MINIMUM WAGE IN THE BALTICS
MINIMĀLĀ ALGA BALTIJĀ

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Abstract. *The topic being analyzed in this article is Minimum wages in the Baltic countries. Authors paper analyzes the effect of the rise of the minimum wages within the Baltic States, particularly in Lithuania. Authors utilized SurveyMonkey website to aid in obtaining information about the effect of the minimum wage in Lithuania-particularly to do with price changes, redundancy as well as differences in the effect of minimum wage with respect to differing genders as well as ages and wage bands. Higher minimum wages, despite being controversial, are observed to be beneficial for the economy due to their effects on immigration and the perception of locals on their ability to cope with prices rising as well as their perception on experiencing the benefits of minimum wages increasing. Upon completion of survey, authors used SPSS software to effectively analyze results and determine any correlations.*
Keywords*: Baltics, economy, Estonia, immigration, inflation, Latvia, Lithuania, minimum wage, price changes, redundancy, research.*

Introduction

Relevance: minimum wages are very important in the context of international business as they can greatly influence the economic conditions of a country. As a matter of fact, minimum wages can greatly affect the foundation of economies as they are directly concerned with the labor force. Additionally, it can create a very catastrophic concept within an economy known as 'inflation' (the general increase in prices).

The object of the research is the effects of minimum wages on the citizens of the Baltic states 2016-2023 years.

The purpose of the research is to analyze how the rising minimum wage has affected the citizens of the Baltic states.

Tasks of the work:
1. Describe the significance of minimum wages and how they relate to other economic indicators. as well as in context to the Baltic states.
2. Examine the minimum wage statistics for the past 8 years and extrapolate the amount for the 9th year and evaluate said results.
3. Research whether or not the minimum wage changes (increases) in the Baltic states have negatively affected the Baltic citizens.

Research methods: thorough analysis of scientific literature, research of relevant statistical data, analysis of data via statistical investigative methods, time series analysis, quantitative research sampling as empirical research was made online between 13.10.2023 and 18.10.2023.

The notion of minimum wages

Minimum wages are the lowest legal amount employers must pay their employees. While intended to reduce poverty and improve living standards, they can be controversial. Some argue that they may not provide a sufficient income for a decent living, causing conflicts like the one in Mexico in 1917. Typically, minimum wages are set nationally rather than regionally to maintain uniformity, and governments and trade unions often collaborate to determine appropriate rates, relying on economic studies and surveys *(Vargas Domínguez, 2023)*.

Minimum wages aim to address poverty and elevate living standards, but their effectiveness varies. They are legal price floors for labor and can sometimes lead to positive outcomes, such as improved infant health and increased family income without decreasing employment levels. Studies show that higher wages can enhance worker productivity due to increased satisfaction *(Fahimullah et al., 2019)*.

However, minimum wages also have downsides. They may cause job losses, particularly in small businesses that cannot afford higher labor costs, affecting vulnerable groups like women and young workers *(Anderson, 2021)*. Additionally, minimum wages may not account for cost-of-living differences between cities, making them insufficient in more expensive areas. They can also lead to reduced firm productivity *(Álvarez & Fuentes, 2018)* and impact immigration negatively *(Edo & Rapoport, 2019)*. For migrant workers, wages often leave the local economy, as money is sent home instead of circulating locally.

The relationship between minimum wages and inflation is critical; if inflation rises faster than wages, the real value of income declines, eroding purchasing power. It is essential to align wage adjustments with inflation to ensure positive outcomes *(Doh & Van der Meer, 2023)*. Minimum wages can also shift power to non-unionized workers, allowing them greater bargaining capacity, which can promote more equitable income distribution *(Malloy, 2020)*.

Age-dependent minimum wages offer lower rates to younger, less-experienced workers, potentially leading employers to replace older workers with younger ones, perpetuating unemployment among older populations *(Kabátek, 2021)*. Additionally, minimum wages influence spending patterns, as low-income individuals tend to allocate their wages primarily to necessities like food and housing *(Bittner, 2023)*.

In summary, while minimum wages can positively influence the economy and society, they also have significant drawbacks that need careful consideration to ensure their benefits outweigh their disadvantages.

Minimum wage indicators in the Baltic states

In Lithuania, while minimum wage laws can effectively raise pay for low-wage workers *(Freeman, 1996; Autor et al., 2016; Dube, 2019),* they may also lead to reduced employment opportunities as employers adjust hiring and firing practices *(Neumark et al., 2004)*. The impact of such policies depends on labor market structure, sectoral composition, and firms' ability to absorb or pass on costs. A significant increase of 17.7% in Lithuania's minimum wage in 2013, from 317 to 373 euros, marked one of the largest single-step increases, affecting 25% of wage earners *(Garcia-Louzao & Tarasonis, 2023)*. Studies found that this hike primarily impacted low-wage workers, with no significant effect on high-wage employees, and estimated a slight negative effect on employment elasticity at -0.021 *(Dube, 2019)*.

In Latvia, the minimum wage rose by 24% in 2023, marking the largest increase in Europe for the period. This decision followed a three-year period of wage stability and was driven by economic challenges from the pandemic. The wage increase to 500 euros per month, effective from January 2021, benefited over 200,000 workers, reflecting Latvia's adaptive economic policies. Latvia applies a progressive personal income tax (PIT), with rates of 20% for income up to 20,004 euros, 23% for income between 20,004 and 62,800 euros, and 31% for

higher salaries. Social insurance contributions (VSAOI) are set at 34.09%, with 23.59% covered by employers and 10.5% by employees. The annual non-taxable minimum is adjusted based on individual income, and discrepancies may require additional payments.

Estonia, a small Baltic country with a population of 1.3 million (2021) and independence since 1991, experienced economic booms from 2001 to 2007 with growth rates of 5-10 % *(Põder & Kerem, 2011)*. The impact of minimum wage varies by labor market: in high-wage markets, it minimally affects income distribution, while in low-wage markets, it significantly alters it *(Lee et al., 1999)*. Studies show that the gender wage gap often favors women in Estonia, influenced by age and experience *(Ferraro et al., 2018)*. The "protection effect" occurs when employers replace higher-cost employees due to minimum wage hikes, impacting overall employment distribution *(Stewart, 2012)*. From 2013 to 2016, minimum wage increases had a neutral effect on employment, suggesting the need for more research to understand long-term impacts. Estonia's uneven income distribution, weak collective agreements, and progressive tax system make studying these effects crucial.

Authors decided to conduct a time series analysis for this section. It considers all the minimum wages from the years 2016 up until 2023 for each of the three Baltic countries *(Trading Economics, 2023a; Trading Economics, 2023b; Trading Economics, 2023c)*. Upon presenting and analyzing our data in relation with the main topic authors can say that minimum wages are set to continue to grow (see Figure 1).
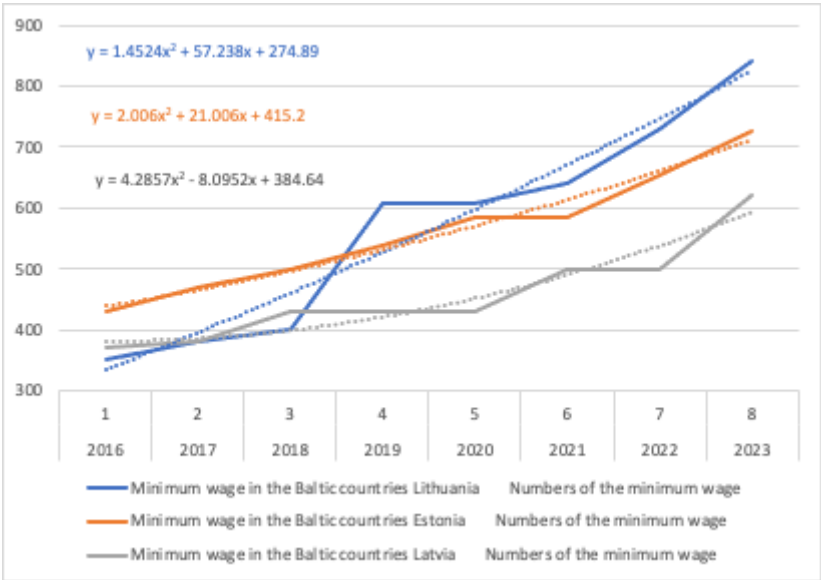

The equations shown in the figure:

$$y = 1.4524x^2 + 57.238x + 274.89$$

$$y = 2.006x^2 + 21.006x + 415.2$$

$$y = 4.2857x^2 - 8.0952x + 384.64$$

Figure 1. **Line graph showing minimum wages and their changes between 2016-2023 for the 3 Baltic Countries as well as the equation of the lines** *(compiled by the authors based on Trading Economics, 2023a; Trading Economics, 2023b; Trading Economics, 2023c)*

However, according to Lithuania's minimum wage will be far greater than the other 2 Baltic countries. Latvia will have the lowest of the 3 minimum wages, whilst Estonia will have a somewhat median minimum wage. Accordingly, it could be stated that the minimum wage for all three Baltic countries will continue to increase. This phenomenon could be a result of general gross domestic product and living standard improvements for the 3 nations.

However, from an evaluative point of view, these results can't be certain because there are always events that authors cannot plan for. Sometimes, certain events can occur which can cause economic shocks and thus prevent us from being able to predict certain values with certainty. Plus, when using previous data - certain 'one-off' events can impact the future forecasting as these events are not typically 'normal' in the sense that they typically occur/occur naturally. For example, Covid-19, the Ukraine-Russia war, etc. Therefore, authors cannot fully rely on forecasting. Nevertheless, authors can use forecasts to give a sort of 'hint' at what future values might be similar to.

The information presented raises a critical question: what are the implications of these findings? Authors central hypothesis posits that minimum wage increases may have more negative than positive effects, particularly for vulnerable populations such as women, young workers, and the elderly. The data suggests that, if this hypothesis holds true and minimum wages continue to rise, the adverse impacts could be substantial, disproportionately affecting these groups. In the subsequent section, authors will analyze the observed outcomes of minimum wage increases to evaluate this hypothesis further.

Applied research methodology

Research problem: according to extensive theoretical research, it is very common to state that minimum wages affect countries adversely; particularly the vulnerable groups. Is this factor true in a practical sense?

The hypothesis put forward is that the minimum wage increases do, in fact, produce negative outcomes to a greater extent as compared to the positive outcomes (on the economy). Additionally, vulnerable groups as well as those who earn lower wages are more likely to face the negative effects of minimum wage (the former being women, younger people and older people).

The object: is the effects of increasing minimum wages.

The aim is to examine whether or not the minimum wage changes (increases) in the Baltic states have negatively affected the Baltic citizens.

The research method, organization of research and their justification. The quantitative research sample was conducted via Survey Monkey, shared through social media, and collected online between 13/10/2023 and 18/10/2023. It aimed to categorize respondents by gender, age, and wage bands, offering a fast, cost-effective method for analysis *(Mander, 2023)*.

Survey respondents and their justification. The survey targeted working-class individuals in the Baltic states across different wage bands and ages to examine the impact of minimum wage changes. A non-probabilistic sampling method was used due to limited information on respondents' demographics before the study, requiring 267 participants *(Raosoft, 2023)*. The research later focused on specific demographics within the collected sample, making it a partially selective approach.

Quantitative research sample size and justification. The acceptable margin of error for this quantitative research sample exercise was 5 %, the confidence level was at 95 % and the response distribution was 50 %. Authors had originally hoped to attain 385 respondents. Therefore, authors managed to attain 127 respondents for quantitative research sample exercise which confidence level is 82 %.

Development of the research instrument and its validation. This section will highlight the questions authors selected for quantitative research sample exercise as well as explain why authors selected these questions.

What is your gender: this question will be used to help authors examine possible differences according to genders (if any).

What is your age: within previous research, authors have found that there are cases where younger/older workers are typically more affected by minimum wage increases *(Congressional Digest, 2021).* This question helps authors better understand whether this hypothesis is true.

What are your wage earnings per month: this question is used to identify the wage that the respondent currently earns in respect to the minimum wage. Typically, those who earn more are less likely to be affected negatively by minimum wage increases.

Agree or disagree (spectrum) questions.

1) I know of someone who has been affected by redundancy over the last 5-10 years: this question introduces the effects of minimum wage, it helps authors examine how many people could have been affected by wage increases (in terms of job losses). However, redundancy can occur for a multitude of reasons.

2) I am someone who has been affected by redundancy over the last 5-10 years: the same applies here from the point directly above.

3) I have coped well with prices increasing due to minimum wage rises over the last 5-10 years: This question examines the possible 'inflation' element of minimum wages increasing. It aids in understanding whether the inflation has been minimal in its impacts upon wages rising. The 2 are related *(Doh & Van der Meer, 2023).*

4) I have been affected by inflation (prices rising): This question is similar to the one above, however it takes a more general approach to inflation. Any effect can be considered here.

5) I have noticed more immigrant workers over the last 5-10 years: this question analyzes a 'negative' effect of minimum wages increasing. It may describe the lack of jobs that are available to natives due to the high influx of immigrants seeking higher wages.

6) I can now satisfy my needs better (over the last 5-10 years): This question analyzes the positive impacts of minimum wages increasing. It looks closer at whether citizens are better protected from poverty due to minimum wages increasing.

7) My expenditure over the last 5-10 years has increased greatly; This question refers to a similar aspect to that stated above, however it examines the disposable income aspect of the situation. Being able to satisfy 'needs' and 'wants' are 2 distinct aspects, this question examines the latter.

8) I have experienced the benefits from the minimum wages increasing over the last 5-10 years: This question takes a more general approach to examining the positives of minimum wages. Authors can examine a more 'quality of life' aspect with this question.

9) I can confidently say that the economy has grown over the last 5-10 years due to the minimum wage increasing: This is a key economic aim that can be intended with minimum wage increases. It more or less helps examine whether the positives have occurred as a result of minimum wages increasing.

Research Ethics are essential in research to build trust, minimize result tampering, and ensure controlled, beneficial outcomes, especially when involving human subjects *(Huh, 2023).* Huh outlines three core principles: (1) Respect for persons (consent), (2) Beneficence (weighing risks and benefits), and (3) Justice (ensuring benefits for those at risk). In this study, ethics were upheld by obtaining participant consent, preventing surveyor bias, ensuring data integrity, maintaining confidentiality, aligning questions with the topic, and drawing conclusions directly from collected data.

Research Data. The data authors obtain will be processed in SPSS software as well as Microsoft Excel. These programs are specialized in handling mass quantitative data, which makes them perfect for authors quantitative research sample exercise.

Description of survey demographics. The respondents who completed the quantitative research sample exercise vary in gender, age and wage.

As for the distribution of the gender, authors found that just around 75 % of the respondents consisted of males (74.6 %) the other 25 % of the respondents were females (25.4 %). In numerical terms there were 94 male respondents and 32 female respondents.

As for the distribution of wage earnings, authors can see that despite the results being somewhat mixed; EUR 501-650 has the largest number of respondents at around 22.83 %, the second highest being EUR 351-500 at 17.32 %. Therefore, authors can conclude that the respondents' incomes were mostly around the EUR 351-650 range.

The age distribution: it is not all surprising that the majority of respondents are within the 18-24 age range at 29.13 % of the respondents. The smallest group being the seniors (75 or older) at 3.94 %. Generally, however, authors can say that the distribution is largely among the young and the late-middle-aged demographic (from 35-74).

Analysis on minimum wages effect to citizens

The paper consists of 1 core Hypothesis:

H0: Minimum wages increases adversely affect the economy, particularly the vulnerable groups (women, the elderly and younger inexperienced workers) and those that earn lower wages.

H1: Minimum wages increases positively affect the economy, particularly the vulnerable groups (women, the elderly and younger workers) and those that earn lower wages.

Table 1

Shows the mean and variance and mean results prepared by SPSS program

Question	No.	Min	Max	Mean	Variance
What is your gender?	126	1	2	1.75	0.191
What is your age?	127	1	7	3.43	3.803
What are your average wage earnings per month after taxes? (euros)	127	1	8	4.37	4.187
I know of someone who has been affected by redundancy over the last 5-10 years. - How Far do you agree?	127	1	5	2.94	1.059
I am someone who has been affected by redundancy over the last 5-10 years. - How Far do you agree?	126	1	5	2.83	1.324
I have coped well with prices increasing due to minimum wage rises over the last 5-10 years. - How Far do you agree?	126	1	5	2.90	1.405
I have been affected by inflation (prices rising). - How Far do you agree?	126	1	5	2.82	1.766
I have noticed more immigrant workers over the last 5-10 years. - How Far do you agree?	127	1	5	2.94	1.552
I can now satisfy my needs better (over the last 5-10 years). - How Far do you agree?	126	1	5	2.97	1.551
My expenditure over the last 5-10 years has increased greatly. - How Far do you agree?	126	1	5	2.87	1.670
I have experienced the benefits from the minimum wages increasing over the last 5-10 years. - How Far do you agree?	126	1	5	2.97	1.551
I can confidently say that the economy has grown over the last 5-10 years due to the minimum wage increasing. - How Far do you agree?	126	1	5	2.87	1.552
Valid N (listwise)	125				

Table 1 tells authors a wide array of information. Firstly, from a big-picture perspective authors can say that of the 127, 125 results were valid. Additionally, 1 of the 127 respondents failed to answer the full questionnaire.

Therefore, authors can conclude that the survey response rate was somewhat successful. It could also be inferred that the questionnaire was not confusing as only 1 failed to answer it fully.

All of the variance answers from the table are greater than 1, this tells authors that the answers were obtained from many of the answer options. Essentially, the answers for the questions were relatively spread out from each other (as well as the mean values). The larger the variance, the more spread apart the responses were. The most spread apart was the question concerning wage, and the least being gender. Other than gender the lowest was: the question asking whether the respondent knew of someone affected by redundancy; this tells authors that the responses for that question were relatively consistent and close to the mean answer (value). The opposite can be said about the question concerning wages.
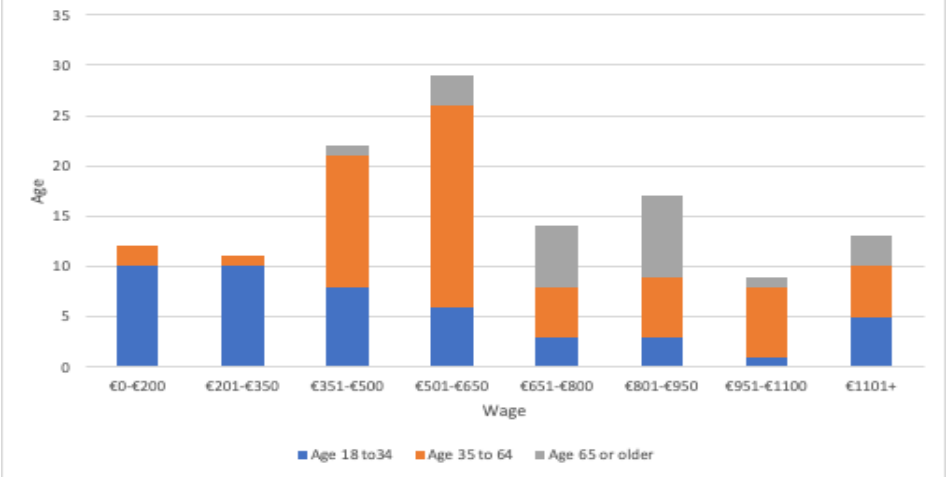

Figure 2. **shows the age and wage earnings correlation graphically, prepared by the SPSS program**

Figure 2 essentially highlights the distribution of wages in relation to the respondents' ages. Figure 2 contributes to the hypothesis in the sense that as authors know from before, typically as the minimum wages increase; the vulnerable groups tend to be more susceptible to face unemployment. This graph helps authors understand how many individuals earn lower wages, as well as how old they are.

From what authors can see, younger workers actually earn lower wages. As authors move towards higher wages; it is more common to see senior individuals earn these wages. For instance, the column with the most 65+ workers is the EUR 801-950 bar with 8, followed closely by the EUR 651-800 bar with 6. However, as for the younger workers, most of the very young workers (18-34 years) reside in the lower income groups. Mostly in the EUR 0-200 and the EUR 201-350 bars at 10. However, as for the middle-aged workers (35-64 years) they mostly reside in the middle age range of EUR 351-500 and EUR501-650 with 13 and 20 respectively.

In terms of authors hypothesis, authors can say that the older individuals may not be as affected by minimum wages as they rise as they have higher wages; perhaps because of loyalty bonuses or attained promotions overtime. However, as for younger workers and middle-aged workers, it is very likely that they will suffer unemployment due to minimum wages increasing as they are further down in terms of the wage earnings. They may even be earning less wages as they don't have enough experience, nor have they obtained the necessary skills to be valued greatly. Essentially, work provided by the younger population becomes more expensive; thus, for business survival they must be let go *(Anderson, 2021)*.

Thus, it can be concluded that this correlation agrees with the H0 hypothesis to a slight extent, however it does not support the suggestion that women and older folk are susceptible to unemployment when minimum wages increase.
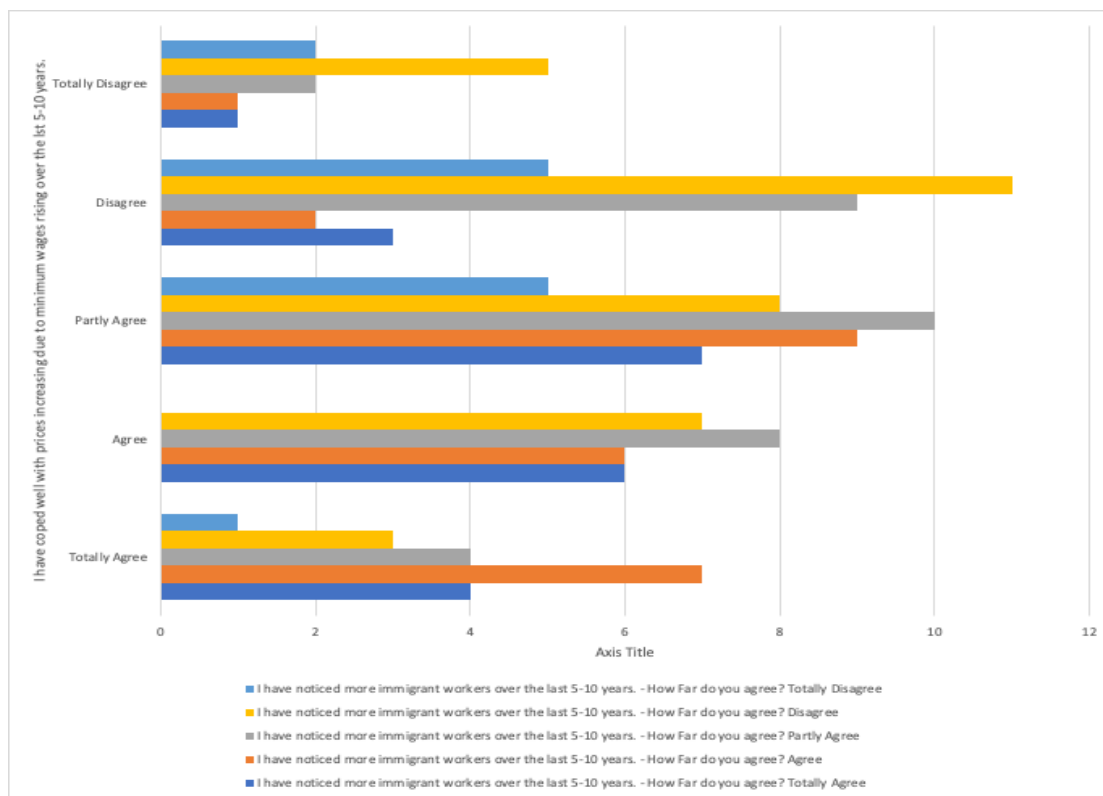
Figure 3. **Shows the correlation between noticing more immigrant workers over the last 5-10 years and coping well with price increasing due to minimum wages increasing over the past 5-10 years graphically, prepared by the SPSS program**

Figure 3 essentially examines the relationship between coping well with price rises due to minimum wages increasing. The y axis represents the degree to which the respondents coped with price rises due to minimum wages increasing; and the x axis represents the quantity of respondents. The color of the bars represents the level to which respondents noticed migrant workers over the 5-10 year time span.

This aspect contributes to the hypothesis. As stated before, having more immigrant workers (who are attracted to migrate to a country as a result of higher minimum wages) can be detrimental because of high levels of remittances, as they remove money from the economy.

According to Figure 3, authors can see that for the partly agree column set in the y axis (coping well with price increases due to higher minimum wages), there are a large number of respondents that are on the more 'agree side' when it comes to noticing more immigrant workers; this means that as minimum wages increase and more immigrants enter the country due to the higher minimum wage, the better people can cope with prices rising as a result of higher minimum wages. This thus disproves the hypothesis and, as a result, side against hypothesis H0 ('Minimum wages increases adversely affect the economy, particularly the vulnerable groups {women, the elderly and younger workers} and those that earn lower wages'), to a considerable degree.

The reason that it disproves hypothesis H0 (to a considerable degree) is because there is no evidence that the economy actually deteriorates from wage induced immigration. The only conclusion that can be drawn from the investigation is that people can actually cope with prices increasing due to higher minimum wages, whilst they notice more immigrant workers. No evidence of vulnerable groups being especially affected (or affected at all) due to minimum wages, nor is there evidence of the economy being impacted negatively.

Thus, authors can conclude that the data found disproves the hypothesis, as the economy (more or less) maintains a neutral position, as people can still cope with prices increasing due

to higher minimum wages, despite more immigrant workers being present. So, the higher minimum wages do not adversely affect the economy (and particularly the vulnerable groups).

Rather it could be argued that the results may side with hypothesis H1, as no negatives have been found and it could be theorized that the higher minimum wages can help the people cope with more immigrants entering the country and prices rising as a result of it. Perhaps the higher prices could be a result of demand-pull inflation, which is great for an economy. However, more research would be needed to confirm this theory.

Generally, from looking at the bars, authors can conclude that as authors go down the y axis (higher agreement levels towards the bottom), the bars that show agreement for noticing migrant workers typically outweigh the disagreement bars, which therefore sides with the conclusion drawn above.
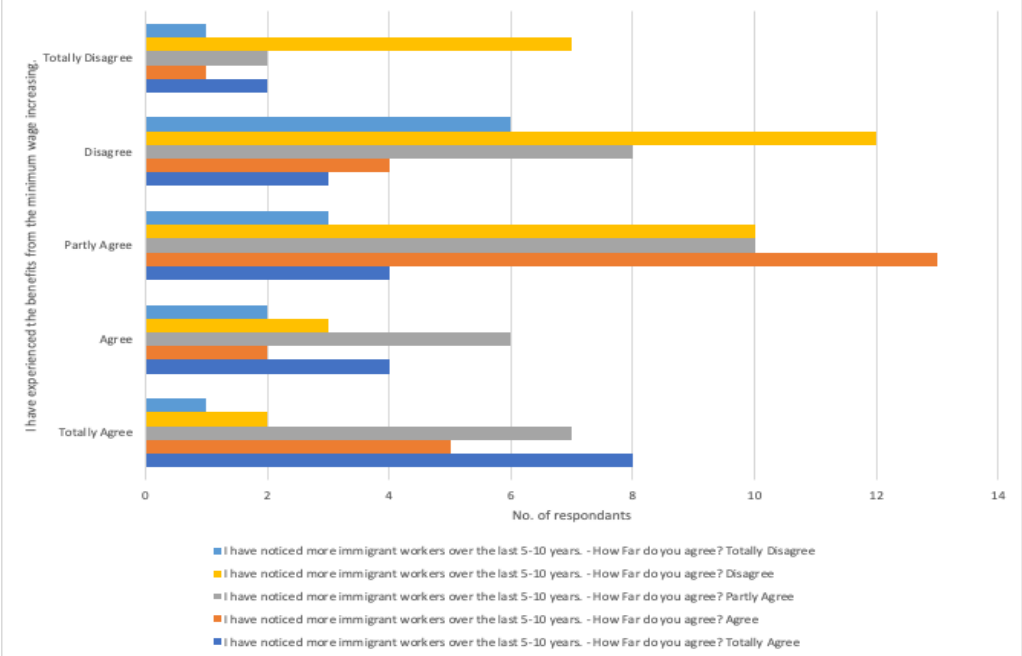

Figure 4. **Shows the correlation between noticing more immigrant workers over the last 5-10 years and experiencing the benefits of the minimum wages increasing over the last 5-10 years graphically, prepared by the SPSS program**

Figure 4 takes a closer look at the relationship between having more immigrant workers within the Baltic countries and experiencing the benefits of the minimum wages increasing. This correlation can be utilized to bolster the previous cross tabulation analysis (Figure 3) as the 2 are very similar.

As authors go down the y axis (experiencing the benefits of the minimum wage increasing over the last 5-10 years) authors notice more and more that the bar colors associated with noticing more immigrant workers increases and/or outweigh those that disagree.

Therefore, authors can denote that more immigrant workers can incline Baltic citizens to experience more benefits of the minimum wage increasing. Therefore, further showing that the increase in immigration actually positively affects the economy perhaps. This disproves the hypothesis' H0 element and actually sides with the H1 hypothesis. Authors can say that as a whole the economy benefits from higher minimum wages that actually attract higher levels of immigration and thus cause the citizens (respondents) to experience the benefits of minimum wages increasing.

In retrospect, perhaps this study can be further expanded to examine the specific benefits that the respondents are referring to, as the benefits may not have solely been experienced due to more immigration.

Conclusion

The research conducted was done to examine the relationship between minimum wages, employment and the economy. A time-series analysis was conducted to examine the future minimum wages of the 3 Baltic states (Lithuania, Estonia, Latvia). It indicates that the minimum wages for the three countries will continue to grow with Lithuania having the greatest and then followed by Estonia and lastly Latvia. The extrapolated figures authors produced were trustworthy. However, despite the trustworthiness of the figures, unexpected economic shocks could always occur.

Authors questionnaire data essentially concluded that the hypothesis, in practicality, is false; but only to a limited extent. Authors SPSS analysis focused on the relationship between ages and wages after taxes, noticing more immigrant workers within 5-10 years and coping well with prices increasing due to minimum wages increasing over the past 5-10 years; and lastly noticing more immigrant workers over the past 5-10 years and experiencing the benefits of minimum wages increasing over the last 5-10 years. Within the research authors find that, because the younger population as well as the middle aged population earn lower wages, it is very likely that they would be subject to redundancy when businesses are experiencing high costs (of labor due to minimum wages increasing). Authors also find that despite noticing a lot of immigrant workers over the past 5-10 years, people are able to cope with the prices increasing due to minimum wages over the past 5-10 years and they also experience the benefits of minimum wages increasing over the past 5-10 years. Therefore, it can be denoted that the economy is actually benefiting from minimum wages increasing as this attracts immigrant workers and (according to the results) thus people can cope better with prices increasing plus they experience more benefits due to the minimum wage increasing.

Limitations

The quantitative research sampling exercise itself was relatively successful in the sense that 125/127 respondents understood the questionnaire and managed to answer all the questions. Within the 127, most respondents were males and of the 127 their answers were all over the board- there wasn't a great deal of consistency in answers between the respondents. The respondents were also mainly middle aged, they all also had an average earning of EUR 510-801. Additionally, to have a more vivid answer to hypothesis more data on gender in relation to minimum wages and redundancy could have been conducted. Also, the 'benefits' that the respondents experience should have been further expanded on, so that the exact impacts could be seen and compared to immigration. Levels of inflation as well as the form of inflation present could have been expanded on in order to better explain how the respondents cope with price increases due to higher minimum wage costs.

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