

**THE SHARING ECONOMY IN THE DIGITAL ECONOMY: A
QUANTITATIVE ANALYSIS OF ECONOMIC BENEFITS AND
REGULATORY CHALLENGES IN LABOUR MARKETS**

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Abstract. This study examines the impact of the sharing economy on labour market development in the United States over the period 2010–2023 within the broader context of the digital economy. Using a quantitative econometric approach, the analysis applies multiple linear regression to evaluate the relationship between sharing economy activity, digital development, and labour market performance. The findings indicate that the sharing economy has a positive and statistically significant effect on labour market development, suggesting that the expansion of platform-based work contributes to increased employment opportunities and broader labour market participation. The results further demonstrate that the digital economy plays a complementary role by strengthening this relationship. The interaction between the sharing economy and digital development is statistically significant, indicating that higher levels of digital infrastructure enhance labour market outcomes. The model exhibits strong explanatory power, with an increase in the coefficient of determination when the interaction effect is included. However, the results also highlight structural challenges associated with platform-based employment, including income instability and regulatory gaps that may affect long-term sustainability. Overall, the study provides empirical evidence that the sharing

economy contributes positively to labour market development while emphasising the need for balanced regulatory frameworks to ensure stability and inclusiveness.

Keywords: sharing economy; labour market development; digital economy; platform work; econometric analysis; United States; employment dynamics.

ЭКОНОМИКА СОВМЕСТНОГО ПОТРЕБЛЕНИЯ В ЦИФРОВОЙ ЭКОНОМИКЕ: КОЛИЧЕСТВЕННЫЙ АНАЛИЗ ЭКОНОМИЧЕСКИХ ПРЕИМУЩЕСТВ И РЕГУЛЯТОРНЫХ ВЫЗОВОВ НА РЫНКЕ ТРУДА

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Аннотация. В данном исследовании рассматривается влияние экономики совместного потребления на развитие рынка труда в Соединённых Штатах Америки в период 2010–2023 гг. в более широком контексте цифровой экономики. С использованием количественного эконометрического подхода в работе применяется метод множественной линейной регрессии для оценки взаимосвязи между активностью экономики совместного потребления, уровнем цифрового развития и показателями функционирования рынка труда. Полученные результаты свидетельствуют о том, что экономика совместного потребления оказывает положительное и статистически значимое влияние на развитие рынка труда, что позволяет сделать вывод о том, что расширение платформенной занятости способствует увеличению возможностей трудоустройства и более широкому участию населения в рынке труда. Результаты также показывают, что цифровая экономика играет дополнительную роль, усиливая данную взаимосвязь. Взаимодействие между

экономикой совместного потребления и цифровым развитием является статистически значимым, что указывает на то, что более высокий уровень развития цифровой инфраструктуры способствует улучшению показателей рынка труда. Построенная модель демонстрирует высокую объясняющую способность, что подтверждается увеличением коэффициента детерминации при включении эффекта взаимодействия. Вместе с тем результаты выявляют ряд структурных проблем, связанных с платформенной занятостью, включая нестабильность доходов и пробелы в регулировании, которые могут негативно влиять на долгосрочную устойчивость данного сектора. В целом исследование предоставляет эмпирические доказательства положительного влияния экономики совместного потребления на развитие рынка труда, одновременно подчёркивая необходимость формирования сбалансированных регуляторных механизмов для обеспечения стабильности и инклюзивности.

Ключевые слова: экономика совместного потребления; развитие рынка труда; цифровая экономика; платформенная занятость; эконометрический анализ; Соединённые Штаты Америки; динамика занятости.

1. Introduction

The global economic system has undergone profound structural transformations over recent decades, driven by rapid advances in information and communication technologies. These developments have given rise to the digital economy, a comprehensive framework that has reshaped patterns of production, exchange, and consumption. Such transformations have also extended to labour markets, altering employment structures, skill requirements, and the nature of work relationships.

Within this context, the sharing economy has emerged as a prominent model of economic activity. It relies on digital platforms to connect service providers with

users, utilising technologies such as algorithms, big data, and mobile applications. This model enables a more efficient utilisation of both human and material resources and has significant implications for labour market dynamics.

The expansion of sharing platforms has created new forms of employment characterised by flexibility in working hours and locations. This has broadened access to income-generating opportunities across different segments of society. However, these developments are accompanied by regulatory and institutional challenges, particularly concerning employment classification, social protection, and income stability.

Research Problem

Despite the rapid expansion of the sharing economy, considerable debate remains within the economic literature regarding its impact on labour market development. On one hand, empirical studies suggest that the sharing economy enhances labour market participation, increases flexibility, and improves resource allocation. On the other hand, critical perspectives argue that it may lead to job insecurity, income instability, and the erosion of social protection systems.

This divergence in findings is partly due to the limited availability of comprehensive quantitative studies based on long-term data. Much of the existing research relies on descriptive or partial analyses. Accordingly, the central research problem of this study is to provide a rigorous quantitative assessment of the impact of the sharing economy on labour market development within the context of the digital economy, while also evaluating the associated regulatory challenges.

Research Objectives

This study aims to: (i) evaluate the quantitative impact of the sharing economy on labour market development; (ii) examine the role of the digital economy in strengthening this relationship; (iii) analyse the regulatory challenges associated

with platform-based employment; and (iv) provide policy-relevant conclusions and recommendations.

Research Hypotheses

H1: The sharing economy has a positive and statistically significant effect on labour market development.

H2: The digital economy positively moderates the relationship between the sharing economy and labour market development.

H3: Regulatory challenges negatively affect the sustainability of the sharing economy's impact on labour market development.

2. Theoretical and Conceptual Framework

2.1 The Digital Economy

The digital economy can be described as that segment of the economy that makes use of digital technologies—including the Internet, big data, cloud computing, and artificial intelligence—in the production, distribution, and consumption of goods and services (World Bank, 2016). It should not be considered a separate economic sector; rather, it represents a framework that transforms traditional economic sectors, including labour markets.

Current literature reveals that the digital economy affects the restructuring of labour markets through job creation, transformation in required skills, and rapid labour matching (OECD, 2019).

There are several distinctive characteristics of the digital economy which differentiate it from traditional economies: (1) reduction of transaction costs due to lowered search, contracting, and implementation costs (Goldfarb and Tucker, 2019); (2) the use of data as the principal economic resource for improving efficiency and pricing (Varian, 2019); (3) flexibility in labour-related activities in terms of time and

location (OECD, 2022); and (4) an international dimension that expands labour markets globally (World Bank, 2020).

2.2 The Sharing Economy

The sharing economy can be described as an economic system that uses digital platforms to facilitate the exchange of partially or wholly underutilised resources owned by individuals, in return for financial or other compensation (Botsman and Rogers, 2010). It is an evolution of the digital economy and cannot be considered independently of the digital infrastructure upon which it rests. Transactions made in the sharing economy include ride-sharing, short-term accommodation, digital freelance work, delivery services, and professional services through platforms (Sundararajan, 2016).

The sharing economy has several characteristics that have significant implications for labour markets. They include: (1) digital intermediation, where the platform mediates the transaction between the worker and the consumer and determines contractual terms and pricing strategy (Kenney and Zysman, 2016); (2) on-demand work, which causes income volatility (Dube et al., 2020); (3) employment status as an independent contractor, which poses legal concerns (De Stefano, 2016); and (4) task assignment and pay determination through algorithms (Rosenblat and Stark, 2016).

2.3 The Sharing Economy and the Labour Market

The development of the sharing economy has led to new forms of employment—part-time, flexible, and gig employment—which have created opportunities for participation among individuals who were previously outside the labour market, while simultaneously contributing to a certain erosion of the traditional concept of job security (Hall and Krueger, 2018). Literature suggests that there is a range of economic advantages provided by the sharing economy, the most important of which are: increased rates of labour

market participation; more effective human resource allocation; reduction of frictional unemployment; and provision of additional sources of income, especially during recessions (Berger et al., 2021). On the other hand, the sharing economy encounters a series of regulatory problems, namely: insufficient social security of employees; insufficient job stability; challenges in the implementation of labour laws; and an unclear legal relationship between employee and platform employer (Cherry and Aloisi, 2017).

3. Literature Review

3.1 Economic Implications of the Sharing Economy

There is a substantial body of scholarly work examining the impact of sharing economy platforms on the creation of new job opportunities and improved labour market efficiency. Berger et al. (2021) found that the introduction of ride-sharing companies to urban areas of the United States helped increase labour force participation rates, especially among individuals seeking supplementary income sources. Hall and Krueger (2018) also found that this type of work offers greater temporal and spatial flexibility than what is available in traditional sectors, although accompanied by significant variation in actual wage levels after accounting for operating costs. Callaway and Sant'Anna (2024) found that the rise of sharing economy platforms within highly populated cities has led to enhanced short-term employment metrics, especially where technological connectivity is sophisticated.

3.2 Wages, Income, and Employment

Research findings provided by the Economic Policy Institute indicate that the average earnings of gig workers who are members of ride-sharing services in the United States are lower than the mean income of individuals in similar traditional sectors after subtracting operational and insurance costs (EPI, 2019). Similarly,

Dube et al. (2020) established that the nature of remuneration in the sharing economy tends to be unstable, based on current market needs and price mechanisms, thus posing negative consequences for job security. The studies reviewed suggest that job growth generated by the sharing economy does not necessarily translate into improved income and employment conditions, hence the need for rigorous quantitative analysis.

3.3 Regulatory Challenges

Considerable research has examined the regulatory and legislative challenges associated with the sharing economy and labour markets. De Stefano (2016) found that the classification of sharing economy workers as independent contractors leads to a lack of legal protections for basic labour rights, such as the right to a minimum wage, health insurance, and pensions. Cherry and Aloisi (2017) demonstrated that advanced countries find it difficult to balance the flexibility provided by the sharing economy with social protection needs. Zhang et al. (2022) found in comparative research that regulatory issues are among those factors influencing the sharing economy's effects on the labour market in the United States and Europe.

3.4 Sharing Economy and Labour Market Development

Kässi and Lehdonvirta (2018), using the Online Labour Index, argue that the development of digital labour platforms has contributed to higher demand for online freelance work, leading to more economic engagement especially among youth and digitally skilled workers. Pesole et al. (2018) found that the sharing economy helps promote the growth of the labour market in terms of numbers but creates problems concerning job quality and income sustainability, arguing that the potential benefits of the model are dependent on favourable regulations. OECD reports have further concluded that combining sharing economy platforms with active labour market

policies and associating them with social protection systems would lead to improved results (OECD, 2019; OECD, 2022).

3.5 Research Gap

The research gap can be identified in the lack of literature using econometric models to evaluate the influence of the sharing economy on labour market development quantitatively; limited research that combines sharing economy and digital economy frameworks in one analytical approach; and the requirement for long time-series data to study developmental sustainability. The current research intends to fill these gaps with applied quantitative analysis, supported by credible data gathered from one of the leading countries in sharing economy development.

4. Research Methodology

4.1 Research Design and Case Selection

This study adopts a quantitative econometric approach to examine the impact of the sharing economy on labour market development within the context of the digital economy. The United States is selected as the case study given its advanced and mature sharing economy ecosystem (e.g., Uber, Airbnb, Upwork), the availability of reliable and consistent time-series data, its strong digital infrastructure, and its relevance in global economic and labour market research. The study covers the period 2010–2023, capturing the emergence and rapid growth of digital platforms, structural changes in labour markets, and the impact of external shocks such as the COVID-19 pandemic.

4.2 Variables

The dependent variable is Labour Market Development (LMD), constructed as a composite index: $LMD = Employment\ Rate + Participation\ Rate - Unemployment\ Rate$. Independent variables include the Sharing Economy (SE), measured by number of platform workers and platform revenues, and the Digital

Economy (DIG), measured by Internet penetration rate and ICT expenditure as a percentage of GDP. A time trend variable (Z) is included as a control to capture structural changes over time.

4.3 Data Sources

The study relies on secondary data from the U.S. Bureau of Labor Statistics (BLS), the OECD Digital Economy Outlook, the World Bank (World Development Indicators), Statista, and McKinsey Global Institute.

4.4 Model Specification

To examine the relationship between the sharing economy and labour market development, the following multiple linear regression model is used:

$$LMD_t = \alpha + \beta_1 SE_t + \beta_2 DIG_t + \beta_3 Z_t + \varepsilon_t$$

To test the moderating role of the digital economy, the following interaction model is estimated:

$$LMD_t = \alpha + \beta_1 SE_t + \beta_2 DIG_t + \beta_3 (SE_t \times DIG_t) + \varepsilon_t$$

4.5 Diagnostic Tests

To ensure the validity and reliability of the model, the following diagnostic tests are conducted: a Multicollinearity Test (Variance Inflation Factor, VIF) and an Autocorrelation Test (Durbin–Watson Statistic). Given the time-series nature of the data, Augmented Dickey–Fuller (ADF) tests were conducted to examine stationarity. All variables are non-stationary at level and become stationary after first differencing, i.e., integrated of order one, I (1).

V Empirical Results

5.1 Descriptive Analysis

Table 1 presents trends in sharing economy employment. The number of workers rose from 7.2 million in 2010 to 36.2 million in 2023, reflecting the rapid

expansion of platform-based employment. This trend highlights the growing importance of the sharing economy as a component of modern labour markets.

Table 1

Trends in the Number of Workers in the Sharing Economy (Millions)

Year	Number of Workers (millions)
2010	7.2
2011	8.1
2012	9.4
2013	11.0
2014	13.2
2015	15.8
2016	18.3
2017	21.0
2018	23.4
2019	26.7
2020	29.1
2021	31.8
2022	34.5
2023	36.2

Source: McKinsey Global Institute (2021, 2023); OECD (2022).

Revenue data presented in Table 2 confirm the growing economic significance of the sharing economy. Revenues increased from \$15.3 billion in 2010 to \$245.7 billion in 2023, reflecting rising demand for digital services.

Table 2

Revenues of Sharing Economy Platforms in the United States (USD Billions)

Year	Revenue (USD billions)
2010	15.3
2011	18.7
2012	23.5
2013	31.2
2014	49.8
2015	72.4
2016	94.1
2017	112.5
2018	128.6
2019	149.3
2020	170.9
2021	198.6
2022	223.4
2023	245.7

Source: Statista (2023); OECD Digital Economy Outlook.

Table 3 presents U.S. labour market indicators over the study period. The unemployment rate declined from 9.6% in 2010 to 3.7% in 2023, despite a temporary increase during the COVID-19 period in 2020. Employment and participation rates show relative stability, indicating resilience in the U.S. labour market.

Table 3

U.S. Labour Market Indicators (%)

Year	Employment Rate (%)	Labour Force Participation Rate (%)	Unemployment Rate (%)
2010	—	64.7	9.6
2011	58.4	64.1	8.9
2012	58.6	63.7	8.1
2013	58.6	63.2	7.4
2014	59.0	62.9	6.2
2015	59.3	62.7	5.3
2016	59.7	62.8	4.9
2017	60.1	62.9	4.4
2018	60.4	63.0	3.9
2019	61.0	63.2	3.7
2020	56.8	61.4	8.1
2021	58.5	61.6	5.4
2022	59.8	62.2	3.6
2023	60.1	62.6	3.7

Source: U.S. Bureau of Labor Statistics (2023). Note: Employment rate for 2010 was not reported in the dataset.

5.2 Descriptive Statistics and Correlation

The descriptive statistics, reported in Table 4, reveal variation in the key variables. The labour market development variable (LMD) exhibits relatively low variability (standard deviation = 2.45), indicating stability over time. In contrast, the sharing economy variable (SE) shows high variability (standard deviation = 41.28), reflecting rapid and uneven growth. The digital economy variable (DIG) displays moderate variation.

Table 4*Descriptive Statistics of Model Variables*

Variable	Mean	Std. Deviation	Min	Max
LMD	115.98	2.45	111.0	119.3
SE	66.17	41.28	11.2	140.9
DIG	44.42	3.68	37.6	49.1
Z	7.50	4.03	1	14

Note: Authors' calculations.

The correlation matrix (Table 5) provides initial insights into the relationships between variables. There is a strong positive correlation between LMD and DIG (0.88) and between LMD and SE (0.82). The correlation between SE and DIG is also high (0.94), reflecting the interconnected nature of digital and sharing economy developments. Although this correlation is relatively strong, multicollinearity diagnostics indicate that it does not compromise the reliability of the regression results.

Table 5*Correlation Matrix among Model Variables*

Variable	LMD	SE	DIG	Z
LMD	1.00	0.82	0.88	0.79
SE	0.82	1.00	0.94	0.97
DIG	0.88	0.94	1.00	0.96
Z	0.79	0.97	0.96	1.00

Note: Authors' calculations.

5.3 Regression Results

The regression results confirm a statistically significant relationship between the sharing economy and labour market development. As shown in Table 6, the coefficient of the sharing economy (SE) is positive and significant ($\beta = 0.08$, $p = 0.002$), indicating that expansion in platform-based activities contributes to improved labour market outcomes. Similarly, the digital economy (DIG) has a positive and significant effect ($\beta = 0.12$, $p = 0.003$), highlighting the role of digital infrastructure in enhancing labour market efficiency. The model demonstrates strong explanatory power, with an R^2 value of 0.92.

Table 6

Multiple Linear Regression Results (Basic Model)

Variable	Coefficient (β)	Std. Error	t-value	p-value
Constant	35.21	6.11	5.76	0.000
SE (Sharing Economy)	0.08	0.02	4.25	0.002
DIG (Digital Economy)	0.12	0.03	4.00	0.003
Z (Time Variable)	0.14	0.04	3.50	0.006

Note: $R = 0.96$; $R^2 = 0.92$; $Adj. R^2 = 0.90$; $F = 38.7$; $Sig. = 0.000$. Authors' calculations.

The interaction model provides further insight into the moderating role of the digital economy. As reported in Table 7, the interaction term (SE \times DIG) is positive and statistically significant ($\beta = 0.03$, $p = 0.02$). This result indicates that the effect of the sharing economy on labour market development is amplified as the level of digitalisation increases.

Table 7*Interaction Model Results (SE × DIG)*

Variable	t-value	p-value
SE (Sharing Economy)	2.80	0.010
DIG (Digital Economy)	3.00	0.009
SE × DIG ($\beta = 0.03$)	2.60	0.020

Note: Authors' calculations.

5.4 Diagnostic Tests

The results of the multicollinearity test show that VIF values are 8.9 for SE and 9.7 for DIG. Although these values are relatively high, they remain within acceptable limits. The Durbin–Watson statistic is equal to 1.91, which is close to the ideal value of 2.0, indicating the absence of autocorrelation in the residuals. ADF tests confirm that all variables are non-stationary at level, consistent with the methodology discussion above.

5.5 Model Performance and Hypothesis Testing

The overall performance of the regression model improves with the inclusion of the interaction term. The coefficient of determination (R^2) increases from 0.92 in the basic model to 0.94 in the interaction model, while the F-statistic increases from 38.7 to 42.1, suggesting a better overall fit. H1 is supported, as the coefficient of SE is positive and statistically significant. H2 is supported, as both DIG and the interaction term SE × DIG are statistically significant, confirming the moderating role of the digital economy. H3 receives partial support, as regulatory challenges are not directly measured but are indirectly reflected through structural trends and variability in the model.

6. Discussion

The empirical findings of this study provide strong evidence that the sharing economy has a statistically significant and positive impact on labour market development. The positive and significant coefficient of SE ($\beta = 0.08$, $p < 0.01$) indicates that the expansion of platform-based economic activities contributes to improved labour market outcomes. This finding reflects the increasing role of digital platforms in lowering barriers to entry and facilitating broader participation in income-generating activities.

The results also highlight the important role of the digital economy as a complementary factor. The positive and significant coefficient of DIG, along with the statistically significant interaction term ($SE \times DIG$), confirms that the impact of the sharing economy is strengthened in more digitally developed environments. This suggests that digital infrastructure enhances the efficiency of labour market matching and amplifies the benefits of platform-based work.

Despite these positive findings, the results also reveal important structural concerns. The relatively high variability observed in the sharing economy variable, along with strong correlations among key variables, suggests that the benefits of platform-based work may not be evenly distributed or stable over time. This reflects the inherent uncertainty associated with gig-based employment, where income security and job continuity are not guaranteed.

These findings are consistent with existing literature, which emphasises both the opportunities and challenges associated with digital labour markets. While previous studies have highlighted the role of the sharing economy in expanding employment opportunities and improving labour market flexibility, they have also pointed to issues related to income instability and lack of social protection (Berger et al., 2021; Hall and Krueger, 2018; Dube et al., 2020). The contribution of this

study lies in providing quantitative evidence that supports these arguments within a unified empirical framework.

Another important implication relates to the role of regulation. Although regulatory factors are not directly measured in the model, their influence is indirectly reflected through structural patterns and variability in the results. This suggests that labour market outcomes in the sharing economy are shaped not only by economic and technological factors but also by institutional and regulatory conditions. The findings therefore challenge the notion that digital markets are fully self-regulating.

From a policy perspective, the results indicate the need for a balanced regulatory approach. While the sharing economy contributes positively to labour market development, the associated risks highlight the importance of policies that ensure worker protection without restricting innovation. Measures aimed at improving social protection, enhancing income stability, and regulating platform-based work can help maximise the benefits of the sharing economy while mitigating its potential drawbacks.

7. Conclusions

This study has examined the impact of the sharing economy on labour market development in the United States over the period 2010–2023. The empirical analysis leads to the following conclusions.

First, the sharing economy has a positive and statistically significant effect on labour market development. Increased participation in platform-based activities contributes to improved employment outcomes. Second, the digital economy plays a critical enabling role; digital infrastructure strengthens the impact of the sharing economy by enhancing labour market efficiency and reducing transaction costs. Third, the interaction between the sharing economy and the digital economy is

significant; the benefits of the sharing economy are amplified in more digitally developed environments. Fourth, the sharing economy contributes to labour market resilience, providing flexibility and alternative income opportunities, particularly during periods of economic shocks such as the COVID-19 pandemic. Fifth, despite the positive effects, structural challenges such as income instability and lack of social protection limit the sustainability of the sharing economy's impact. Sixth, the sharing economy functions as a complementary driver of labour market development rather than a substitute for traditional employment.

The study has several limitations. The analysis is based on time-series data for a single country, which may limit the generalisability of findings. The model does not directly incorporate regulatory variables or informal employment dynamics. The relatively small sample size may restrict the ability to capture complex long-term relationships. These limitations provide opportunities for future research, particularly through the use of panel data across multiple countries, inclusion of institutional variables, and application of more advanced econometric techniques such as vector autoregression.

Policy Recommendations

Based on the findings, the following recommendations are proposed: (i) develop flexible regulatory frameworks tailored to platform-based work, ensuring a balance between labour market flexibility and worker protection; (ii) establish clear legal definitions of employment status in the sharing economy by adopting hybrid models that provide access to social protection while maintaining flexibility; (iii) improve transparency of digital platform algorithms, particularly in pricing mechanisms, task allocation, and performance evaluation; (iv) invest in digital infrastructure to support the expansion of the sharing economy and improve access to employment opportunities, especially in underserved regions; (v) integrate the

sharing economy into active labour market policies by promoting digital skills training and vocational development programmes; and (vi) promote further research, including comparative international studies and analyses of job quality and income stability, using advanced econometric methods.

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Appendix: Digital Environment Indicators for the United States (2010–2023)

Table A1

Digital Environment Indicators for the United States (2010–2023)

Year	Internet Penetration (% of Population)	ICT Expenditure (% of GDP)	Innovation Ranking
2010	71.7	3.6	11
2011	74.0	3.7	7
2012	75.8	3.8	10
2013	77.8	3.9	5
2014	79.4	4.0	6
2015	80.0	4.1	5
2016	81.7	4.2	4
2017	83.4	4.3	4
2018	84.5	4.4	6

Year	Internet Penetration (% of Population)	ICT Expenditure (% of GDP)	Innovation Ranking
2019	89.4	4.5	3
2020	90.3	4.6	3
2021	91.3	4.8	3
2022	92.2	5.0	2
2023	93.1	5.1	3

Source: OECD Digital Economy Outlook (2022); World Bank World Development Indicators (2023); Global Innovation Index.