

2023

## Economic Freedom and One-Way Truck Rental Prices: An Empirical Note

Alexander Cardazzi  
*Old Dominion University, [acardazz@odu.edu](mailto:acardazz@odu.edu)*

Robert A. Lawson  
*Southern Methodist University*

Follow this and additional works at: [https://digitalcommons.odu.edu/economics\\_facpubs](https://digitalcommons.odu.edu/economics_facpubs)



Part of the [Econometrics Commons](#), [Growth and Development Commons](#), and the [Transportation Commons](#)

---

### Original Publication Citation

Cardazzi, A., & Lawson, R. A. (2023). Economic freedom and one-way truck rental prices: An empirical note. *American Journal of Economics and Sociology*, 32(4), 313-318. <https://doi.org/10.1111/ajes.12508>

This Article is brought to you for free and open access by the Department of Economics at ODU Digital Commons. It has been accepted for inclusion in Economics Faculty Publications by an authorized administrator of ODU Digital Commons. For more information, please contact [digitalcommons@odu.edu](mailto:digitalcommons@odu.edu).

# Economic freedom and one-way truck rental prices: An empirical note

Alexander Cardazzi<sup>1</sup> | Robert A. Lawson<sup>2</sup> 

<sup>1</sup>Department of Economics, Old Dominion University, Norfolk, Virginia, USA

<sup>2</sup>Cox School of Business, Southern Methodist University, Dallas, Texas, USA

## Correspondence

Robert A. Lawson, Jerome M. Fullinwider Centennial Chair in Economic Freedom, Bridwell Institute for Economic Freedom, SMU Cox School of Business, Dallas, TX, USA.  
Email: [rlawson@smu.edu](mailto:rlawson@smu.edu)

## Abstract

This study examines the one-way truck rental prices for 378 cities. There are large price differentials in one-way rental prices between city pairs. The pull of people toward higher economic freedom locales and push away from lower economic freedom locales is found to be an important determinant of the city-pair price differentials.

The choice to change where one lives involves a complicated mix of costs and benefits. Economic prospects, familial ties, climate, political repression, and regulatory barriers to crossing borders, among many other considerations are undoubtedly swimming in the minds of those contemplating a move. The question we seek to address in this empirical note is whether people are motivated to move to attain greater economic freedom and how this might influence the price of one-way rental moving trucks.

## MIGRATION AND ECONOMIC FREEDOM

There is a small but growing literature that finds economic freedom is an important factor in determining migration flows. Without exception, the studies find that high economic freedom attracts people while low economic freedom repels them.

At the international level, Meierrieks and Renner (2017) found that high-skilled migrants are especially responsive to differences in economic freedom across nations. Ashby (2010) found

Authors are listed alphabetically.

This is an open access article under the terms of the [Creative Commons Attribution](https://creativecommons.org/licenses/by/4.0/) License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited.

© 2023 The Authors. *The American Journal of Economics and Sociology* published by Wiley Periodicals LLC on behalf of American Journal of Economics and Sociology, Inc.

economic freedom was an important determinant of OECD immigration even if controlling for income and political freedom.

At the state level in the U.S., Cebula (2014); Cebula et al. (2016); Cebula and Clark (2010), and Ashby (2007) all found that inward migrants preferred to move to states with higher economic freedom. Mulholland and Hernández-Julián (2013) report that states with higher economic freedom were attractive to migrants with secondary education and to a lesser degree those with some college.

Shumway (2018) and Arif et al. (2020) looked at migration and economic freedom at the city level. They both found that locales with higher economic freedom experience economically and statistically significant increases in domestic in-migration.

## ONE-WAY TRUCK RENTAL PRICES

This empirical note utilizes a snap shot of one-way rental moving truck prices among 378 metro areas in the United States.<sup>1</sup> The price data were collected from the [uhaul.com](https://www.uhaul.com) website between January 20–25, 2021, and reflect the one-way rental price of a 10-foot truck, which is described as large enough to move a studio or small one-bedroom apartment.<sup>2</sup> In the end, we obtained one-way rental price data for 142,506 city pairs.

The price differences between city pairs can be large. For example, a one-way rental from El Centro, CA to Amarillo, TX, a distance of 1165 miles, was found to be \$1947, while the same one-way rental from Amarillo to El Centro was 48% less expensive, only \$1015. Why the price difference?

If rental trucks were pure commodities, we might expect the law of one price to apply; that is, the price from El Centro to Amarillo would be the same as the price from Amarillo to El Centro. A 10' truck *here* is the same as a 10' truck *there*, and a 1165-mile rental *this way* should be a 1165-mile rental *that way*.

But rental trucks are not pure commodities. The company's fleet of trucks in the very short run, or market period, is highly, if not perfectly, inelastic, and the market is far from perfectly competitive. If the rental price of the trucks was the same in both directions, then the lesser demand for rental trucks from Amarillo to El Centro versus the greater demand for rental trucks from El Centro to Amarillo would cause a net outflow of trucks from El Centro to Amarillo. Fewer and fewer trucks would be available to rent in El Centro, while more and more would end up in Amarillo. One could imagine the company hiring people to move empty trucks back from Amarillo to El Centro, and for all, we know this does occur. But another option would be to charge different prices to reflect the higher demand for El Centro to Amarillo rentals versus the lower demand for Amarillo to El Centro rentals and thus maintain a balance in the overall fleet of trucks. The lower price for Amarillo to El Centro rentals essentially encourages customers to return the trucks to El Centro so those trucks can be available to help more customers move from El Centro.<sup>3</sup>

Another way of looking at it would be to utilize the familiar equation for optimal pricing for firms with market power (which the company in this case clearly has) as taught in basic microeconomics. The optimal price ( $P^*$ ) is a function of the marginal cost (MC) and the elasticity of demand ( $E^d$ ):  $P^* = MC / (1/E^d + 1)$ . Seen from this perspective, we would argue that servicing a customer renting one way from El Centro to Amarillo is *more costly* from a fleet management perspective than one who wants to move from Amarillo to El Centro because the former customer is taking a truck away from a high demand location and moving it to a lower demand location.

## METROPOLITAN AREA ECONOMIC FREEDOM

Stansel (2019) has developed a *U.S. Metropolitan Area Economic Freedom Index* for Metropolitan Statistical Areas (MSAs) in the United States. The metro-area economic freedom index (MEFI), like the *Economic Freedom of the World* (EFW) index (Gwartney et al., 2022) and *Economic Freedom of North America* (EFNA) index (Stansel et al., 2022) that inspired it, attempts to measure how economically free citizens are at the metro-area level. The MEFI index is based on nine variables and is very similar in structure to the EFNA index: government consumption expenditures (% of personal income), transfers and subsidies (% of personal income), insurance and retirement payments (% of personal income), income and payroll tax revenue (% of personal income), sales tax revenue (% of personal income), revenue from property tax and other taxes (% of personal income), full-time minimum wage (% of per capita personal income), government employment (% of total employment), and private union membership (% of total employment). Because the census survey of governments occurs only every 5 years, the MEFI can only be calculated on a five-year basis. The most recent data and the data used in the ensuing analysis are from the year 2017. The MEFI, like all economic freedom indexes, changes only very slowly over time so it is highly unlikely that using a MEFI for 2017 and truck rental price data from early 2021 is going to affect the analysis.

It is common for politicians and political pundits to highlight the divergent one-way rental prices between certain city pairs and attribute the differences to public policy differences between jurisdictions (Perry, 2014). The purpose of this empirical note is to see if the metro-area economic freedom index correlates with the one-way truck rental prices for a larger sample of cities than is typically used by partisan commentators.

## DATA ANALYSIS

A casual scan of the data indicates clearly that the distance of the one-way trip is an important factor determining the price. Figure 1 shows the one-way truck rental prices for all 142,506 city pairs versus distance, with the median price by distance noted accordingly. The discrete number of bands, or functional forms, are faintly apparent even when plotting all the city pair data.

Table 1 provides descriptive statistics for the variables utilized in the regression analysis to follow. Regressions (1) and (2) in Table 2 are OLS regressions looking at rental prices as a function of distance and distance squared. The results all confirm the positive relationship between one-way rental prices and distance with the quadratic distance variable coming in mildly negative as expected. Regression (1) also includes the MEFI at the origin and MEFI at the destination. As expected, it appears more expensive to rent a truck going to and less expensive to rent a truck going from a high economic freedom city. The results hold in Regression (2) when controlling for income and population in the respective metro areas.

Let us consider Ft. Myers, FL, which is one standard deviation above average in the MEFI, versus Springfield, OH, which is one standard deviation below average. Based on the coefficients in Regression (2), if you move to Ft. Myers from Springfield, the price of the rental truck will be \$289 higher compared to a move between two metro areas with similar MEFI ratings. In contrast, if you move to Springfield from Ft. Myers, the price of the rental truck will be \$289 lower compared to a move between two metro areas with similar MEFI ratings. Combining these prices, we then would estimate the one-way price to Ft. Myers from Springfield would be about \$578

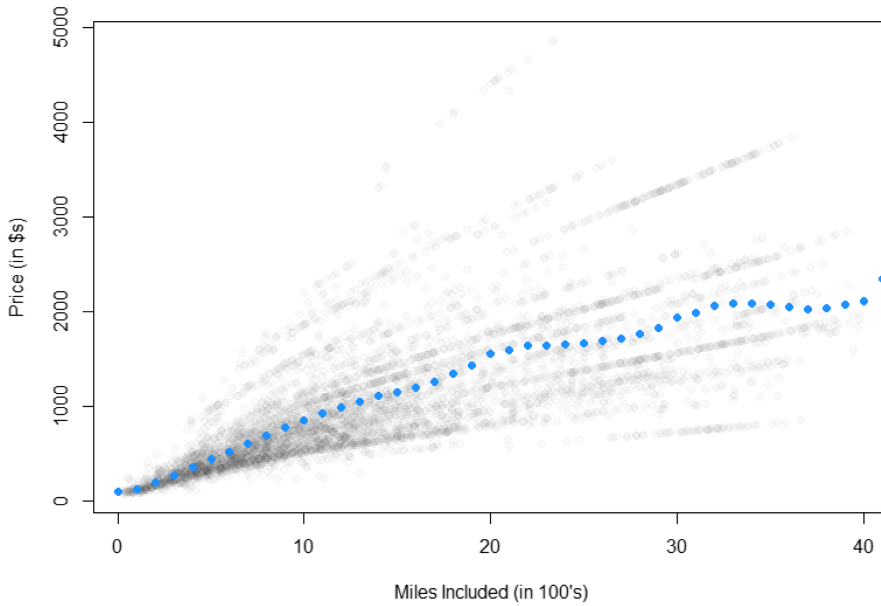


FIGURE 1 One-way truck rental prices by distance.

TABLE 1 Summary statistics.

Variable	N	Mean	SD	Min	Max
Distance between cities (100s miles)	142,506	14.80	9.16	0.29	41.98
Rental price (\$)	142,506	1085.96	729.28	60.00	5105.00
Metro-area economic freedom index	142,506	6.56	0.74	4.22	8.55
Metro-area income (\$1000)	142,506	43.81	9.17	24.81	106.67
Metro-area population growth (%)	142,506	2.53	3.57	-10.30	20.60

different than the one-way price in the other direction. (In fact, the rental price to Springfield from Ft. Myers was \$629, and to Ft. Myers from Springfield was \$1331, a difference of \$702.)

## CONCLUSION

This empirical note looked at the one-way truck rental prices between 142,506 city pairs in the United States. One-way truck rental prices can be seen as a useful privately produced data source providing current, real-time information about migration flows within the country. In this sense, these data could be used in a similar way as using satellite data on the night light and data from the digital economy to measure economic activity (Glaeser et al., 2017; Henderson et al., 2012; Mellander et al., 2015; Mossberger et al., 2022). It also fits in nicely with other unconventional approaches to measuring institutional quality such as using currency iconography (Lawson, 2019) or postal delivery quality (Chong et al., 2014).

The results presented in this empirical note, based on a reduced-form regression model with simple controls, confirm the commonly held observation that one-way rentals are more expensive when moving from cities with lower economic freedom to cities with greater economic freedom and vice versa. The relationship is sufficiently strong that one might take the price asymmetries

TABLE 2 OLS regression results.

<b>Dependent variable: Rental price of a 10-foot truck (from city A to city B)</b>		
<b>Independent variable</b>	<b>(1)</b>	<b>(2)</b>
Distance between cities	94.33*** (0.526)	95.59*** (0.49)
Distance between cities—squared	-1.05*** (0.01)	-1.11*** (0.01)
Economic freedom in destination city B	118.89*** (1.67)	136.72*** (1.75)
Economic freedom in origin city A	-210.54*** (1.67)	-254.50*** (1.75)
Income in destination city B		-7.32*** (0.128)
Income in origin city A		17.71*** (0.128)
Population growth in destination city B		0.59* (0.36)
Population growth in origin city A		-4.45*** (0.36)
Observations	142,506	142,506
$R^2$	0.60	0.66
Adjusted $R^2$	0.60	0.66
$F$ -statistics	54318***	34278***

Note: Standard errors in parentheses.

\*  $p < 0.1$ ; \*\*\*  $p < 0.01$ .

between city pairs as proxy indicators of differential policy/institutional environments among cities, and politicians and pundits are not necessarily wrong when they cite these data accordingly.

Bottom line: The pull of people toward higher economic freedom locales and push away from lower economic freedom locales is found to be an important determinant of the city-pair price differentials for one-way truck rentals.

## DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

## ORCID

Robert A. Lawson  <https://orcid.org/0000-0002-5258-7566>

## ENDNOTES

<sup>1</sup> We started with all 380 MSAs but omitted the two in Hawaii for obvious reasons.

<sup>2</sup> Price data for other truck sizes were collected, but some cities lacked inventory for the larger trucks. We decided to use the 10' truck because it was available in all the cities we selected.

<sup>3</sup> Some formal work on this one-way pricing problem has been done in the operations research literature (Boyaci et al., 2015; Love, 1985; Zhou, 2012).

## REFERENCES

- Arif, I., Hoffer, A., Stansel, D., & Lacombe, D. (2020). Economic freedom and migration: A metro area-level analysis. *Southern Economic Journal*, 87(1), 170–190.
- Ashby, N. (2007). Economic freedom and migration flows between the U.S. states. *Southern Economic Journal*, 73(3), 677–697.
- Ashby, N. (2010). Freedom and international migration. *Southern Economic Journal*, 77(1), 49–62.
- Boyaci, B., Zografos, K. G., & Geroliminis, N. (2015). An optimization framework for the development of efficient one-way car-sharing systems. *European Journal of Operational Research*, 204(3), 718–733.
- Cebula, R. (2014). The impact of economic freedom and personal freedom on net in-migration in the U.S.: A state-level empirical analysis, 2000–2010. *Journal of Labor Research*, 35, 88–103.
- Cebula, R., & Clark, J. R. (2010). Migration, economic freedom, and personal freedom: An empirical analysis. *Journal of Private Enterprise*, 27(1), 43–62.
- Cebula, R., Foley, M., & Hall, J. (2016). Freedom and gross in-migrations: An empirical study of the post-great recession experience. *Journal of Economics and Finance*, 40, 402–420.
- Chong, A., La Porta, R., Lopez-de-Silanes, F., & Shleifer, A. (2014). Letter grading government efficiency. *Journal of the European Economic Association*, 12(2), 277–298.
- Glaeser, E., Kim, H., & Luca, M. (2017). Nowcasting the local economy: Using Yelp data to measure economic activity. *NBER Working Paper 24010*.
- Gwartney, J., Lawson, R., Hall, J., & Murphy, R. (2022). *Economic Freedom of the World: 2022 Annual Report*. Fraser Institute.
- Henderson, J. V., Storeygard, A., & Weil, D. (2012). Measuring economic Growth from outer space. *American Economic Review*, 102(2), 995–1028.
- Lawson, K. (2019). Using currency iconography to measure institutional quality. *The Quarterly Review of Economics and Finance*, 72, 73–79.
- Love, C. E. (1985). Source/since inventory control for vehicle rental systems. *Computers & Operations Research*, 12(4), 349–364.
- Meierrieks, D., & Renner, L. (2017). Stymied ambition: Does a lack of economic freedom lead to migration? *Journal of Population Economics*, 30, 977–1005.
- Mellander, C., Lobo, J., Stolarick, K., & Matheson, Z. (2015). Night-time light data: A good proxy for economic activity? *PLoS ONE*, 10(10), 1–18.
- Mossberger, K., Martini, N., McCullough, M., & Tolbert, C. (2022). Digital economic activity and resilience for metros and small businesses during Covid-19. *Small Business Economics*. <https://link.springer.com/article/10.1007/s11187-022-00674-x#citeas>
- Mulholland, S., & Hernández-Julián, R. (2013). Does economic freedom lead to selective migration by education. *Journal of Regional Analysis and Policy*, 43(1), 65–87.
- Perry, M. (2014). The California exodus to Texas is reflected in market-based, one-way U-Haul Truck rental prices. *Carpe Diem Blog*. <https://www.aei.org/carpe-diem/the-california-exodus-to-texas-is-reflected-in-market-based-one-way-u-haul-truck-rental-prices/>
- Shumway, J. M. (2018). Economic freedom, migration and income change among U.S. metropolitan areas. *Current Urban Studies*, 6(1), 1–20.
- Stansel, D. (2019). *U.S. metropolitan economic freedom index*. Reason Foundation.
- Stansel, D., McMahon, F., & Torra, J. (2022). *Economic freedom of North America 2022*. Fraser Institute.
- Zhou, S. (2012). *Dynamic incentive scheme for rental vehicle fleet management*. Massachusetts Institute of Technology.

**How to cite this article:** Cardazzi, A., & Lawson, R. A. (2023). Economic freedom and one-way truck rental prices: An empirical note. *American Journal of Economics and Sociology*, 82, 313–318. <https://doi.org/10.1111/ajes.12508>