. To be more specific, the United States of America, the United Kingdom, Australia, and Canada constitute the English-spoken countries Group. Sweden, Finland, Norway, and Denmark are the Scandinavian Group. France, Germany, the Netherlands, and Belgium form the Central-Europe Group. Finally, the Mediterranean side which includes Italy, Spain, and Portugal.

3.3 Data Frequency

To achieve a complete view, this research analyzes data collected quarterly from the fourth quarter of 2016 to the fourth quarter of 2022. This granular data frequency allows for a more nuanced understanding of how social and economic factors evolve and interact over time within each nation. By examining data at regular intervals across six years, the research captures the dynamic nature of the socioeconomic landscape and provides a deeper understanding of emerging trends and fluctuations. In particular, it is worth noting that within this period, there are periods of crisis such as COVID-19 and the Russian-Ukrainian wars. This helps make the point of how each country faced these crises and how they recovered after it. In total, the panel contains 18 countries over the period 2016-2022, with 1080 country-quarter observations.

3.4 Data on Artificial Intelligence Hiring Index (AIHI)

First, the dependent variable of the analysis is the Artificial Intelligence Hiring Index (AIHI)**.** Stanford University, in its annual standard report, uses the following as the definition of AIHI:

"The AI hiring index reflects the prevalence of AI talent acquisition, measured by the proportion of LinkedIn users with active AI skills or employment who transition to new jobs within a month of starting. This rate is then normalized against the total LinkedIn user base in a specific country. We track the AI hiring index over time, but to compare across months and years, we compared it to average hiring in 2016. For example, 1.05 in December 2020 means 5% more hiring than average." It used monthly updates to account for profile changes and calculate the yearly score by averaging all monthly scores.

The details for the AIHI in the pooled sample are presented in Table 1 below.[2]

Table 1

Variable	N	Mean	St. Dev.	Min	25%	Median	75%	Max	Variance
AIHI	1241	1,19	0,13	0,10	0,13	1,19	1,25	1,65	0,02

The average AIHI score, based on a sample size of 1241 observations, is 1.19. The standard deviation is 0.13. The observed score ranges from a minimum of 0.10 to a maximum of 1.65. The median score of 1.19 is in close proximity to the average, as seen by the quartiles provided in the table. In a similar vein, 25% of the data points (Q1) fall below 1.13 and 75% of the data points (Q3) fall below 1.25. The analysis of the cross-sectional average by year and the time series average by country follows.

Table 2

Cross-sectional Average by year	
Year	Year Average
2017	1.09
2018	1.19
2019	1.25
2020	1.28
2021	1.20
2022	1.13

Table 2 above shows the cross-sectional average by year.[3] The first line shows the minimum value of the 6-year period in 2017 equal to 1.09.[4] This is because is the beginning of Artificial Intelligence with moderate technology compared to today which also means fewer AI-driven jobs. The fourth line shows the maximum value of the cross-sectional average in 2020 equal to

[2] The table has been rounded to the second decimal.
[3] The table has been rounded to the second decimal.
[4] For accuracy and mathematical reasons the base-value (1.000000) which is considered the beginning of the index is not used, therefore the time frame starts from 2017 Q1.

1.28. At this time the AIHI hits its peak with more jobs and better technology until the pandemic. The table below shows the quadrants and the total number of observations.

Table 3

MIN	1.09
Q1	1.12
MEDIAN	1.20
Q3	1.25
MAX	1.28
Observations	6

It is worth mentioning that with 6 observations the median of the table above is equal to 1.20, which means that both 2018 and 2021 are closest to the median value with exactly the same absolute difference with it. This is an expected estimate as within these limits is the max value that follows the fall due to the pandemic. Next, the table below presents the time series average of each country.

Table 4

Time series Average by country			
Canada	1.26	Netherlands	1.18
United States	1.21	Germany	1.15
United Kingdom	1.22	France	1.13
Ireland	1.13	Portugal	1.17
Finland	1.13	Spain	1.16
Sweden	1.14	Italy	1.19
Denmark	1.13	Australia	1.25

Belgium	1.14		New Zealand	1.34

Table 4 above shows the time series average for each country.[5] In the second country row in the third line, the minimum value from all 18 countries is presented in France equal to 1,13. In the second country row in the final row, the maximum time series average value of AIHI is presented in New Zealand equal to 1,34. Below is a table showing the quadrants and the total number of observations.

Table 5

MIN	1.13
Q1	1.14
MEDIAN	1.17
Q3	1.21
MAX	1.34
Observations	18

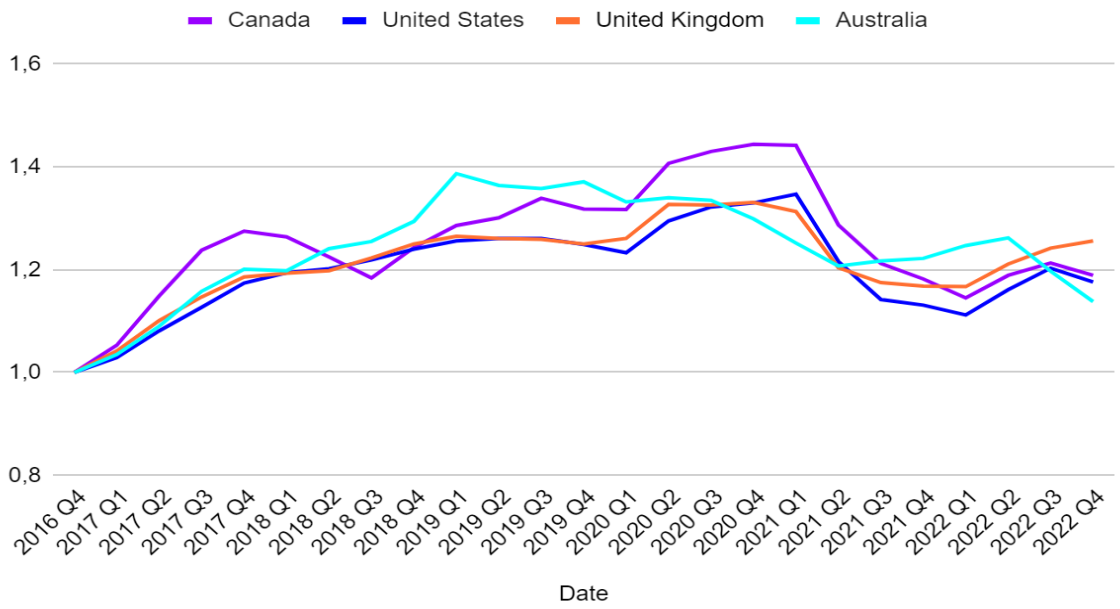
It is worth mentioning that with 18 observations the median of the table above is equal to 1.17, which means that the Netherlands and Portugal are closest to the median value with exactly the same absolute difference with it. From Table 4, nine countries' time series averages including Canada, the United States, the United Kingdom, Norway, the Netherlands, Italy, India, Australia, and New Zealand are above the median value.

To analyze the temporal relationship between variables, this thesis utilizes the mean statistic, resulting in Table[6] showcasing the AIHI for each quarter. For a better visual representation, all AIHI values are multiplied by 1 billion in the graphs:

[5] The table has been rounded to the second decimal.
[6] See Table 10 at the Appendix.

Graph 1

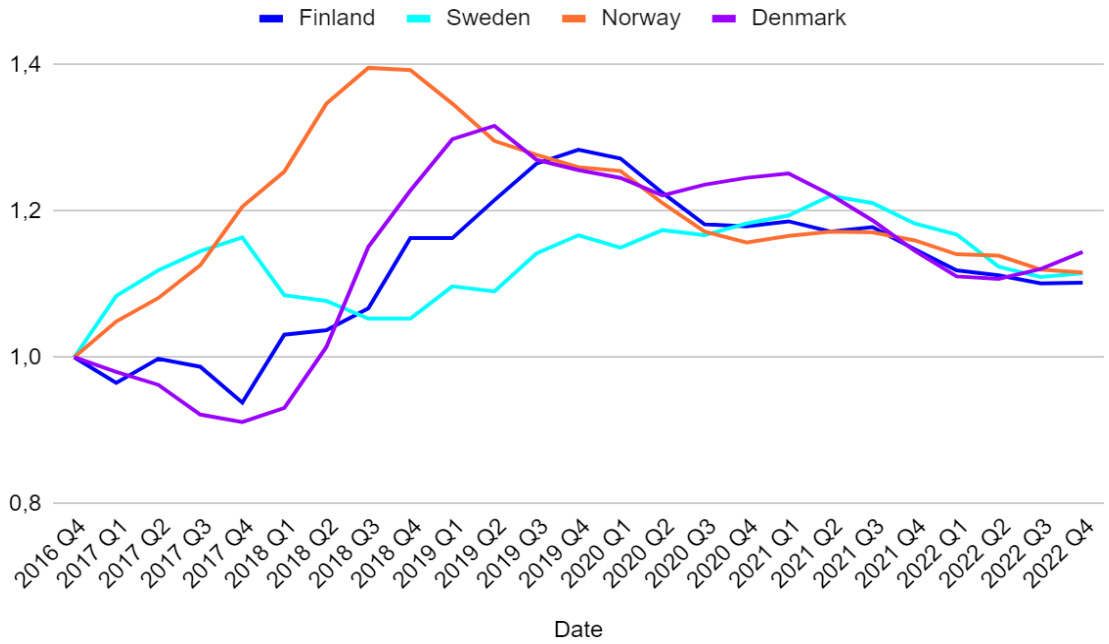
AIHI in English-speaking Countries



Let's start by analyzing the first team, namely the English-speaking countries, in Graph 1. These countries stand out from the others because they have routinely outperformed the pooled average on the AI Hiring Index (AIHI) year after year, and also the average for each of the index's individual member nations. In general words, the graph follows an inverted-U shape with peaks around the middle of the period. It is worth mentioning that these countries had the same minimum points during the COVID-19 pandemic until 2022, which affected the economy and society as much as expected, as all countries during the COVID-19 period decreased the AI Hiring Index with their period-high before the pandemic at 2020 Q2. A small difference in the group is made by Australia which mechanized more of their task as fast as possible and it seemed that Australia reacted faster than many other nations having its peak in 2019 Q2. The Australian government has played an important role in all of this by providing financial and educational incentives to support digital transformation. The United States, United Kingdom, and Canada have similar patterns over time. Notable peaks in the USA happened in the 1st quarter of 2021, which after that has its minimum value which has been caused by the COVID-19 pandemic and the state of the economy. Similar swings were seen in the AI hiring indexes of the UK and Canada, which peaked in the same quarter as the USA in Q1 2021 followed by their minimum values at Q1 2022 during the pandemic. In total all these countries tend to move together.

Graph 2

AIHI in Scandinavian Countries

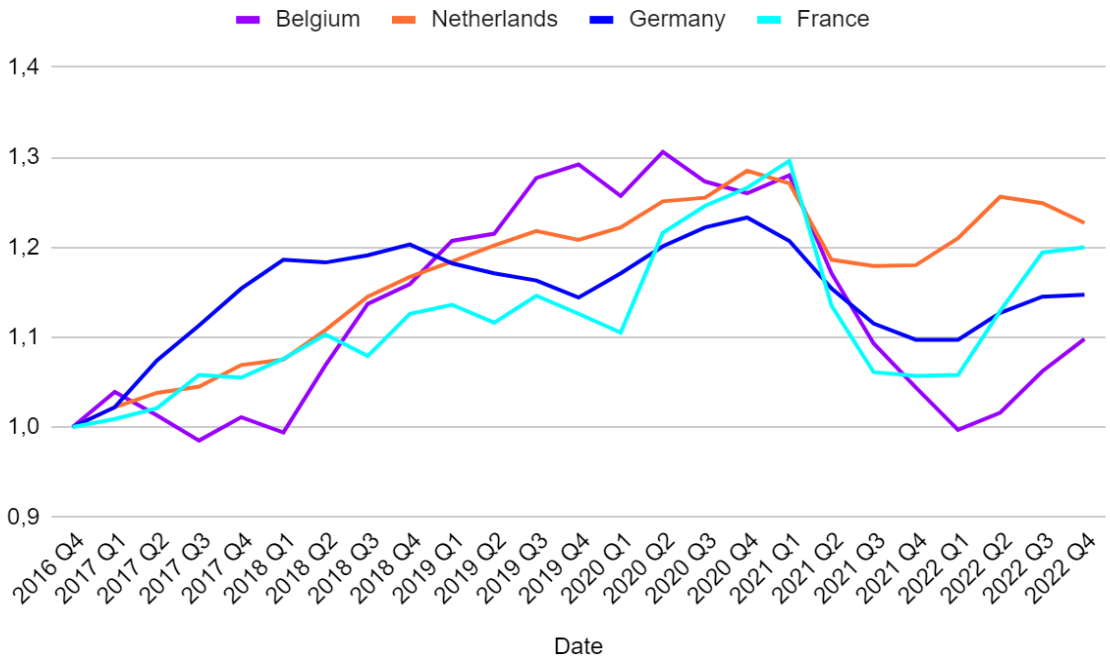


Secondly, the Scandinavia group [Graph 2], has a little bit of a similar pattern to the previous one. In particular, there is seen unevenness between some of the countries with the similarities being the countries of Finland and Denmark with periods of both growth and decline and maximum points before the beginning of the pandemic period. Sweden and Norway on the other hand had their maximum points again before the pandemic period but a bit earlier than the other two countries, in Q4 2017 and Q3 2018 respectively. The Danish government was one of the countries that got in the AI system a bit late and that is why the beginning of the graph has its minimum points below the standard beginning. Subsequently, Danish universities plan to expand AI programs by 23% by the end of 2020 as the Danish Ministry of Finance and Ministry of Industry, Business and Financial Affairs wrote in March 2019, which has brought it back to leading levels within these countries. Norway is the leader of the team as it is the standout from the second half of 2017 to the first quarter of 2019 with a peak in the second quarter of 2018. This can be attributed to this decline in market sharing and competition between the surrounding countries and not to anything negative in the AI strategy of the Norwegian government which 2020 launched the National AI Strategy to attract the workforce and companies to invest in this innovation (Alex Moltzau, 2020). On the other hand, Sweden on this indicator is characterized by absolute equilibrium over the 6 years with a very small decrease during COVID-19. In comparison to the English-speaking countries [Graph 1], Norway and Sweden seem to grow

earlier than them, namely 2018 Q3 and 2017 Q4, respectively. Finland comparatively follows a similar trend to the English-speaking countries until 2020 when it peaks and then declines.

Graph 3

AIHI in Central European Countries

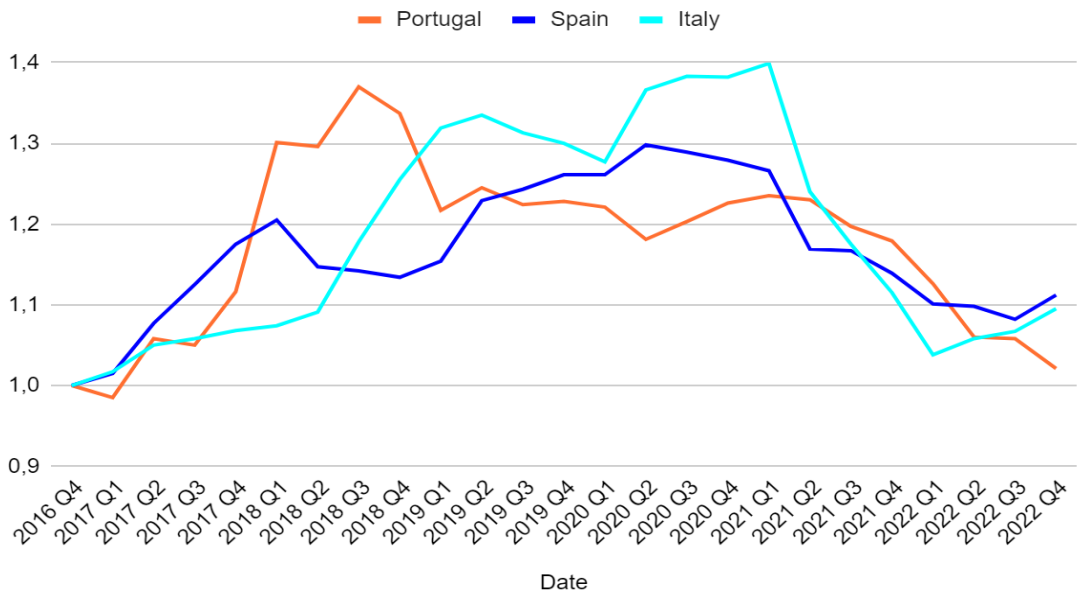


Third, the graph with the countries of central Europe [Graph 3]. Again in general words, the countries have the same form as the anglophone countries [Graph 1] as an inverted-U shape, a bigger increase after the low of COVID. In particular, it is worth mentioning that the four countries presented have similar patterns with peaks at the same points as the post-COVID period, which it turns out that the traumas of the health crisis have been the reason for governments to commit themselves economically and recover this sector rather than that of technical intelligence. All of this combined with the shock of the war in Ukraine brought these countries to their highest lows in the first quarter of 2022. From then on the trend is only upwards as the European Union is also excited about this new technology and is implementing agreements and information programs to all European countries. To be more specific about the countries, Germany arose as a forerunner at the beginning, in artificial intelligence recruiting, flaunting steady and positive development with the period of pandemic reduced its numbers having its minimum in 2022 Q1. This proposes a consistent interest in artificial intelligence ability inside the German work market. Interestingly, Belgium's AI recruiting market, while displaying development had its maximum before covid in 2019 Q4 with the pandemic having an important role in Belgium's development by hitting its minimum in 2022 Q1, same as all the other countries

in this team. These last two nations show a more unique scene, with times of both huge development and a decrease in the Artificial Intelligence Hiring Index. France has a smooth increase in AIHI numbers until it reaches its peak in 2021 Q1, then no shortage of pandemic episodes with a consecutive downfall until 2022 Q1 when its minimum point was reached. The Netherlands is in the same position with the only difference after its 2020 Q4 pick being a much smaller AIHI decline during the pandemic than all other countries.

Graph 4

AIHI in Mediterranean Countries



Finally, the fourth Graph with the Mediterranean countries [Graph 4]. In general, the countries have a uniform diagram again as observed in the previous graphs as an inverted-U shape with the lows of the countries being in the first and last years of the period and in general development in the field of Artificial Intelligence Hiring Index within it. More specifically, Italy had a normal increase at the beginning of the Graph with the peak at the start of the pandemic in 2021 Q1, but it didn't last for much time because after that it hit its minimum in 2022 Q1 below all the other countries at the group. Spain has a similar shape as Italy but with lower numbers, with a peak in 2020 Q2 and a minimum in 2022 Q3 after the pandemic effect. Compared to the other countries Spain had a U-shape decrease in the 2018 Q1 - 2019 Q2 period. Unfortunately, there is no specific information about this event but it can be considered that the Spanish constitutional crisis[7] played an important role in this event. The surprise is Portugal, not only in

[7] The law intending to allow the 2017 Catalan independence referendum was denounced by the Spanish government under Prime Minister Mariano Rajoy and subsequently suspended by the Constitutional Court until it ruled on the issue. [References]

this group but also in all 18 Portugal is the EU's second-best country for adopting artificial intelligence (AI) technology, per a recent Eurostat research where more than 17% of companies currently use AI in their day-to-day operations. This figure is about twice as high as the average for Europe. The nation has taken extraordinary steps in the field of cyber security compared to other similar economies.

3.5 Macroeconomic Variables

The macroeconomic variables used in the analysis are as follows.[8]

1. **Corporate Income Tax Rates[CT]:** These rates represent the tax levied on the profits earned by businesses, potentially influencing economic activity and investment decisions within a country.
2. **Employment Rate[E]:** This metric measures the percentage of the working-age population that is currently employed, offering insights into the labor market and available workforce.
3. **The GINI Index (0-100) [GN]:** This measure reflects the level of income inequality within a country, with 0 representing perfect equality and 100 representing perfect inequality. Understanding the GINI Index is crucial for assessing social and economic stability.
4. Gross Domestic Product (GDP) per Capita **[GDP]:** This rate is a key economic indicator used to compare the average level of economic prosperity across different countries. By dividing a nation's total GDP by its population, we get a snapshot of how much wealth is produced per person. This metric helps us understand a country's standard of living and economic well-being.
5. **Innovation Index (0-100)[In]:** This score reflects a country's ability to innovate and develop new ideas, technologies, and processes, which can significantly impact future economic competitiveness.
6. **Investment (% of GDP)[IG]:** This percentage signifies the portion of the GDP allocated to investment activities, such as building infrastructure or expanding businesses, indicating potential for future economic growth.
7. **Population [P]:** This metric represents a country's total number of inhabitants. Population size and growth can influence various economic factors, including labor dynamics and demand.

[8] For details, see Appendix

8. **Tertiary Education (% of 25-65 years old) [TE]:** This measure reflects the percentage of the population aged 25-65 that has completed tertiary education (e.g., college or university degree). Higher education levels are often associated with a more skilled workforce and economic growth potential.
9. **Unemployment Rate [U]:** This rate indicates the percentage of the labor force actively seeking work but unable to find employment, providing insights into the available workforce and potentially economic challenges.

3.6 Panel Description

To summarize, the analysis uses information on 18 countries over 6 years on a quarterly basis, from the fourth quarter of 2016 to the fourth quarter of 2022.

4. Econometric Analysis

This chapter delves into the statistical analysis of the Artificial Intelligence Hiring Index (AIHI) variance across eighteen diverse countries. Through the application of one specific econometric technique Panel Regression, the study aims to gain a deeper understanding of each country's unique position and the factors contributing to their respective differences in AIHI.

4.1 Panel Regression

The analysis employs a panel regression as follows. In this regression is useful to state that time and country-fixed effects are not used. The regression model utilizes the familiar normal equation format:

$$Y_{it} = \beta X_{it} + e_{it}$$

where Y is the AIHI, X is the macroeconomic variables of interest, i is the country and t is the year. Specifically, vector X includes the following variables: The employment rate (E), the investment rate (IG) as a percent of GDP, the Innovation Index (In) on a scale of 0-100, the percent of workers/the population in ages 25-65 with an undergraduate degree, the corporate income tax rate (CT), and the Gini coefficient (GN) on a scale 0-100. Table 6 below presents the main results.[9]

[9] The original Table will be presented at the Appendix.

Table 6

Summary Output		
Variables	Coefficients	t-Stat
Employment	0.44	3.96
Investment	0.09	1.80
Innovation Index	-0.01	-5.70
Tertiary Education	0.15	2.40
Corporate Income Tax Rates	-0.27	-2.40
GINI Index	0.01	4.67
Regression Statistics		
R Square	0.12	
Adjusted R Square	0.10	
Observation	450	

Firstly, the coefficient of the employment rate is positive at 0.44 and statistically significant at the 10 percent level. This means that countries with higher employment rates have a higher AI Hiring Index. Artificial intelligence needs a lot of labor combined with skilled knowledge as mentioned above. Especially in the initial stages, the most important factor is its formulation and programming. In terms of magnitudes, a one percent increase in the employment rate increases AIHI by approximately 0.44 percent.

Secondly, the coefficient of the investment rate is positive at 0.09 and statistically significant at the 5 percent level. This means that an increase in the investment also increases the AIHI, as capital investment is significant for innovation and development. In terms of magnitudes, a one percentage point increase in the investment rate increases AIHI by approximately 0.09 percent.

Third, the coefficient of the innovation index is negative at 0.01 and statistically significant at the 10 percent level. This means that an increase in the innovation index reduces

the AIHI. One reason for this potentially surprising relationship might be that the innovation index captures the level of innovation embedded in the capital stock of a country, whereas the AIHI captures the level of innovative skills embedded in human capital. At the initial stages of AI development, physical and human capital appears to be substituted in production. In terms of magnitudes, a one standard deviation increase in the innovation index decreases AIHI by 4.74 percent.

Fourth, the coefficient on Tertiary Education is positive at 0.15 and statistically significant at the 5 percent level. This indicates that countries with higher educational attainments among those aged 25 to 65, have a higher AI Hiring Index. This is because education, and especially university education of the labor force of a country, is a basic skill for the formation of an AI mentality. In other words, the use and configuration of such a specialized technology as artificial intelligence requires specialized knowledge of information and data. In terms of magnitudes, a one percentage point increase in Tertiary Education increases AIHI by approximately 0.15 percent.

Fifth, the Corporate income tax rate coefficient is negative at 0.26 and statistically significant at the 5 percent level. This means that countries with higher corporate income taxes have lower AIHI. This may be because low taxes on corporate profits operate as an incentive for hiring AI-skilled labor. In terms of magnitudes, a one percentage point increase in the corporate income tax rate decreases AIHI by approximately 0.26 percent.

Lastly, the effect of the Gini coefficient is positive at 0.01 and statistically significant at the 5 percent level. This indicates that countries with higher income inequality have a higher AI Hiring Index. This is because the English-speaking countries, which have a higher AIHI index compared to other countries (see one Table or one Graph only) are also characterized by higher levels of income inequality, compared to other countries. In terms of magnitudes, a one standard deviation increase in the Gini coefficient increases AIHI by approximately 2.9 percent.

5. Robustness Test

This section presents the robustness test that the paper examined before the original regression, with the information presented in Table 7 below[10]:

[10] The original Table will be presented at the Appendix.

Table 7

Summary Output		
Variables	Coefficients	t-Stat
Unemployment	-0.14	-0.57
GDP per capita	7.16	0.45
Employment	0.39	2.54
(GDP per capita)^2	0.01	-1.53
Investment	0.17	3.02
Innovation Index	-0.01	-5.30
Tertiary Education	0.24	3.47
Corporate Income Tax Rates	-0.40	-3.38
GINI Index	0.01	4.77
Regression Statistics		
R Square	0.13	
Adjusted R Square	0.11	
Observation	450	

Table 7 shows that unemployment and GDP per capita are not statistically significant for developments in the AIHI. Hence, the result that emerges is that the level of income (first moment) does not play a role in the AIHI, whereas the variance of income (second moment, positively related to the Gini coefficient) plays a role in the AIHI.

One additional important observation needs to be made. The econometric analysis of this paper does not include time country-fixed effects. Time-fixed effects capture unobserved factors that affect all countries in a similar manner. For example, one such factor could be the global pandemic, which affected all countries and probably did have an effect on AI hiring. Some

intuition along these lines can be gleaned from Graphs 1-4, where it is shown that AI-intensive hiring declined after the height of the pandemic. Country-fixed effects capture unobserved factors that are country-specific and therefore affect each country differently. For example, one such factor could be cultural differences, which may influence the type of hiring policies across countries. Although the current analysis does not possess sufficient statistical power to incorporate fixed effects across time and countries, future analysis will take them into consideration as more data becomes available.

6. Further discussion of AI developments

This section presents some additional AI developments, apart from the main econometric results of the paper. More specifically, the first section will further analyze the non-influence of unemployment and GDP per capita on the adaptation and development of AI technologies, specifically in the human resources sector. The second section will report on some predictions according to the literature on the development and integration of AI in people's lives, emphasizing the advantages and disadvantages of AI. Finally, a third section will present the impact of Artificial Intelligence on various fields.

6.1 Unemployment and GDP

As shown in the previous econometric analysis, one significant thing is the p-value column. Unemployment and GDP per capita are not important at any percent significant level, and this section will explain why. Firstly, Unemployment [U] is not an important variable for the research. This can easily be explained by the fact that the knowledge needed for AI is specialized in software and web development. These skills are very much in demand on the market at the moment (FDM, 2023)[11]. This leads to the result that the workforce with these skills may be absent from the unemployed population. In addition, companies see the adoption of technical intelligence only as a tool rather than as a replacement for the existing human resources, in other words, there is no general effect of unemployment[12]. Secondly, GDP per capita is also a variable that is not statistically important. This is because a high GDP per capita does not mean an equal distribution of wealth, which means that with the countries used, priority is given to the GINI index, which was found to be an important variable for this thesis. Where investment in AI is enhanced in countries with economic inequality according to the results of the basic regression

[11] More at References, Brown, P. (18 October, 2023).
[12] More at References, World Economic Forum. (2023)

and the test above. Also, a key condition for this variable is the allocation of resources[13].In particular, due to the observations and the time period used for the research, which implies periods of crisis, it was more important for the country to allocate more resources to industries that needed them than to new technologies, innovation, and artificial intelligence. One such sector was the health sector due to the COVID crisis. As a continuation of this argument, it is worth mentioning the case of India which was in the regression and is a developing country (IMF, 2022) which could potentially give priority to basic infrastructure and needs they have.

6.2 Advantages and Disadvantages

This section will analyze the advantages and disadvantages of artificial intelligence and its future influence.

6.2.1 Advantages of AI

Some predictions and expected facts that will be affected by this digital change will be presented, with the socio-economic aspect of the issue as the main nomenclature. Computer literacy and the use of artificial intelligence will most likely be key hard skills in a candidate, more than a few times this has been proven so far. More specifically, since 2000 when the computer and its tools entered middle-class homes, and therefore everyone's lives, but also most companies. This triggered a search for skills with simple computer knowledge and later (post 2010) these skills became specialized, further limiting the workforce that has them. In both the first and the second era the demand for such skills is high as the work they provide will be profitable for the company. For the first few years in particular, many new jobs will be created as it is a subject that needs a lot of work. These include roles in AI development, data science, cybersecurity, and jobs that partner with AI systems. These new jobs can offer competitive salaries and benefits. In the next years where AI will have a form, it will automate many tasks, such for example, administration services to improve them to customer services chatbots which is a very positive thing for the companies as the technical intelligence works without interruption thus providing 24/7 services. Many jobs will be automated accordingly.[14]

It is worth mentioning that AI can speed up scientific discoveries by automating operations related to invention and research, bringing additional new technologies and evolving existing ones. This will enhance economic well-being and improve lives as many aspects of development are also in the field of health. It will be able to create simulations of diseases and get results and

[13] More at References, Yip, J. Y. C. (2021)
[14] Will robots take my job? - website that shows the risk level of automation

statistics for the disease it examined, giving doctors a much better picture based on data. In conclusion, everything that is mentioned presupposes that doctors are informed by other doctors, and research studies on artificial intelligence, while at the same time, it should be seen as a tool. More information about future jobs will be analyzed in the 6.3 section.

6.2.2 Disadvantages of AI and Solutions

The negative side of this is the reaction and denial of knowledge by people, which will lead them to unemployment. The increasing automation of manual labor in manufacturing, while promising economic benefits, will inevitably lead to major social and economic upheavals that require proactive policy responses. More specifically, this automation is simultaneously leading to many mass layoffs, such as Amazon in November 2023, which is laying off some 27 thousand workers to give way to AI tools (Forbs, 2023)[15]. Moreover, apart from the negatives of unemployment, technical intelligence brings some other negatives of greater importance. One of them is non-security on the net. In particular, a technology that can read anything on the internet in a split second is dangerous. The potential for hacking, phishing, software viruses, and other issues that damage cybersecurity is greatly increased. Hackers have access to private accounts and passwords that are left exposed. An adversary that is knowledgeable in advanced AI programming is a hacker. According to a recent study, 75% of the cyber security specialists questioned saw a spike in hacking attacks between August 2022 and August 2023, and 85% of them blamed the misuse of artificial intelligence (GenAI) for the incident (McNicholas et al., 2024)[16]. Such an observation leads us to the conclusion that it is much easier for even novice developers to develop malware[17].

As a continuation of the problems mentioned around the misuse of technical intelligence it will mention some solutions I make to this. The solutions are divided into two subgroups, legal solutions and social solutions. First, starting with the legal solutions that need to be implemented and have already been implemented in many states. According to major judicial authorities in the United States such as the CFAA, SCA, and ECPA[18], offenses such as hacking and phishing are punishable by up to 10 years in prison, which is a penalty only for the act of hacking, if the results of it are worse there or the penalties are equal to felony penalties. Second, social solutions

[15] More at References, Forbs. (2023)
[16] More at References, McNicholas et al., 2024
[17] Software that is specifically designed to disrupt, damage, or gain unauthorized access to a computer system.
[18] The Computer Fraud and Abuse Act (CFAA), The Stored Communications Act (SCA), The Electronic Communications Privacy Act (ECPA) all located in the United States

are a more important factor. This is because, as already mentioned, artificial intelligence is software that people adapt and its misuse is a hallmark of problems. On the one hand, this means that developers who create AI technologies should create foolproof barriers to reduce the risk of the technology not being controlled or being hacked. Perhaps a connection of the new AI technology with the cybercrime police or antivirus systems so that any malicious activities are checked would be a valuable solution. On the other hand, all humans must be informed about the correct use of artificial intelligence. With the fact that from a young age, the use of mobile phones and computers is daily and access to AI becomes very simple, the training should start with seminars on cyber security, the use of the internet, and these technologies from school classes.[19] Governments should make educational seminars based on Artificial Intelligence and its use, either subsidized or free to all people[20]. As a conclusion, the correct use of AI is the most important solution. Forming a mindset aware of these technologies needs individual effort as well as collective effort.

6.3 AI impact on various fields

In this section, we will analyze fields that are very important for the evolution of humans, which will be affected by artificial intelligence. More specifically the fields consist of finance and manufacturing, health care and scientific research, and finally education.

The decision-making used to be in the hands of humans only in classic fields such as financial operations and manufacturing. Along with peer review loan officers carefully analyzed comprehensive applications encompassing borrowers' financial statements and credit histories to gauge any risks involved. The data management group was loaded with the duty of searching for anomalies in the big data to find out possible fraudulent activities. The factory workers, who had attended and possessed years of experience and a set of instruction booklets for the ownership of the machines, had their considerations within the assembly lines (Shoetan et al., 2024). Although human skills are still of utmost importance for making complex financial decisions and getting to grips with machine failures on the production line, these processes are slow, prone to mistakes, and almost impossible to get the desired result under rapidly changing market conditions. Artificial Intelligence (AI) might be one of the most significant game-changers among such sectors as it can take over workplace monotony and improve decision-making with instant feedback from real-time data analysis (Fayad, A., Montfort University, 2024). The assessment

[19] Due to Statista share of children owning a smartphone in the United States in 2021 by age of 14 to 18 have values: 14 - 91%, 15 - 83%, 16 - 89%, 17 - 97%, 18 - 91%
[20] UNESCO, 7 September 2023

process of loan applications can be taken over by AI-based algorithms trained on great volumes of datasets that feature historical financial data making it easier and faster to approve the loan without the risk of inaccuracy. AI technology can track transactions continuously through algorithms that could otherwise be wrong attributed to the volume of data that human analysts are unlikely to detect. AI, in this case, can be applied in manufacturing to analyze and predict failures from sensor data before they occur by perceiving conditions promptly so that the manufacturing facilities will not be shut down unnecessarily and smooth production can be ensured. Another dimension of AI in optimizing production lines is through the use of historical data and current trends (Srivastava, S. 2024). While AI analyzes these data, it goes ahead to indicate how they can be used effectively. In comparison to people, these AI-based systems make fewer mistakes, issue loans quicker, and eventually lead to cost reduction with optimum production line designs in manufacturing. Moreover, AI can personalize financial services by estimating and recognizing investment proposals and loans considering financial data, and calculations of the risk profiles for the investment instruments that are acceptable for the clients and loans which apply to the customers.

Pathology and biomedical research are domains that have been traditionally manned by the judgment and opinion of human experts. Doctors come to a diagnosis based on the physicians' experience, their understanding of medical history, and result interpretation. Scientists spend an infinite amount of their labor time on the overall data analysis including search of patterns and drawing conclusions that would programs. The results of these efforts may be the appearance of new solutions, which solve the most difficult issues. On the other hand, it is true that, despite the progress in AI, human expertise is still irreplaceable in these areas. However, the limitations of traditional methods such as the data volume and bias of human decisions still exist. AI is revolutionizing the discoveries in these genetic fields by allowing using vast amounts of data and making complex pattern identification. AI-assisted algorithms are outstanding at the analysis of medical imagery, such as X-rays or MRIs[21], which is impossible to compare with human accuracy (Khalifa & Albadawy, 2024). They analyze images successfully identifying abnormalities that can lead to early disease detection. Consequently, interventions can become more early and patients may recover faster. In the search for new drugs, AI has been preferred over traditional methods of screening through huge databases of molecules and their relations using computer-aided simulations which enables the process to be completed faster and with a higher level of precision (Singh et al., 2024). Not only does this process expedite the market

[21] A sort of an ultrasound-like noninvasive physic imaging procedure producing detailed pictures almost the whole interior of the human body, including the organs, bones, muscles and blood vessels.

entry of new life-saving drugs, but it also increases the efficiency that is related to limited resources. And AI can automate the administrative work in health care which sets doctors and nurses free from time-consuming tasks that could be accomplished with a computer. The AI integration creates an opportunity for better health, a shorter time for diagnosis, and the speediness of discoveries in the era of health (Alowais et al., 2023). AI-driven image analysis might help in at least two ways: timely diagnosis, and hence, saving lives. The use of AI technology during the discovery of drugs shortens the period of development of vital cures. Such capability is also able to speed up the provision of healthcare services with medical personnel having more time to deal with their patients on a one-on-one basis with a high level of attention, therefore supplying them with more specific and inclusive treatment.

Education continues to be inequality-prone since the teachers traditionally follow the general approach that involves them teaching grades to students with different learning styles within the classroom. This approach comes with a drawback in the sense that at times some of the students might advance far while others get left behind or even get bored as the repetition of some concepts might not be useful for them. Similarly, the grading process often requires time, which provides the student with feedback usually on the class's strengths and weaknesses. (Glover, B. 2023). AI is personalizing teaching and offering then psychological support to learners so that they offer a more dynamic, engaging, and student-centered learning environment. The AI-driven markers can enable to customize of educational material and methods of delivery suited to the interests and learning styles of every student. These systems can apply, machine learning algorithms to analyze student performance data and learning patterns to suggest the personalized learning path, with the adaptive learning modules adapting to the intimate wear and adjusting the difficulty and pace based on the progress of the student (Song et al., 2024). Moreover, AI-fueled platforms can use automation of assessment and feedback that students can immediately utilize for improvement purposes and hence follow progress tracking. Students may chance to get immediate feedback which will help in identifying their strong and weak areas that need improvement in assignments. On top of that, AI chatbots operate as virtual tutors that allow students prompt access through availability all the time, which also means the provision of assistance on basic inquiries. They could be the ones who offer enduring support to those in need, on top of what classmates can give. With the help of AI in personalizing a learning process and providing always-on support, AI has a huge potential to change the concept of education. Students can study at their own pace and get individual instruction aligned with their struggles which leads to a final aim of a better understanding of the material. An intelligent feedback system that provides instant feedback enables students to realize weaknesses or strengths faster and thus improve much more quickly. Besides, artificial intelligence-supported virtual tutors can

give learners the chance to get support immediately, regardless of whether they are within the class or outside the classroom, which means no one will be left behind.

As a conclusion, Artificial Intelligence is not only reshaping financial, medical, educational, and many other areas but also eliminating jobs and creating new important ones. It fast-tracks workflows, makes decisions more efficient, and customizes the experience. Although human expertise matters, AI inaugurates a new era where progress happens so much faster, activities are performed more efficiently and consequently, humanity grows bright across countries.

7. Conclusion

This thesis investigates the factors influencing AI developments in the labor market in a panel of 18 Western countries for the period 2016-2022. Specifically, it examines the role of a variety of macroeconomic variables for the cross-country and time-series evolution of the Artificial Intelligence Hiring Index (AIHI) developed by Stanford University. The AIHI captures whether hiring of AI talent is growing faster than, equal to, or more slowly than overall hiring in a particular country or region. Hence, it can be viewed as a proxy of the relative importance of AI skills for the labor force of a specific country. The main findings are that the investment rate, the level of education, and the degree of income inequality affect the AIHI positively, whereas the corporate tax rate and the innovation index affect the AIHI negatively.

The computerized unrest is changing reality at a speeding-up pace, and artificial intelligence remains at the front of this change. Artificial intelligence vows to alter various businesses, from medical services and transportation to manufacturing and finance. However, its impact on society extends far beyond mere efficiency gains. One of the most pressing concerns encompassing artificial intelligence is its capability to disturb the work market, uprooting laborers and prompting inescapable joblessness. Additionally, the ability of different countries to adopt and integrate AI technology raises concerns about widening development gaps. This thesis investigates the factors influencing AI developments in the labor market in a panel of 18 Western countries for the period 2016-2022.

Specifically, the thesis leverages as a dependent variable the Artificial Intelligence Hiring Index (AIHI) developed by Stanford University. The AIHI captures whether hiring of AI talent is growing faster than, equal to, or more slowly than overall hiring in a particular country or region. Hence, it can be viewed as a proxy of the relative importance of AI skills for the labor force of a specific country. The thesis then investigates the role of a variety of macroeconomic variables in the evolution of the AIHI across countries.

The main findings of the paper are as follows. First, the investment rate and the percentage of the workforce with a tertiary education degree are positively correlated with the AIHI. This means that countries with higher investment needs and with higher average educational attainment have started hiring more intensely in jobs that require advanced AI skills, compared to other types of jobs. Second, the innovation index in a country negatively affects the AIHI of the country. One reason for this potentially surprising relationship might be that the innovation index captures the level of innovation embedded in the capital stock of a country, whereas the AIHI captures the level of innovative skills embedded in human capital. At the initial stages of AI development, physical and human capital appears to be substituted in production. Third, the corporate income tax rate affects the AIHI negatively. This may be because low taxes on corporate profits operate as an incentive for hiring AI-skilled labor. Finally, income inequality, as proxied by the Gini coefficient, positively affects the AIHI. This is because English-speaking countries, which are the front-runners in AI-intensive labor hiring, are also characterized by higher income inequality.

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Appendix I - Data

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Appendix II - Indexes rates

Table 8.1

A.I. Hiring Index

Date	Canada	United States	United Kingdom	Ireland	Finland	Sweden	Norway	Denmark	Belgium	Netherlands	Germany	France	Portugal	Spain	Italy	India	Australia	New Zealand
12/1/2016	1,00000000	1,00000000	1,00000000	1,00000000	1,00000000	1,00000000	1,00000000	1,00000000	1,00000000	1,00000000	1,00000000	1,00000000	1,00000000	1,00000000	1,00000000	1,00000000	1,00000000	1,00000000
1/1/2017	1,01337765	1,01417678	1,02246479	1,00795166	0,98057616	1,06952321	1,03386652	0,99045078	1,02231424	1,01165145	1,00033820	1,00819254	0,98214295	0,99901996	1,00858157	0,99719421	1,02186355	0,99995994
2/1/2017	1,06788427	1,02590399	1,03507642	1,13553983	0,95812878	1,09049539	1,03851046	0,97056703	1,05826522	1,03116355	1,02482460	1,00738159	0,96152432	1,01353970	1,01090292	0,99373502	1,03421900	1,02609681
3/1/2017	1,07739948	1,04736717	1,06829975	1,19801775	0,95680965	1,09280413	1,07422222	0,97866258	1,03748209	1,02370037	1,04110823	1,00993983	1,01041424	1,03292534	1,03238134	0,98343765	1,04768165	1,05583757
4/1/2017	1,13215077	1,06602038	1,08099457	1,17598491	0,96262910	1,12479547	1,06183130	0,98477402	1,02866262	1,03814735	1,06113317	1,01917098	1,05054819	1,04547773	1,05271818	0,98986606	1,07682812	1,30114534
5/1/2017	1,15116716	1,08371460	1,10070765	1,24327900	1,02272557	1,11327434	1,06655200	0,96224757	0,99817146	1,04333522	1,07424280	1,02107700	1,07353589	1,08733397	1,04454479	0,99395524	1,09521860	1,26147707
6/1/2017	1,16512067	1,09420544	1,12268460	1,27781208	1,00954819	1,11762054	1,11363916	0,94002860	1,01290984	1,03371137	1,08783093	1,02195031	1,04948716	1,09909440	1,05418718	0,99785070	1,09878450	1,27990465
7/1/2017	1,20286837	1,11280022	1,13545178	1,28521179	1,00209667	1,12221127	1,10565360	0,92493303	0,98569556	1,03043749	1,09989278	1,04729449	1,03613274	1,10071107	1,05358989	1,00058517	1,12548015	1,38592206
8/1/2017	1,24357885	1,12472038	1,14995905	1,30618841	0,98839817	1,15925076	1,11158833	0,91774440	0,97465655	1,05076034	1,11673061	1,06491252	1,05983315	1,12642653	1,05491627	1,00697494	1,15956447	1,52067338
9/1/2017	1,26724101	1,14200641	1,15641317	1,31133030	0,97084362	1,15414653	1,16022263	0,92210547	0,99581442	1,05332240	1,12374180	1,06267210	1,05270109	1,14772895	1,06435995	1,01600554	1,18884435	1,59299969
10/1/2017	1,27140403	1,15618797	1,16926946	1,34139225	0,94579151	1,14467059	1,19671712	0,90697851	0,99123865	1,06947038	1,13867792	1,05267263	1,08961199	1,15957599	1,06464145	1,02383308	1,19395848	1,64304460
11/1/2017	1,27254609	1,17225389	1,18308865	1,35759621	0,92719697	1,18146305	1,18401235	0,92158193	1,01724669	1,07020655	1,15189843	1,05307467	1,07579563	1,17034870	1,07267105	1,02513639	1,20558565	1,61547877
12/1/2017	1,28129542	1,19357331	1,20567102	1,39484710	0,94220901	1,16702491	1,23656531	0,90541552	1,02487183	1,06816648	1,17082511	1,05974699	1,18131754	1,19456970	1,06801553	1,02750887	1,20450163	1,62206880
1/1/2018	1,29757725	1,19382095	1,19966852	1,42556636	0,98155936	1,09591749	1,23737862	0,92021230	0,99809595	1,07023591	1,19610193	1,06341554	1,27247165	1,21590251	1,06035252	1,03624230	1,18369334	1,62642038
2/1/2018	1,24015151	1,19555849	1,19221085	1,31622157	1,05067821	1,07579721	1,28590829	0,93008215	0,98180518	1,05875801	1,17884114	1,07481230	1,33903511	1,20436488	1,08794497	1,04953798	1,19185785	1,63385650
3/1/2018	1,25419162	1,19405725	1,18835368	1,23096113	1,06050013	1,08257706	1,23785670	0,94156622	1,00325305	1,09487930	1,18391286	1,08907821	1,29208821	1,19400213	1,07232700	1,07581899	1,21820218	1,65842600
4/1/2018	1,22540619	1,19715121	1,19733207	1,31029188	1,07938562	1,04829817	1,33533092	0,94674699	1,03281557	1,09819081	1,17758661	1,08343936	1,30072063	1,17557468	1,06166807	1,07984134	1,21628250	1,43093944
5/1/2018	1,22309909	1,19987626	1,20442044	1,28697969	1,01065266	1,07277095	1,37566347	1,01228673	1,10126632	1,10571645	1,18798948	1,10506799	1,26009122	1,13590920	1,11059918	1,09503135	1,23063091	1,60789850
6/1/2018	1,22601735	1,20988926	1,19255804	1,25587380	1,02081308	1,10959723	1,32987626	1,08289311	1,07390209	1,11898039	1,18434806	1,12107913	1,32595303	1,12966508	1,10202025	1,11461351	1,27491538	1,65667582
7/1/2018	1,20193551	1,21089716	1,20842911	1,24308733	1,03815610	1,08208091	1,38578964	1,13680469	1,12175947	1,14890603	1,18950964	1,09115006	1,35854810	1,16028396	1,13518979	1,12515227	1,27141882	1,56744389
8/1/2018	1,17453947	1,22257138	1,22170294	1,25939116	1,05481353	1,03495122	1,41225003	1,15416803	1,15679355	1,13497452	1,18756537	1,06663010	1,36169226	1,13729428	1,19437852	1,12995900	1,24901868	1,49051953
9/1/2018	1,17650757	1,22405904	1,23915026	1,25673871	1,10824743	1,04169756	1,38920690	1,16206159	1,13176355	1,15256619	1,19697846	1,07821507	1,39104798	1,12762964	1,20345864	1,13716553	1,24489639	1,43897806
10/1/2018	1,22033033	1,23432241	1,25048386	1,24616205	1,14247866	1,05820994	1,36428306	1,20234078	1,15003708	1,14277005	1,20350228	1,11318883	1,33589097	1,12626809	1,22187917	1,14751546	1,26681260	1,37878848
11/1/2018	1,24907691	1,24277019	1,25864344	1,26673949	1,18693970	1,04110877	1,42660523	1,21554123	1,14762367	1,16578928	1,20397434	1,12431739	1,39129160	1,14475339	1,25251958	1,17100963	1,28104398	1,48720841
12/1/2018	1,25817557	1,24278165	1,24155861	1,23340040	1,16081417	1,05858326	1,38888777	1,26632572	1,18018252	1,19316722	1,20173288	1,14014306	1,28503032	1,12998415	1,29206408	1,19215012	1,33460097	1,50636623

AI Hiring Index, defined by Stanford University, for 18 countries over the period 1/12/2016 – 1/12/2018

Table 8.2

A.I. Hiring Index

Date	Canada	United States	United Kingdom	Ireland	Finland	Sweden	Norway	Denmark	Belgium	Netherlands	Germany	France	Portugal	Spain	Italy	India	Australia	New Zealand
1/1/2019	1,25314595	1,24631727	1,25174353	1,20464860	1,18429571	1,08074215	1,36401864	1,26800530	1,19559493	1,18762006	1,18099098	1,14016160	1,20359300	1,13198213	1,32064363	1,21245005	1,38302779	1,56957383
2/1/2019	1,29991575	1,26143433	1,28096830	1,18879736	1,14569823	1,09586890	1,31282162	1,32374913	1,19845060	1,18668107	1,18580847	1,14035353	1,20202812	1,15958579	1,30496836	1,22899035	1,39194809	1,54265768
3/1/2019	1,30361953	1,26066411	1,26226822	1,25605395	1,16014932	1,11433968	1,36497303	1,30355465	1,22782225	1,17734180	1,17949314	1,12774706	1,24575549	1,16983067	1,33218692	1,23831239	1,38615632	1,47071840
4/1/2019	1,28271486	1,26195477	1,25890071	1,19309558	1,16520098	1,10685671	1,29872696	1,34144617	1,21305972	1,18169774	1,17675692	1,13127139	1,19832262	1,21356712	1,34147983	1,24892886	1,38379857	1,48100140
5/1/2019	1,30504820	1,26060540	1,25055825	1,15476480	1,20784070	1,10208557	1,26757247	1,31803582	1,19660235	1,20513307	1,16710588	1,11249147	1,27805563	1,22970100	1,30854005	1,25846401	1,36938410	1,35516974
6/1/2019	1,31513306	1,25918937	1,27350813	1,16474672	1,27156525	1,05968566	1,32245925	1,29047976	1,23424875	1,21818000	1,16930063	1,10405293	1,25794243	1,24430804	1,35438954	1,25551173	1,33932415	1,29318689
7/1/2019	1,32290551	1,25778302	1,26716747	1,20711228	1,25639607	1,09370216	1,29263167	1,25982000	1,26042181	1,21312767	1,16837868	1,12351552	1,23915647	1,22962711	1,34880689	1,26593462	1,34653337	1,29668568
8/1/2019	1,34797339	1,26159715	1,25887527	1,22261222	1,28270270	1,15557997	1,27939932	1,27458136	1,27312803	1,22192403	1,16406790	1,15817593	1,22432134	1,24381448	1,28813907	1,27916755	1,35575980	1,24116181
9/1/2019	1,34658228	1,26286349	1,25121666	1,25793950	1,25500666	1,17720952	1,25994353	1,27647745	1,29795086	1,21942283	1,15706869	1,15626533	1,20867654	1,25682490	1,30207424	1,28967645	1,37207639	1,23369216
10/1/2019	1,31575733	1,25431930	1,23941840	1,24222330	1,28073406	1,18233207	1,26403811	1,27152225	1,30515326	1,21890349	1,14369502	1,13538740	1,24659105	1,26393815	1,32465497	1,29549649	1,37154714	1,27701015
11/1/2019	1,31415444	1,24868275	1,23738152	1,21533778	1,26349171	1,15507939	1,25424463	1,25809157	1,30350547	1,20230357	1,13972175	1,13395258	1,21233630	1,25374416	1,29942300	1,30117264	1,37761812	1,23538923
12/1/2019	1,32535842	1,24337708	1,27367637	1,25540558	1,30892133	1,16395468	1,26049193	1,23896081	1,26593035	1,20368327	1,14918581	1,10975676	1,22636213	1,26530384	1,27671385	1,29979734	1,36253181	1,27524009
1/1/2020	1,32808730	1,23798140	1,25999468	1,27480761	1,26399227	1,16474650	1,24957597	1,24851672	1,27304764	1,20585203	1,16722873	1,10002386	1,26066435	1,25887297	1,27313474	1,30508022	1,33711712	1,22667084
2/1/2020	1,31156090	1,22283846	1,24952904	1,28188268	1,27069348	1,15446004	1,26163567	1,23259338	1,25260444	1,22412696	1,17051841	1,09520214	1,21920975	1,24943580	1,27309275	1,30992136	1,33524797	1,28286198
3/1/2020	1,31250733	1,23896020	1,27413981	1,27630276	1,28172932	1,13212420	1,25438463	1,25522276	1,24385929	1,23655576	1,17493132	1,12078045	1,18179949	1,27556553	1,28590752	1,32399336	1,32259367	1,38437797
4/1/2020	1,38359420	1,27004963	1,31027552	1,36263592	1,25639850	1,16438189	1,23525729	1,21569231	1,30295328	1,25504447	1,19223258	1,16443846	1,22669613	1,29397804	1,33999617	1,40894508	1,32404270	1,42532693
5/1/2020	1,40884837	1,29926939	1,33770727	1,41565200	1,23859709	1,17728727	1,22558549	1,21831109	1,30486202	1,24251915	1,19974157	1,23146020	1,16230005	1,30399021	1,39061690	1,42525559	1,35021487	1,49521219
6/1/2020	1,42744416	1,31616367	1,33392392	1,45507924	1,18125038	1,18048827	1,17175034	1,23061089	1,30952179	1,25688980	1,21178781	1,25121849	1,15300222	1,29552689	1,36719602	1,42916728	1,34501383	1,51290875
7/1/2020	1,43423056	1,32681105	1,32573978	1,43818121	1,19084641	1,20309552	1,16958303	1,24328290	1,29878751	1,25103358	1,21283206	1,25461022	1,19303821	1,29298122	1,36171236	1,42488202	1,33864735	1,47676867
8/1/2020	1,42420104	1,32137663	1,32133630	1,38750986	1,17150053	1,15384009	1,16853730	1,22790946	1,26083934	1,25934694	1,22330244	1,23610724	1,20555402	1,29221728	1,39790531	1,45179552	1,34690084	1,54277274
9/1/2020	1,43176200	1,31758119	1,32948046	1,36162004	1,18451203	1,14481872	1,17761031	1,23731559	1,25949364	1,25550258	1,23005090	1,24746039	1,21077492	1,28175440	1,38965595	1,46895402	1,31992306	1,54599226
10/1/2020	1,43901092	1,32354705	1,34056184	1,38160561	1,16729279	1,16647362	1,17626906	1,24334529	1,25870335	1,27947456	1,23674096	1,25298758	1,21731568	1,28166049	1,36250638	1,48424313	1,31846618	1,53673721
11/1/2020	1,43963856	1,32931817	1,34154221	1,40756788	1,19687214	1,19500974	1,14527323	1,24280028	1,25031270	1,29270205	1,24223693	1,25841462	1,22906801	1,27730290	1,37767882	1,49474905	1,30114208	1,50913532
12/1/2020	1,45218813	1,33690743	1,30959766	1,37217622	1,17135640	1,18835035	1,15045028	1,25051234	1,27150758	1,28225878	1,21961553	1,28683445	1,23263678	1,27794916	1,40471959	1,49962427	1,27796387	1,43846312
1/1/2021	1,45324766	1,35463180	1,32346804	1,37120708	1,18467434	1,18127627	1,17587566	1,26610470	1,27650336	1,29342695	1,21084722	1,30445670	1,22943224	1,28130924	1,41102058	1,48575835	1,26856961	1,43274290

AI Hiring Index, defined by Stanford University, for 18 countries over the period 1/1/2019 – 1/1/2021

Table 8.3

A.I. Hiring Index

Date	Canada	United States	United Kingdom	Ireland	Finland	Sweden	Norway	Denmark	Belgium	Netherlands	Germany	France	Portugal	Spain	Italy	India	Australia	New Zealand
2/1/2021	1,44243669	1,35633735	1,31763601	1,39672020	1,19655818	1,19566552	1,17408061	1,24714552	1,28780455	1,27382486	1,21116182	1,30823727	1,23395304	1,28283445	1,41748981	1,48368235	1,25152365	1,38620374
3/1/2021	1,43038196	1,32890813	1,29858888	1,35621101	1,17560723	1,20652360	1,14916978	1,24131819	1,27625824	1,24655725	1,20015472	1,27586207	1,24288485	1,23501908	1,36798229	1,46776321	1,23537179	1,31335469
4/1/2021	1,35251991	1,27003422	1,24743836	1,27362834	1,17160470	1,22249948	1,17399915	1,24682677	1,19770067	1,20457336	1,17245881	1,21127703	1,19424233	1,17414190	1,28820824	1,35792065	1,22164145	1,24251473
5/1/2021	1,27804672	1,20872950	1,19472367	1,19540105	1,16805685	1,21224535	1,16768285	1,23502447	1,16820970	1,18600668	1,15271951	1,11577254	1,24395042	1,15742651	1,21962680	1,30820142	1,18819329	1,14552105
6/1/2021	1,23142422	1,16804745	1,16902942	1,12933647	1,17586442	1,22747397	1,17302504	1,18499808	1,14813664	1,16850263	1,13601918	1,07706781	1,25070106	1,17499027	1,21133110	1,29832013	1,21242100	1,14342874
7/1/2021	1,22534517	1,14627443	1,17555986	1,12429157	1,18696994	1,20397824	1,17773335	1,18898777	1,09560071	1,17146813	1,12618575	1,05958753	1,21468486	1,17277876	1,19863021	1,29507716	1,21341131	1,21377109
8/1/2021	1,21453286	1,13883281	1,17868421	1,12800682	1,18226443	1,21556721	1,16674722	1,19252199	1,09459786	1,17578086	1,11413368	1,06486021	1,17904737	1,16631919	1,17016400	1,24928791	1,20710542	1,13993427
9/1/2021	1,19734446	1,14010207	1,17078098	1,11686310	1,16570512	1,21273329	1,16818454	1,18026944	1,08897957	1,18851693	1,10547723	1,05821794	1,19805974	1,16280125	1,15763287	1,21433370	1,22937223	1,13070522
10/1/2021	1,19697673	1,13605316	1,16553010	1,09983171	1,16781052	1,17555195	1,16626978	1,15426640	1,06455596	1,17667888	1,10035364	1,06313084	1,18715599	1,15303479	1,15011353	1,19304571	1,22079428	1,12565473
11/1/2021	1,19022534	1,13062884	1,16381293	1,05521254	1,13319962	1,17388885	1,16234918	1,14743854	1,04476397	1,17898255	1,09292619	1,06057359	1,18432049	1,14171284	1,12143650	1,16194544	1,22320322	1,11743857
12/1/2021	1,15969348	1,12625216	1,17340479	1,06270764	1,14231897	1,19828819	1,15083126	1,13590957	1,02184375	1,18285261	1,09900908	1,04754897	1,16435556	1,12126539	1,07266479	1,14350431	1,22072355	1,12353492
1/1/2022	1,14737624	1,11352479	1,16622233	1,04149475	1,13307643	1,18085237	1,14405922	1,10708141	1,00969398	1,18810131	1,09388361	1,05084913	1,14015201	1,10705077	1,04000777	1,12740782	1,22780498	1,10710884
2/1/2022	1,14614628	1,11068369	1,16785297	1,00211861	1,11369002	1,16327850	1,14051820	1,10992404	0,99602459	1,21187885	1,09573099	1,05613407	1,12583005	1,09184817	1,02832114	1,10340766	1,24989010	1,11422619
3/1/2022	1,14109854	1,11031730	1,16780214	0,99825233	1,11005342	1,16024197	1,13794304	1,11483432	0,98595921	1,22925556	1,10103208	1,06571121	1,11347104	1,10399491	1,04479506	1,08279590	1,26377348	1,10565700
4/1/2022	1,15893038	1,12289906	1,18286110	1,00572482	1,11696046	1,12445307	1,11892871	1,10011205	1,00601426	1,24341553	1,11409785	1,08463663	1,09720175	1,11084969	1,04901123	1,08503883	1,26783132	1,11185357
5/1/2022	1,19149252	1,16670671	1,21366653	1,03831447	1,11135551	1,12666300	1,15218422	1,09333284	1,02003550	1,25915320	1,13036576	1,13174687	1,05217707	1,10248519	1,06722308	1,08748770	1,27363978	1,13998745
6/1/2022	1,21623912	1,19320301	1,23627786	1,05648861	1,10754493	1,12202677	1,14706157	1,12858078	1,02340505	1,26408650	1,13628518	1,16934965	1,03098429	1,08167735	1,05754750	1,06584248	1,24365541	1,12173516
7/1/2022	1,20792845	1,19755853	1,23656991	1,04226847	1,08950340	1,11286702	1,12023817	1,11163494	1,06222532	1,25966934	1,14064083	1,19380482	1,03839404	1,07992799	1,06114317	1,04716365	1,22030780	1,08978875
8/1/2022	1,20554599	1,20507208	1,24189697	1,05876834	1,10133030	1,10772646	1,12497116	1,12392603	1,06307617	1,24649027	1,14500331	1,19003131	1,08160476	1,07808265	1,07035262	1,03691138	1,20252174	1,11092942
9/1/2022	1,22549324	1,20671982	1,24817461	1,06826881	1,11300579	1,11007009	1,11490897	1,12646344	1,05920741	1,24033135	1,15041675	1,19945281	1,05471608	1,08789670	1,07008392	1,01873467	1,16703404	1,12029153
10/1/2022	1,20693863	1,19734749	1,25515313	1,08246197	1,10590985	1,13169729	1,12447387	1,14197228	1,08463047	1,23657968	1,15271666	1,20606897	1,03533306	1,10452746	1,08153014	0,98915968	1,15258749	1,08281090
11/1/2022	1,18655271	1,17767084	1,25848231	1,10503654	1,11824787	1,12031016	1,12875618	1,14843719	1,10272040	1,23176317	1,15402616	1,20621215	1,01536434	1,10911192	1,08996259	0,96736300	1,14194989	1,08142461
12/1/2022	1,17490356	1,15207681	1,25368225	1,08032047	1,08301566	1,09162123	1,09582795	1,14178853	1,10636179	1,21378504	1,13452089	1,18694655	1,01305749	1,12344914	1,11472524	0,93895210	1,11954626	1,08550999

AI Hiring Index, defined by Stanford University, for 18 countries over the period 1/2/2021 – 1/12/2022

Table 9

Corporate Income Tax Rates

Quarter	Canada	United States	United Kingdom	Ireland	Finland	Sweden	Norway	Denmark	Belgium	Netherlands	Germany	France	Portugal	Spain	Italy	India	Australia	New Zealand
2016 Q4	12,50%	35,00%	19,00%	12,50%	20,00%	22,00%	24,00%	22,00%	33,90%	25,00%	15,00%	33,30%	21,00%	25,00%	24,00%	30,00%	30,00%	28,00%
2017 Q1	15,00%	35,00%	19,00%	12,50%	20,00%	22,00%	24,00%	22,00%	33,90%	25,00%	15,00%	33,30%	21,00%	25,00%	24,00%	30,00%	30,00%	28,00%
2017 Q2	15,00%	35,00%	19,00%	12,50%	20,00%	22,00%	24,00%	22,00%	33,90%	25,00%	15,00%	33,30%	21,00%	25,00%	24,00%	30,00%	30,00%	28,00%
2017 Q3	15,00%	35,00%	19,00%	12,50%	20,00%	22,00%	24,00%	22,00%	33,90%	25,00%	15,00%	33,30%	21,00%	25,00%	24,00%	30,00%	30,00%	28,00%
2017 Q4	15,00%	35,00%	19,00%	12,50%	20,00%	22,00%	24,00%	22,00%	33,90%	25,00%	15,00%	33,30%	21,00%	25,00%	24,00%	30,00%	30,00%	28,00%
2018 Q1	15,00%	21,00%	19,00%	12,50%	20,00%	22,00%	23,00%	22,00%	29,50%	25,00%	15,00%	33,30%	21,00%	25,00%	24,00%	30,00%	30,00%	28,00%
2018 Q2	15,00%	21,00%	19,00%	12,50%	20,00%	22,00%	23,00%	22,00%	29,50%	25,00%	15,00%	33,30%	21,00%	25,00%	24,00%	30,00%	30,00%	28,00%
2018 Q3	15,00%	21,00%	19,00%	12,50%	20,00%	22,00%	23,00%	22,00%	29,50%	25,00%	15,00%	33,30%	21,00%	25,00%	24,00%	30,00%	30,00%	28,00%
2018 Q4	15,00%	21,00%	19,00%	12,50%	20,00%	22,00%	23,00%	22,00%	29,50%	25,00%	15,00%	33,30%	21,00%	25,00%	24,00%	30,00%	30,00%	28,00%
2019 Q1	15,00%	21,00%	19,00%	12,50%	20,00%	21,40%	23,00%	22,00%	29,50%	25,00%	15,00%	28,00%	21,00%	25,00%	24,00%	25,10%	30,00%	28,00%
2019 Q2	15,00%	21,00%	19,00%	12,50%	20,00%	21,40%	23,00%	22,00%	29,50%	25,00%	15,00%	28,00%	21,00%	25,00%	24,00%	25,10%	30,00%	28,00%
2019 Q3	15,00%	21,00%	19,00%	12,50%	20,00%	21,40%	22,00%	22,00%	29,50%	25,00%	15,00%	28,00%	21,00%	25,00%	24,00%	25,10%	30,00%	28,00%
2019 Q4	15,00%	21,00%	19,00%	12,50%	20,00%	21,40%	22,00%	22,00%	29,50%	25,00%	15,00%	28,00%	21,00%	25,00%	24,00%	25,10%	30,00%	28,00%
2020 Q1	15,00%	21,00%	19,00%	12,50%	20,00%	21,40%	22,00%	22,00%	29,50%	25,00%	15,00%	28,00%	21,00%	25,00%	24,00%	22,80%	30,00%	28,00%
2020 Q2	15,00%	21,00%	19,00%	12,50%	20,00%	21,40%	22,00%	22,00%	29,50%	25,00%	15,00%	28,00%	21,00%	25,00%	24,00%	22,80%	30,00%	28,00%
2020 Q3	15,00%	21,00%	19,00%	12,50%	20,00%	21,40%	22,00%	22,00%	29,50%	25,00%	15,00%	28,00%	21,00%	25,00%	24,00%	22,80%	30,00%	28,00%
2020 Q4	15,00%	21,00%	19,00%	12,50%	20,00%	21,40%	22,00%	22,00%	29,50%	25,00%	15,00%	28,00%	21,00%	25,00%	24,00%	22,80%	30,00%	28,00%
2021 Q1	15,00%	21,00%	19,00%	12,50%	20,00%	21,40%	22,00%	22,00%	29,50%	25,00%	15,00%	28,00%	21,00%	25,00%	24,00%	22,80%	30,00%	28,00%
2021 Q2	15,00%	21,00%	19,00%	12,50%	20,00%	21,40%	22,00%	22,00%	29,50%	25,00%	15,00%	28,00%	21,00%	25,00%	24,00%	22,80%	30,00%	28,00%
2021 Q3	15,00%	21,00%	19,00%	12,50%	20,00%	21,40%	22,00%	22,00%	29,50%	25,00%	15,00%	28,00%	21,00%	25,00%	24,00%	22,80%	30,00%	28,00%
2021 Q4	15,00%	21,00%	19,00%	12,50%	20,00%	21,40%	22,00%	22,00%	29,50%	25,00%	15,00%	28,00%	21,00%	25,00%	24,00%	22,80%	30,00%	28,00%
2022 Q1	15,00%	21,00%	19,00%	12,50%	20,00%	21,40%	22,00%	22,00%	29,50%	25,00%	15,00%	28,00%	21,00%	25,00%	24,00%	22,80%	30,00%	28,00%
2022 Q2	15,00%	21,00%	19,00%	12,50%	20,00%	21,40%	22,00%	22,00%	29,50%	25,00%	15,00%	28,00%	21,00%	25,00%	24,00%	22,80%	30,00%	28,00%
2022 Q3	15,00%	21,00%	19,00%	12,50%	20,00%	21,40%	22,00%	22,00%	29,50%	25,00%	15,00%	28,00%	21,00%	25,00%	24,00%	22,80%	30,00%	28,00%
2022 Q4	15,00%	21,00%	19,00%	12,50%	20,00%	21,40%	22,00%	22,00%	29,50%	25,00%	15,00%	28,00%	21,00%	25,00%	24,00%	22,80%	30,00%	28,00%

Data on the corporate income tax rate, defined as tax percentages, for 18 countries over the period 2016-2022

Table 10

Employment Rate (% of the population)

Quarter	Canada	United States	United Kingdom	Ireland	Finland	Sweden	Norway	Denmark	Belgium	Netherlands	Germany	France	Portugal	Spain	Italy	India	Australia	New Zealand
2016 Q4	72,90	69,52	74,57	66,91	68,22	75,87	74,07	73,04	63,28	76,71	73,89	64,99	64,98	60,06	57,26		72,29	76,35
2017 Q1	73,37	69,79	74,77	67,24	68,45	76,24	73,88	72,83	62,37	76,94	73,98	65,02	65,76	60,44	57,56		72,42	76,78
2017 Q2	73,47	70,06	75,11	67,55	68,77	76,22	73,98	73,22	62,99	77,20	74,09	65,64	66,54	60,98	57,80		72,79	76,24
2017 Q3	73,6	70,27	75,01	67,54	69,06	76,43	74,00	73,16	63,24	77,54	74,42	65,60	67,47	61,33	57,97		73,18	77,11
2017 Q4	73,90	70,28	75,17	67,99	70,04	76,50	74,18	73,75	63,96	77,79	74,52	65,98	68,10	61,58	58,11		73,47	77,54
2018 Q1	73,87	70,49	75,56	68,00	70,43	76,79	74,56	73,58	64,08	78,06	74,76	65,87	68,48	61,72	58,25		73,65	77,54
2018 Q2	73,83	70,67	75,55	68,60	71,14	76,88	74,91	74,27	63,92	78,49	74,70	66,09	68,92	62,40	58,62		73,59	77,58
2018 Q3	74,17	70,73	75,55	68,63	71,37	76,88	74,75	74,22	64,86	78,95	75,06	66,33	69,30	62,58	58,64		73,76	77,93
2018 Q4	74,40	70,97	75,83	68,78	71,58	76,81	75,04	74,45	65,02	79,28	75,13	66,28	69,39	62,87	58,57		73,96	76,93
2019 Q1	74,40	71,04	76,06	69,37	71,83	76,71	75,05	74,59	64,68	79,46	75,64	66,22	69,61	63,00	58,71		74,07	77,45
2019 Q2	74,77	71,17	76,10	69,50	71,79	76,78	75,33	75,21	65,74	79,72	75,64	66,54	69,77	63,59	59,32		74,17	77,61
2019 Q3	74,70	71,47	76,05	69,22	72,09	76,46	75,58	75,05	65,64	79,77	75,64	66,26	70,15	63,28	59,13		74,45	77,49
2019 Q4	74,51	71,71	76,47	69,57	72,28	76,42	75,24	75,24	65,11	79,77	75,79	66,53	69,85	63,35	59,03		74,41	77,30
2020 Q1	73,10	71,37	76,33	69,65	72,19	75,84	75,53	75,03	65,20	80,11	74,52	66,70	69,57	62,67	58,80		74,51	77,68
2020 Q2	64,57	62,39	75,71	63,99	70,06	74,57	74,36	74,21	64,01	78,96	74,15	65,64	67,44	59,35	56,72		70,48	76,85
2020 Q3	70,50	66,38	74,92	66,13	71,02	74,45	74,17	73,95	64,51	78,87	74,10	65,89	68,11	60,67	57,02		72,06	76,11
2020 Q4	72,27	67,89	74,58	66,49	71,35	74,66	74,60	74,43	64,01	79,24	74,66	66,23	68,95	61,08	57,32		73,56	76,52
2021 Q1	72,20	68,39	74,67	66,07	71,67	74,45	74,88	74,07	63,67	79,43	74,51	66,53	68,63	61,22	56,68		74,34	77,12
2021 Q2	72,67	68,90	75,02	69,14	72,76	75,32	75,99	75,74	65,10	79,84	75,23	67,14	70,06	62,50	57,94		75,13	77,85
2021 Q3	74,03	69,76	75,34	71,60	72,74	75,64	76,92	75,65	66,27	80,42	76,20	67,58	70,87	63,38	58,85		74,81	79,10
2021 Q4	75,13	70,56	75,47	72,59	73,47	76,10	77,39	76,68	66,07	80,85	76,40	67,74	70,96	63,89	59,43		75,34	79,27
2022 Q1	75,30	70,98	75,63	73,18	73,94	76,60	77,85	76,48	66,51	81,38	76,59	67,90	71,68	64,10	59,51		76,70	79,11
2022 Q2	75,83	71,27	75,52	73,71	74,61	77,15	77,81	77,12	66,16	81,85	76,87	68,05	71,55	64,59	60,21		77,13	79,22
2022 Q3	75,53	71,40	75,48	72,81	74,01	77,36	77,71	76,77	66,80	81,73	76,91	68,34	71,90	64,55	60,11		77,51	80,13
2022 Q4	75,81	71,40	75,63	73,08	74,62	77,31	77,53	76,75	66,67	82,08	77,21	68,27	71,66	64,39	60,74		77,57	80,26

Data on employment rate, defined as percentage of population, for 18 countries over the period 2016-2022

Table 11

GINI Index (0-100)

Quarter	Canada	United States	United Kingdom	Ireland	Finland	Sweden	Norway	Denmark	Belgium	Netherlands	Germany	France	Portugal	Spain	Italy	India	Australia	New Zealand
2016 Q4	31,0	42,0	33,1	32,8	27,1	29,6	28,5	28,2	27,6	28,2	31,4	31,9	35,2	35,8	35,2	34,8	33,7	33,3
2017 Q1	31,0	42,0	32,6	31,4	27,4	28,8	27,0	28,7	27,4	28,5	31,9	31,6	33,8	34,7	35,9	35,9	33,7	33,5
2017 Q2	31,0	42,0	32,6	31,4	27,4	28,8	27,0	28,7	27,4	28,5	31,9	31,6	33,8	34,7	35,9	35,9	33,7	33,5
2017 Q3	31,0	42,0	32,6	31,4	27,4	28,8	27,0	28,7	27,4	28,5	31,9	31,6	33,8	34,7	35,9	35,9	33,7	33,5
2017 Q4	30,0	42,0	32,6	31,4	27,4	28,8	27,0	28,7	27,4	28,5	31,9	31,6	33,8	34,7	35,9	35,9	33,7	33,5
2018 Q1	30,0	42,0	33,7	28,8	27,3	30,0	27,6	28,2	27,2	28,1	31,8	32,4	33,5	34,7	35,2	34,6	34,3	33,0
2018 Q2	30,0	42,0	33,7	28,8	27,3	30,0	27,6	28,2	27,2	28,1	31,8	32,4	33,5	34,7	35,2	34,6	34,3	33,0
2018 Q3	30,0	42,0	33,7	28,8	27,3	30,0	27,6	28,2	27,2	28,1	31,8	32,4	33,5	34,7	35,2	34,6	34,3	33,0
2018 Q4	30,0	42,0	33,7	28,8	27,3	30,0	27,6	28,2	27,2	28,1	31,8	32,4	33,5	34,7	35,2	34,6	34,3	33,0
2019 Q1	30,0	43,0	32,8	28,3	27,7	29,3	27,7	27,7	27,2	29,2	31,7	31,2	32,8	34,3	34,6	35,0	34,3	32,6
2019 Q2	30,0	43,0	32,8	28,3	27,7	29,3	27,7	27,7	27,2	29,2	31,7	31,2	32,8	34,3	34,6	35,0	34,3	32,6
2019 Q3	30,0	43,0	32,8	28,3	27,7	29,3	27,7	27,7	27,2	29,2	31,7	31,2	32,8	34,3	34,6	35,0	34,3	32,6
2019 Q4	30,0	43,0	32,8	28,3	27,7	29,3	27,7	27,7	27,2	29,2	31,7	31,2	32,8	34,3	34,6	35,0	34,3	32,6
2020 Q1	28,0	42,0	32,6	28,3	27,1	28,9	27,6	27,5	26,0	26,0	30,5	30,7	34,7	34,9	35,2	34,8	32,4	32,0
2020 Q2	28,0	42,0	32,6	28,3	27,1	28,9	27,6	27,5	26,0	26,0	30,5	30,7	34,7	34,9	35,2	34,8	32,4	32,0
2020 Q3	28,0	42,0	32,6	28,3	27,1	28,9	27,6	27,5	26,0	26,0	30,5	30,7	34,7	34,9	35,2	34,8	32,4	32,0
2020 Q4	28,0	42,0	32,6	28,3	27,1	28,9	27,6	27,5	26,0	26,0	30,5	30,7	34,7	34,9	35,2	34,8	32,4	32,0
2021 Q1	29,0	43,0	35,4	26,9	29,1	26,8	25,9	27,0	24,1	26,1	31,2	29,3	31,3	32,3	32,9	34,2	32,4	31,7
2021 Q2	29,0	43,0	35,4	26,9	29,1	26,8	25,9	27,0	24,1	26,1	31,2	29,3	31,3	32,3	32,9	34,2	32,4	31,7
2021 Q3	29,0	43,0	35,4	26,9	29,1	26,8	25,9	27,0	24,1	26,1	31,2	29,3	31,3	32,3	32,9	34,2	32,4	31,7
2021 Q4	29,0	43,0	35,4	26,9	29,1	26,8	25,9	27,0	24,1	26,1	31,2	29,3	31,3	32,3	32,9	34,2	32,4	31,7
2022 Q1	28,8	42,0	34,5	27,9	26,6	27,6	27,5	27,7	24,9	26,3	28,8	29,8	32,0	32,0	32,7	34,2	32,4	33,2
2022 Q2	28,8	42,0	34,5	27,9	26,6	27,6	27,5	27,7	24,9	26,3	28,8	29,8	32,0	32,0	32,7	34,2	32,4	33,2
2022 Q3	28,8	42,0	34,5	27,9	26,6	27,6	27,5	27,7	24,9	26,3	28,8	29,8	32,0	32,0	32,7	34,2	32,4	33,2
2022 Q4	28,8	42,0	34,5	27,9	26,6	27,6	27,5	27,7	24,9	26,3	28,8	29,8	32,0	32,0	32,7	34,2	32,4	33,2

Data on the GINI index, defined as a number from 0 to 100, for 18 countries over the period 2016-2022
(100 as total income inequality)

Table 12

GDP per Capita

Quarter	Canada.	United.States	United.Kingdom	Ireland	Finland	Sweden	Norway	Denmark	Belgium	Netherlands	Germany	France	Portugal	Spain	Italy	India	Australia	New.Zealand
2016.Q4	44805,00	57705,00	43179,00	75155,00	43873,00	49535,00	60887,00	50781,00	46765,00	51602,00	48372,00	41266,00	30807,00	36274,00	38030,00	1714,30	47357,00	37588,00
2017.Q1.	45299,00	57898,00	43478,00	73026,00	44317,00	49553,00	61484,00	51007,00	47033,00	51815,00	48904,00	41481,00	31181,00	36557,00	38229,00	1958,40	47285,00	37859,00
2017.Q2	45670,00	58132,00	43693,00	73417,00	44859,00	50113,00	61970,00	51506,00	47093,00	52216,00	49298,00	41800,00	31360,00	36932,00	38419,00	1958,40	47423,00	38172,00
2017.Q3.	45500,00	58486,00	43905,00	76949,00	44984,00	50359,00	62253,00	51246,00	47017,00	52488,00	49577,00	42123,00	31589,00	37141,00	38589,00	1958,40	47667,00	38393,00
2017.Q4.	45510,00	59045,00	44156,00	79879,00	45252,00	50329,00	61793,00	51561,00	47348,00	52775,00	50022,00	42322,00	31857,00	37293,00	38824,00	1958,40	47740,00	38714,00
2018.Q1.	45940,00	59453,00	44115,00	80325,00	45373,00	50333,00	62026,00	51762,00	47466,00	52987,00	49674,00	42262,00	32123,00	37414,00	38809,00	1974,40	48005,00	38865,00
2018.Q2.	46170,00	59690,00	44123,00	81298,00	45317,00	50793,00	62107,00	51959,00	47627,00	53282,00	50045,00	42404,00	32376,00	37605,00	38852,00	1974,40	48209,00	39209,00
2018.Q3.	46191,00	59968,00	44209,00	81449,00	45248,00	50178,00	62381,00	52218,00	47750,00	53240,00	49538,00	42544,00	32546,00	37743,00	38897,00	1974,40	48207,00	39033,00
2018.Q4.	46068,00	59965,00	44206,00	82399,00	45256,00	50768,00	62308,00	52416,00	48153,00	53394,00	49931,00	42727,00	32740,00	37904,00	39026,00	1974,40	48171,00	39453,00
2019.Q1.	46083,00	60228,00	44467,00	83131,00	45578,00	50819,00	61962,00	52256,00	48216,00	53786,00	50247,00	42971,00	33021,00	38052,00	39088,00	2050,20	48225,00	39662,00
2019.Q2.	46463,00	60658,00	44551,00	84335,00	45928,00	51083,00	62389,00	52718,00	48396,00	53875,00	50203,00	43207,00	33204,00	38111,00	39257,00	2050,20	48250,00	39677,00
2019.Q3.	46368,00	61255,00	44827,00	85237,00	45925,00	50935,00	62627,00	52923,00	48692,00	53865,00	50177,00	43199,00	33363,00	38140,00	39306,00	2050,20	48323,00	39849,00
2019.Q4.	46243,00	61559,00	44770,00	86274,00	45800,00	51142,00	63016,00	52744,00	48918,00	54051,00	50307,00	42985,00	33647,00	38127,00	39068,00	2050,20	48395,00	39733,00
2020.Q1.	45221,00	60660,00	43505,00	88690,00	45714,00	50804,00	62322,00	52111,00	47444,00	53273,00	49400,00	40669,00	32158,00	36021,00	36762,00	1913,20	48104,00	39110,00
2020.Q2.	40164,00	55846,00	34627,00	83551,00	42791,00	46677,00	59046,00	48928,00	42034,00	48802,00	44856,00	35296,00	27286,00	29659,00	32532,00	1913,20	44724,00	35211,00
2020.Q3.	43787,00	60147,00	40444,00	93712,00	44896,00	50031,00	61110,00	51792,00	46928,00	51852,00	48850,00	41441,00	31264,00	34468,00	37035,00	1913,20	46414,00	39975,00
2020.Q4.	44611,00	60738,00	41001,00	88942,00	45220,00	50299,00	61496,00	52245,00	46717,00	52111,00	49237,00	41139,00	31338,00	34543,00	36919,00	1913,20	48020,00	39906,00
2021.Q1.	45217,00	61530,00	40590,00	98512,00	45083,00	50785,00	61811,00	52779,00	47506,00	52704,00	48610,00	41123,00	30616,00	34700,00	37590,00	2238,10	49025,00	40711,00
2021.Q2.	44978,00	62435,00	43573,00	100971,00	45671,00	51497,00	62028,00	54330,00	48354,00	54254,00	49683,00	41457,00	31987,00	35459,00	38603,00	2238,10	49383,00	41434,00
2021.Q3.	45615,00	62880,00	44194,00	103999,00	46116,00	52517,00	64366,00	54995,00	49347,00	55243,00	49996,00	42644,00	32933,00	36276,00	39696,00	2238,10	48407,00	39613,00
2021.Q4.	46076,00	63889,00	44739,00	100671,00	46458,00	53533,00	64254,00	56083,00	49652,00	55518,00	49979,00	42835,00	33543,00	36954,00	40040,00	2238,10	50330,00	40777,00
2022.Q1.	46379,00	63534,00	44849,00	106462,00	46360,00	52919,00	63658,00	55194,00	49655,00	55666,00	50521,00	42756,00	34311,00	37003,00	40105,00	2410,90	50300,00	40730,00
2022.Q2.	46674,00	63379,00	44761,00	108108,00	46644,00	53160,00	64188,00	55552,00	49795,00	56424,00	50069,00	42887,00	34333,00	37844,00	40717,00	2410,90	50478,00	41333,00
2022.Q3	46580,00	63705,00	44671,00	111107,00	46555,00	53420,00	65180,00	55718,00	49861,00	56298,00	50120,00	43064,00	34508,00	37928,00	40868,00	2410,90	50298,00	42139,00
2022.Q4.	46081,00	64017,00	44663,00	108730,00	46250,00	52870,00	64543,00	55706,00	49901,00	56525,00	49842,00	43028,00	34684,00	37981,00	40821,00	2410,90	50451,00	41560,00

Data on GDP per capita, defined as the real number of average GDP per capita, for 18 countries over the period 2016-2022

Table 13

Innovation Index (0-100)

Quarter	Canada	United States	United Kingdom	Ireland	Finland	Sweden	Norway	Denmark	Belgium	Netherlands	Germany	France	Portugal	Spain	Italy	India	Australia	New Zealand
2016 Q4	54,70	61,40	61,90	59,00	59,90	63,60	52,00	58,50	52,00	58,30	57,90	54,00	46,40	49,20	47,20	33,60	53,10	54,20
2017 Q1	53,70	61,40	60,90	58,10	58,50	63,80	53,10	58,70	49,90	63,40	58,40	54,20	46,10	48,80	47,00	35,50	51,80	52,90
2017 Q2	53,70	61,40	60,90	58,10	58,50	63,80	53,10	58,70	49,90	63,40	58,40	54,20	46,10	48,80	47,00	35,50	51,80	52,90
2017 Q3	53,70	61,40	60,90	58,10	58,50	63,80	53,10	58,70	49,90	63,40	58,40	54,20	46,10	48,80	47,00	35,50	51,80	52,90
2017 Q4	53,70	61,40	60,90	58,10	58,50	63,80	53,10	58,70	49,90	63,40	58,40	54,20	46,10	48,80	47,00	35,50	51,80	52,90
2018 Q1	53,00	59,80	60,10	57,20	59,60	63,10	52,60	58,40	50,50	63,30	58,00	54,40	45,70	48,70	46,30	35,20	52,00	51,30
2018 Q2	53,00	59,80	60,10	57,20	59,60	63,10	52,60	58,40	50,50	63,30	58,00	54,40	45,70	48,70	46,30	35,20	52,00	51,30
2018 Q3	53,00	59,80	60,10	57,20	59,60	63,10	52,60	58,40	50,50	63,30	58,00	54,40	45,70	48,70	46,30	35,20	52,00	51,30
2018 Q4	53,00	59,80	60,10	57,20	59,60	63,10	52,60	58,40	50,50	63,30	58,00	54,40	45,70	48,70	46,30	35,20	52,00	51,30
2019 Q1	53,90	61,70	61,30	56,10	59,80	63,70	51,90	58,40	50,20	61,40	58,20	54,20	44,60	47,90	46,30	36,60	50,30	49,60
2019 Q2	53,90	61,70	61,30	56,10	59,80	63,70	51,90	58,40	50,20	61,40	58,20	54,20	44,60	47,90	46,30	36,60	50,30	49,60
2019 Q3	53,90	61,70	61,30	56,10	59,80	63,70	51,90	58,40	50,20	61,40	58,20	54,20	44,60	47,90	46,30	36,60	50,30	49,60
2019 Q4	53,90	61,70	61,30	56,10	59,80	63,70	51,90	58,40	50,20	61,40	58,20	54,20	44,60	47,90	46,30	36,60	50,30	49,60
2020 Q1	52,30	60,60	59,80	53,00	57,00	62,50	49,30	57,50	49,10	58,80	56,50	53,70	43,50	45,60	45,70	35,60	48,40	47,00
2020 Q2	52,30	60,60	59,80	53,00	57,00	62,50	49,30	57,50	49,10	58,80	56,50	53,70	43,50	45,60	45,70	35,60	48,40	47,00
2020 Q3	52,30	60,60	59,80	53,00	57,00	62,50	49,30	57,50	49,10	58,80	56,50	53,70	43,50	45,60	45,70	35,60	48,40	47,00
2020 Q4	52,30	60,60	59,80	53,00	57,00	62,50	49,30	57,50	49,10	58,80	56,50	53,70	43,50	45,60	45,70	35,60	48,40	47,00
2021 Q1	53,10	61,30	59,80	50,70	58,40	63,10	50,40	57,30	49,20	58,60	57,30	55,00	44,20	45,40	45,70	36,40	48,30	47,50
2021 Q2	53,10	61,30	59,80	50,70	58,40	63,10	50,40	57,30	49,20	58,60	57,30	55,00	44,20	45,40	45,70	36,40	48,30	47,50
2021 Q3	53,10	61,30	59,80	50,70	58,40	63,10	50,40	57,30	49,20	58,60	57,30	55,00	44,20	45,40	45,70	36,40	48,30	47,50
2021 Q4	53,10	61,30	59,80	50,70	58,40	63,10	50,40	57,30	49,20	58,60	57,30	55,00	44,20	45,40	45,70	36,40	48,30	47,50
2022 Q1	50,80	61,80	59,70	48,50	56,90	61,60	48,80	55,90	46,90	58,00	57,20	55,00	42,10	44,60	46,10	36,60	47,10	47,20
2022 Q2	50,80	61,80	59,70	48,50	56,90	61,60	48,80	55,90	46,90	58,00	57,20	55,00	42,10	44,60	46,10	36,60	47,10	47,20
2022 Q3	50,80	61,80	59,70	48,50	56,90	61,60	48,80	55,90	46,90	58,00	57,20	55,00	42,10	44,60	46,10	36,60	47,10	47,20
2022 Q4	50,80	61,80	59,70	48,50	56,90	61,60	48,80	55,90	46,90	58,00	57,20	55,00	42,10	44,60	46,10	36,60	47,10	47,20

Data on the innovation index, defined as a number from 0 to 100, for 18 countries over the period 2016-2022
(100 as the most innovations as possible)

Table 14

Investment (% of GDP)

Quarter	Canada	United States	United Kingdom	Ireland	Finland	Sweden	Norway	Denmark	Belgium	Netherlands	Germany	France	Portugal	Spain	Italy	India	Australia	New Zealand
2016 Q4	21,76%	20,70%	17,22%	45,88%	23,44%	24,56%	27,73%	21,28%	25,10%	20,66%	19,32%	22,14%	14,63%	20,14%	18,99%	29,59%	24,75%	24,43%
2017 Q1	21,49%	20,52%	18,22%	56,75%	23,89%	25,12%	28,54%	20,66%	25,58%	20,66%	19,45%	22,65%	15,01%	20,68%	18,91%	29,77%	25,54%	24,67%
2017 Q2	22,05%	20,80%	19,03%	31,67%	24,27%	25,78%	28,14%	21,41%	25,99%	20,88%	19,88%	22,90%	15,34%	20,83%	19,16%	30,04%	25,67%	25,29%
2017 Q3	26,71%	20,92%	17,41%	100,57%	24,95%	26,47%	27,71%	21,90%	25,83%	21,84%	20,04%	23,22%	15,40%	21,39%	19,48%	31,33%	25,85%	25,92%
2017 Q4	23,64%	21,01%	18,12%	28,86%	24,67%	25,52%	28,38%	22,31%	26,12%	21,82%	20,14%	23,47%	15,91%	21,80%	19,80%	32,21%	26,55%	26,98%
2018 Q1	22,50%	21,07%	18,19%	28,29%	25,26%	26,16%	27,70%	22,00%	26,35%	22,02%	20,20%	23,45%	15,91%	21,82%	19,72%	33,85%	26,55%	27,12%
2018 Q2	22,00%	21,08%	22,90%	31,48%	25,19%	26,19%	29,03%	24,64%	26,40%	22,17%	20,48%	23,73%	16,24%	22,67%	20,01%	34,25%	26,95%	27,66%
2018 Q3	25,87%	21,38%	17,78%	33,91%	25,29%	25,79%	29,00%	21,64%	26,67%	21,57%	20,71%	23,92%	16,42%	22,76%	19,89%	35,59%	26,76%	27,16%
2018 Q4	22,15%	21,29%	18,19%	37,33%	25,64%	26,23%	29,55%	21,55%	27,23%	22,46%	20,87%	24,18%	16,89%	22,85%	19,93%	36,27%	26,92%	27,73%
2019 Q1	21,75%	21,53%	17,51%	73,06%	24,95%	25,99%	30,32%	22,39%	27,75%	22,93%	20,91%	24,35%	17,38%	23,44%	20,05%	35,61%	26,46%	28,34%
2019 Q2	25,44%	21,46%	15,55%	35,51%	25,05%	25,22%	31,71%	21,74%	27,83%	23,41%	20,94%	24,77%	17,23%	23,47%	20,25%	36,93%	26,36%	28,60%
2019 Q3	22,67%	21,38%	18,77%	110,64%	24,88%	25,95%	32,12%	22,33%	28,16%	23,72%	20,98%	25,01%	17,16%	23,75%	20,21%	35,64%	25,80%	28,54%
2019 Q4	22,04%	20,92%	13,08%	40,49%	24,95%	27,01%	32,25%	22,22%	28,28%	23,60%	20,89%	25,09%	17,23%	23,53%	19,97%	35,82%	26,24%	28,86%
2020 Q1	19,41%	20,98%	16,99%	158,65%	24,83%	27,01%	31,16%	22,39%	27,57%	23,74%	20,66%	23,08%	17,14%	22,97%	18,33%	34,89%	26,16%	27,79%
2020 Q2	24,45%	20,10%	20,74%	140,88%	24,65%	25,23%	29,91%	21,88%	23,10%	21,48%	19,32%	20,15%	15,65%	18,51%	15,56%	20,93%	26,08%	22,93%
2020 Q3	21,71%	21,22%	19,96%	32,54%	24,73%	26,74%	29,85%	23,02%	27,26%	22,77%	20,25%	24,10%	17,28%	22,12%	19,97%	35,48%	24,65%	29,00%
2020 Q4	23,75%	21,81%	15,94%	45,24%	24,55%	26,77%	30,36%	25,29%	28,24%	23,16%	20,79%	24,97%	17,45%	22,08%	20,09%	37,57%	25,12%	29,15%
2021 Q1	25,49%	21,07%	18,54%	67,76%	24,63%	27,57%	30,78%	24,26%	27,96%	23,62%	20,27%	25,12%	18,04%	22,04%	21,17%	38,77%	26,22%	30,75%
2021 Q2	24,01%	20,57%	17,42%	33,07%	25,17%	28,20%	29,95%	25,30%	28,35%	23,39%	20,52%	25,54%	18,19%	21,97%	22,00%	33,73%	27,59%	30,23%
2021 Q3	22,47%	20,89%	22,98%	35,48%	24,46%	28,26%	29,86%	24,49%	27,84%	23,27%	19,92%	25,57%	17,99%	21,93%	22,68%	39,23%	28,33%	29,14%
2021 Q4	23,57%	21,86%	18,67%	34,67%	25,42%	28,91%	31,44%	24,71%	27,26%	23,48%	20,00%	25,49%	18,80%	22,08%	23,34%	38,92%	28,59%	31,88%
2022 Q1	28,56%	22,23%	17,14%	69,19%	26,00%	29,20%	32,01%	24,69%	27,72%	23,34%	20,44%	25,60%	19,14%	22,68%	24,20%	40,32%	28,59%	32,04%
2022 Q2	23,18%	21,58%	15,72%	38,20%	25,64%	30,31%	31,91%	24,66%	27,36%	24,09%	20,12%	25,75%	18,50%	22,68%	24,64%	40,92%	28,84%	30,66%
2022 Q3	21,37%	21,18%	19,30%	45,26%	25,87%	30,40%	32,07%	24,66%	27,96%	23,89%	20,32%	26,37%	18,47%	22,83%	24,59%	42,19%	28,81%	32,16%
2022 Q4	21,60%	21,28%	17,21%	49,74%	25,25%	30,01%	32,30%	27,97%	28,24%	24,16%	20,05%	26,39%	19,08%	22,01%	24,81%	42,45%	29,04%	31,32%

Data on investment rate, defined as investment divided by real GDP, for 18 countries over the period 2016-2022

Table 15

Population in Thousand

Quarter	Canada	United States	United Kingdom	Ireland	Finland	Sweden	Norway	Denmark	Belgium	Netherlands	Germany	France	Portugal	Spain	Italy	India	Australia	New Zealand
2016 Q4	36259,0	325557,0	65844,0	4773,0	5502,0	9975,0	5255,0	5744,0	11352,0	17075,0	82541,0	66930,0	10311,0	46501,0	60079,0	1338636,34	24385,0	4754,0
2017 Q1	36314,0	326053,0	65942,0	4784,0	5503,0	10010,0	5263,0	5752,0	11358,0	17094,0	82622,0	67001,0	10310,0	46504,0	60052,0		24511,0	4782,0
2017 Q2	36398,0	326554,0	66040,0	4793,0	5506,0	10040,0	5272,0	5758,0	11368,0	17112,0	82690,0	67075,0	10301,0	46503,0	60020,0	1354195,68	24593,0	4805,0
2017 Q3	36545,0	327140,0	66139,0	4806,0	5511,0	10075,0	5284,0	5770,0	11379,0	17144,0	82775,0	67154,0	10297,0	46532,0	59986,0		24690,0	4825,0
2017 Q4	36721,0	327692,0	66238,0	4826,0	5514,0	10108,0	5293,0	5780,0	11397,0	17176,0	82811,0	67237,0	10294,0	46593,0	59951,0		24759,0	4848,0
2018 Q1	36798,0	328091,0	66337,0	4830,0	5514,0	10132,0	5299,0	5784,0	11407,0	17194,0	82847,0	67324,0	10288,0	46640,0	59916,0		24882,0	4873,0
2018 Q2	36898,0	328526,0	66436,0	4857,0	5514,0	10158,0	5308,0	5788,0	11418,0	17210,0	82931,0	67408,0	10283,0	46675,0	59887,0	1369003,306	24963,0	4893,0
2018 Q3	37065,0	329040,0	66526,0	4869,0	5518,0	10191,0	5318,0	5798,0	11431,0	17244,0	83033,0	67491,0	10282,0	46746,0	59863,0		25067,0	4911,0
2018 Q4	37250,0	329522,0	66616,0	4886,0	5519,0	10220,0	5326,0	5806,0	11452,0	17278,0	83037,0	67572,0	10283,0	46855,0	59843,0		25146,0	4931,0
2019 Q1	37325,0	329868,0	66707,0	4904,0	5518,0	10244,0	5332,0	5809,0	11464,0	17294,0	83058,0	67651,0	10290,0	46957,0	59801,0		25265,0	4953,0
2019 Q2	37423,0	330245,0	66797,0	4922,0	5520,0	10271,0	5341,0	5813,0	11480,0	17317,0	83099,0	67724,0	10288,0	47047,0	59740,0		25335,0	4972,0
2019 Q3	37601,0	330729,0	66868,0	4933,0	5523,0	10300,0	5351,0	5821,0	11494,0	17357,0	83178,0	67793,0	10284,0	47150,0	59702,0	1383112,05	25438,0	4993,0
2019 Q4	37810,0	331208,0	66939,0	4950,0	5526,0	10322,0	5362,0	5825,0	11517,0	17396,0	83171,0	67856,0	10283,0	47 268	59673,0		25521,0	5024,0
2020 Q1	37909,0	331534,0	67010,0	4964,0	5528,0	10337,0	5370,0	5824,0	11536,0	17416,0	83128,0	67915,0	10295,0	47337,0	59586,0		25628,0	5062,0
2020 Q2	37986,0	331699,0	67081,0	4977,0	5528,0	10349,0	5374,0	5825,0	11535,0	17425,0	83151,0	67973,0	10292,0	47350,0	59446,0		25649,0	5087,0
2020 Q3	38007,0	331872,0	67148,0	4986,0	5532,0	10365,0	5380,0	5831,0	11546,0	17446,0	83194,0	68032,0	10294,0	47362,0	59387,0	1396387,127	25633,0	5095,0
2020 Q4	38043,0	332045,0	67216,0	4993,0	5534,0	10379,0	5388,0	5839,0	11560,0	17470,0	83155,0	68090,0	10307,0	47374,0	59338,0		25631,0	5101,0
2021 Q1	38124,0	331989,0	67283,0	5005,0	5536,0	10389,0	5395,0	5842,0	11568,0	17482,0	83150,0	68149,0	10301,0	47347,0	59217,0		25653,0	5106,0
2021 Q2	38227,0	332149,0	67351,0	5011,0	5539,0	10407,0	5400,0	5847,0	11581,0	17498,0	83196,0	68207,0	10287,0	47304,0	59141,0		25685,0	5110,0
2021 Q3	38227,0	332480,0	67412,0	5020,0	5544,0	10431,0	5409,0	5859,0	11597,0	17538,0	83283,0	68265,0	10292,0	47310,0	59105,0	1407563,842	25704,0	5113,0
2021 Q4	38427,0	332786,0	67473,0	5039,0	5548,0	10448,0	5420,0	5870,0	11622,0	17579,0	83177,0	68322,0	10298,0	47366,0	59070,0		25771,0	5116,0
2022 Q1	38516,0	332978,0	67681,0	5060,0	5550,0	10477,0	5430,0	5878,0	11630,0	17616,0	83791,0	68379,0	10308,0	47426,0	59025,0		25910,0	5116,0
2022 Q2	38645,0	333321,0	67791,0	5100,0	5552,0	10518,0	5446,0	5897,0	11674,0	17676,0	84023,0	68435,0	10294,0	47524,0	58948,0		26013,0	5116,0
2022 Q3	38930,0	333799,0	67804,0	5132,0	5560,0	10548,0	5465,0	5919,0	11696,0	17746,0	68549,0	68492,0	10296,0	47671,0	58907,0	1417173,173	26153,0	5125,0
2022 Q4	39292,0	334282,0	67818,0	5167,0	5566,0	10568,0	5482,0	5931,0	11722,0	17796,0	84201,0	68549,0	10298,0	47839,0	58886,0		26291,0	5147,0

Data on population, defined as the population divided by 1000, for 18 countries over the period 2016-2022

Table 16

Tertiary education (% of 25-65 years old)

Quarter	Canada	United States	United Kingdom	Ireland	Finland	Sweden	Norway	Denmark	Belgium	Netherlands	Germany	France	Portugal	Spain	Italy	India	Australia	New Zealand
2016 Q4	60,58%	47,52%	51,78%	53,43%	41,13%	47,22%	48,61%	44,59%	44,31%	46,49%	30,53%	44,04%	23,86%	35,69%	17,72%	11,46%	43,74%	36,28%
2017 Q1	60,92%	47,76%	51,62%	53,47%	41,25%	47,39%	48,34%	45,54%	45,73%	46,50%	31,31%	44,34%	24,04%	36,35%	18,67%	11,46%	45,36%	37,73%
2017 Q2	60,93%	47,77%	51,63%	53,48%	41,26%	47,40%	48,35%	45,55%	45,74%	46,51%	31,32%	44,35%	24,05%	36,36%	18,68%	11,46%	45,37%	37,74%
2017 Q3	60,94%	47,78%	51,64%	53,49%	41,27%	47,41%	48,36%	45,56%	45,75%	46,52%	31,33%	44,36%	24,06%	36,37%	18,69%	11,46%	45,38%	37,75%
2017 Q4	60,95%	47,79%	51,65%	53,50%	41,28%	47,42%	48,37%	45,57%	45,76%	47,99%	31,34%	44,37%	24,07%	36,38%	18,70%	11,46%	45,39%	37,76%
2018 Q1	61,75%	49,37%	50,75%	56,17%	41,31%	47,53%	48,21%	45,83%	47,40%	47,10%	32,28%	46,94%	24,98%	37,25%	19,37%	11,46%	45,73%	39,29%
2018 Q2	61,76%	49,38%	50,76%	56,18%	41,32%	47,54%	48,22%	45,84%	47,41%	47,10%	32,29%	46,95%	24,99%	37,26%	19,38%	11,47%	45,74%	39,30%
2018 Q3	61,77%	49,39%	50,77%	56,19%	41,33%	47,55%	48,23%	45,85%	47,42%	47,10%	32,30%	46,96%	24,10%	37,27%	19,39%	11,48%	45,75%	39,31%
2018 Q4	61,78%	49,40%	50,78%	56,20%	41,34%	47,56%	48,24%	45,86%	47,43%	49,31%	32,31%	46,97%	24,10%	37,28%	19,40%	11,49%	45,76%	39,32%
2019 Q1	62,97%	50,38%	51,81%	55,45%	41,82%	48,37%	48,66%	47,10%	47,28%	49,32%	33,26%	48,05%	26,28%	38,60%	19,70%	12,95%	47,13%	39,07%
2019 Q2	62,98%	50,39%	51,82%	55,46%	41,83%	48,38%	48,67%	47,11%	47,29%	49,33%	33,27%	48,06%	26,29%	38,61%	19,71%	12,96%	47,14%	39,08%
2019 Q3	62,99%	50,40%	51,83%	55,47%	41,84%	48,39%	48,68%	47,12%	47,30%	49,34%	33,28%	48,07%	26,30%	38,62%	19,72%	12,97%	47,15%	39,09%
2019 Q4	62,10%	50,41%	51,84%	55,48%	41,85%	48,40%	48,69%	47,13%	47,31%	49,57%	33,29%	48,08%	26,31%	38,63%	19,73%	12,95%	47,16%	39,10%
2020 Q1	64,39%	51,86%	55,83%	58,38%	44,67%	49,13%	50,84%	42,58%	48,51%	49,58%	34,88%	49,45%	28,16%	39,69%	19,99%	12,95%	49,34%	40,12%
2020 Q2	64,40%	51,87%	55,84%	58,39%	44,68%	49,14%	50,85%	42,59%	48,52%	49,59%	34,89%	49,46%	28,17%	39,70%	19,10%	12,95%	49,35%	40,13%
2020 Q3	64,41%	51,88%	55,85%	58,40%	44,69%	49,15%	50,86%	42,60%	48,53%	49,60%	34,90%	49,47%	28,18%	39,71%	19,10%	12,95%	49,36%	40,14%
2020 Q4	64,42%	51,89%	55,86%	58,41%	44,70%	49,16%	50,87%	42,61%	48,54%	52,15%	34,91%	49,48%	28,19%	39,72%	19,10%	12,95%	49,37%	40,15%
2021 Q1	66,36%	51,17%	57,47%	62,88%	40,06%	49,22%	55,03%	49,04%	50,87%	52,16%	35,88%	50,26%	31,08%	40,70%	19,98%	12,95%	49,77%	40,49%
2021 Q2	66,37%	51,18%	57,48%	62,89%	40,07%	49,23%	55,04%	49,05%	50,88%	52,17%	35,89%	50,27%	31,09%	40,71%	19,99%	12,95%	49,78%	40,50%
2021 Q3	66,38%	51,19%	57,49%	62,90%	40,08%	49,24%	55,05%	49,06%	50,89%	52,18%	35,90%	50,28%	31,10%	40,72%	19,10%	12,95%	49,79%	40,51%
2021 Q4	66,39%	51,20%	57,50%	62,91%	40,09%	49,25%	55,06%	49,07%	50,90%	55,60%	35,91%	50,29%	31,11%	40,73%	19,10%	12,95%	49,80%	40,52%
2022 Q1	66,97%	51,26%	57,70%	63,27%	40,76%	52,30%	56,43%	49,01%	51,36%	55,61%	37,28%	50,39%	31,48%	41,11%	20,32%	12,37%	51,50%	39,84%
2022 Q2	66,98%	51,27%	57,71%	63,28%	40,77%	52,31%	56,44%	49,02%	51,37%	55,62%	37,29%	50,40%	31,49%	41,12%	20,33%	12,38%	51,51%	39,85%
2022 Q3	66,99%	51,28%	57,72%	63,29%	40,78%	52,32%	56,45%	49,03%	51,38%	55,63%	37,30%	50,41%	31,50%	41,13%	20,34%	12,39%	51,52%	39,86%
2022 Q4	66,10%	51,29%	57,73%	63,30%	40,79%	52,33%	56,46%	49,04%	51,39%	56,42%	37,31%	50,42%	31,51%	41,14%	20,35%	12,40%	51,53%	39,87%

Data on tertiary education, defined as a percentage of the population from 25 to 65 years old, for 18 countries over the period 2016-2022

Table 17

Unemployment (% of the population)

Quarter	Canada	United States	United Kingdom	Ireland	Finland	Sweden	Norway	Denmark	Belgium	Netherlands	Germany	France	Portugal	Spain	Italy	India	Australia	New Zealand
2016 Q4	6,867	4,767	4,700	7,567	8,933	7,067	4,567	5,900	7,233	6,533	3,733	10,067	10,667	18,700	11,600	6,533	5,730	5,300
2017 Q1	6,700	4,567	4,600	7,267	8,967	6,900	4,533	6,100	7,700	6,300	3,700	9,633	10,133	18,200	11,900	5,200	5,793	4,900
2017 Q2	6,533	4,367	4,400	6,667	9,033	6,867	4,500	5,867	7,267	6,067	3,600	9,500	9,533	17,367	11,600	4,000	5,585	4,900
2017 Q3	6,233	4,333	4,300	6,667	8,567	6,900	4,300	5,933	7,067	5,767	3,500	9,467	8,967	16,733	11,200	4,033	5,522	4,700
2017 Q4	6,167	4,167	4,400	6,433	8,400	6,800	4,133	5,400	6,400	5,433	3,433	9,033	8,300	16,633	11,200	4,800	5,473	4,500
2018 Q1	5,900	4,033	4,200	5,900	8,433	6,333	4,100	5,200	6,133	5,100	3,300	9,267	7,800	16,200	11,000	5,633	5,527	4,400
2018 Q2	5,900	3,933	4,000	5,867	7,333	6,433	3,967	5,133	6,333	4,900	3,233	9,100	7,167	15,467	11,100	5,500	5,421	4,600
2018 Q3	5,900	3,767	4,100	5,700	7,200	6,533	4,233	4,900	5,667	4,867	3,200	8,900	6,933	14,833	10,700	6,167	5,201	4,000
2018 Q4	5,700	3,833	4,000	5,667	6,733	6,633	3,767	5,267	5,733	4,633	3,100	8,800	6,767	14,500	10,200	6,833	5,052	4,300
2019 Q1	5,800	3,867	3,800	4,933	6,700	6,867	4,000	5,133	5,633	4,467	3,033	8,733	6,633	14,233	10,600	6,933	5,031	4,200
2019 Q2	5,567	3,633	3,900	5,167	6,733	6,533	3,467	4,900	5,500	4,333	2,933	8,500	6,700	14,233	10,400	7,433	5,231	4,100
2019 Q3	5,733	3,633	3,800	5,000	6,667	7,133	3,967	4,867	5,133	4,467	2,900	8,300	6,567	14,100	9,900	7,567	5,253	4,100
2019 Q4	5,700	3,600	3,800	4,800	6,767	7,133	4,067	5,100	5,233	4,433	3,100	8,200	6,767	13,867	9,800	7,633	5,181	4,100
2020 Q1	6,533	3,800	4,000	4,833	6,767	7,333	3,767	4,933	5,100	4,067	3,300	7,900	6,533	13,967	9,700	7,900	5,180	4,200
2020 Q2	13,367	12,967	4,100	5,133	7,800	8,600	4,600	5,433	5,100	4,833	3,600	7,333	6,633	15,600	8,900	18,467	6,923	4,100
2020 Q3	10,133	8,833	4,900	7,167	8,300	9,300	5,500	6,233	6,233	5,467	3,867	8,800	8,133	16,400	8,300	7,467	7,092	5,200
2020 Q4	8,867	6,767	5,200	6,267	8,167	8,867	5,100	5,967	5,833	5,067	3,900	8,100	7,233	16,233	9,800	7,533	6,801	4,900
2021 Q1	8,433	6,200	4,900	7,233	8,067	9,233	4,967	6,133	6,700	4,667	3,900	8,167	6,767	15,500	9,200	6,633	5,907	4,600
2021 Q2	8,067	5,933	4,700	6,967	8,167	9,200	5,000	4,900	6,300	4,367	3,700	8,033	6,900	15,567	9,700	9,700	5,151	4,000
2021 Q3	7,267	5,133	4,300	5,567	7,367	8,833	4,233	4,733	6,267	4,133	3,433	7,800	6,433	14,700	9,300	7,400	4,640	3,300
2021 Q4	6,267	4,200	4,000	5,200	6,900	8,233	3,567	4,567	5,800	3,800	3,267	7,433	6,133	13,400	9,200	7,567	4,677	3,200
2022 Q1	5,733	3,800	3,700	4,867	6,767	7,733	3,300	4,367	5,333	3,433	3,100	7,367	5,700	13,200	8,800	7,433	4,024	3,200
2022 Q2	5,133	3,600	3,800	4,300	6,400	7,667	3,200	4,133	5,800	3,300	3,000	7,500	5,933	12,800	8,600	7,567	3,789	3,300
2022 Q3	5,133	3,567	3,600	4,367	7,133	7,033	3,233	4,567	5,433	3,733	3,067	7,200	6,067	12,800	8,100	7,167	3,509	3,200
2022 Q4	5,100	3,600	3,700	4,467	6,800	7,467	3,233	4,767	5,667	3,600	3,033	7,200	6,400	12,933	7,900	8,033	3,473	3,400

Data on the unemployment rate, defined as a percentage of the population, for 18 countries over the period 2016-2022

Appendix III - Econometric Tables

Table 6

Panel Regression Analysis

SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0,33482838							
R Square	0,112110044							
Adjusted R Square	0,100084446							
Standard Error	0,115903359							
Observations	450							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	6	0,751417226	0,125236204	9,322617258	1,22266E-09			
Residual	443	5,951079719	0,013433589					
Total	449	6,702496945						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95,0%*	*Upper 95,0%*
Intercept	0,979099274	0,096837242	10,11077204	9,21048E-22	0,788781807	1,16941674	0,788781807	1,16941674
Employment	0,439536196	0,111126777	3,955268101	8,89925E-05	0,221135029	0,657937364	0,221135029	0,657937364
Investment (% of GDP)	0,093007621	0,050489677	1,842111621	0,066126985	-0,006221428	0,19223667	-0,006221428	0,19223667
Innovation Index (0-100)	-0,006741909	0,001184262	-5,692919503	2,276E-08	-0,009069378	-0,004414439	-0,009069378	-0,004414439
Tertiary education (% of 25-65 years old)	0,152351655	0,062964553	2,419641663	0,015937451	0,028605316	0,276097994	0,028605316	0,276097994
Corporate Income Tax Rates	-0,265256417	0,109249891	-2,427978771	0,015580563	-0,479968879	-0,050543955	-0,479968879	-0,050543955
GINI index (0-100)	0,007165517	0,001536357	4,663966967	4,11282E-06	0,004146064	0,010184971	0,004146064	0,010184971

Table 7

Panel Regression Analysis (Test)

SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0,365307698							
R Square	0,133449714							
Adjusted R Square	0,115724822							
Standard Error	0,114891754							
Observations	450							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	9	0,894446303	0,099382923	7,528943634	2,79977E-10			
Residual	440	5,808050642	0,013200115					
Total	449	6,702496945						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95,0%*	*Upper 95,0%*
Intercept	1,015779395	0,125157077	8,11603643	4,86772E-15	0,769799416	1,261759374	0,769799416	1,261759374
Unemployment	-0,140614403	0,24630292	-0,570900269	0,568358702	-0,624690802	0,343461996	-0,624690802	0,343461996
GDP per Capita	7,16962E-07	1,58761E-06	0,451599023	0,651780386	-2,40327E-06	3,8372E-06	-2,40327E-06	3,8372E-06
Employment	0,38152926	0,150273507	2,53889903	0,011463654	0,086186201	0,676872319	0,086186201	0,676872319
(GDP per Capita)^2	-2,11785E-11	1,38277E-11	-1,531599323	0,126339977	-4,8355E-11	5,99805E-12	-4,8355E-11	5,99805E-12
Investment (% of GDP)	0,17219908	0,056996896	3,021201036	0,002664537	0,060179085	0,284219075	0,060179085	0,284219075
Innovation Index (0-100)	-0,006754104	0,001275185	-5,296566045	1,86825E-07	-0,009260315	-0,004247893	-0,009260315	-0,004247893
Tertiary education (% of 25-65 years old)	0,241573276	0,069592415	3,471258679	0,000569192	0,104798422	0,378348129	0,104798422	0,378348129
Corporate Income Tax Rates	-0,401818024	0,118784622	-3,382744488	0,000781825	-0,63527377	-0,168362278	-0,63527377	-0,168362278
GINI index (0-100)	0,007301497	0,001530543	4,770526957	2,50347E-06	0,004293414	0,010309581	0,004293414	0,010309581

Appendix IV - Calculations

$$\gamma = \alpha X => \Delta\gamma = \beta\Delta X =>$$

	[E]	[IG]	[In]	[TE]	[CT]	[GN]
ΔX	1%	1%	7,01058529	1%	1%	3,977666954
β	0,439536196	0,093007621	-0,006741909	0,152351655	-0,265256417	0,007165517
ΔY	0,00439536	0,00093007	-0,04726472861	0,00152351655	-0,0026256417	0,0285020402

$$\frac{\Omega}{\Delta\gamma} = \frac{100\%}{X} =>$$

	[E]	[IG]	[In]	[TE]	[CT]	[GN]
Ω	0,070082075	0,070082075	0,070082075	0,070082075	0,070082075	0,070082075
ΔY	0,00439536	0,00093007	-0,047264728	0,001523516	-0,00262564	0,0285020402
=	15,94455857	75,351398	-1,48275633	46,0002225	-26,69142571	2,458844156
÷	100%	100%	100%	100%	100%	100%
=	15,94455857	75,351398	-1,48275633	46,0002225	-26,69142571	2,458844156
X	0,0627 (6,27%)	0,0132 (1,32%)	0,674 (67,4%)	0,0225 (2,25%)	0,0378 (3,78%)	0,406 (40,6%)