

UDC 339.5

Yerboluly Madi

Grade 11 student

Supervisor: Iembergen Assem

School-Lyceum No. 119

(Almaty, Kazakhstan)

DID IMPORTED CARS REALLY GET CHEAPER? CHINESE CARS AND THE AVERAGE CUSTOMS VALUE OF PASSENGER CARS IMPORTED INTO KAZAKHSTAN, 2015-2025

Abstract: Chinese cars have become the largest part of Kazakhstan's car imports, and a common explanation is that they are simply cheap. In this study I used UN Comtrade data on passenger cars (Harmonized System heading 8703) to check how China's share and the average customs value of an imported car changed between 2015 and 2025. According to Kazakhstan's records, China supplied 2.0% of imported passenger cars in 2015 and 69.1% in 2025, and the average value of an imported unit fell by 39% between 2023 and 2025. However, three checks showed that most of this fall does not describe real cars. First, in 2025 Kazakhstan recorded 72,366 units, most of them from China, that weighed about 180 kg and were worth about 670 US dollars each, which is not possible for a passenger car. China itself recorded no exports to Kazakhstan in this subheading, but recorded 65,688 motorcycles of 250-500 cm³, so these units are most likely light vehicles classified differently by the two countries. Without them, China's share of cars was 56.5% and the average value fell by 16%, while the average weight of a car did not change. Second, inside the same engine groups, Chinese cars became about 12% cheaper in Kazakhstan's records and about 17% cheaper in China's own records, so this part of the fall is real. Third, for South Korea and Germany the average value fell by 67% and 47% in Kazakhstan's records but rose by 9% and 11% in the exporters' records. The results show that Kazakhstan's car import statistics should not be used without checking subheadings and mirror data, and that the idea that Chinese cars pushed prices down explains only a small part of the change.

Keywords: car imports; unit values; mirror statistics; UN Comtrade; China; Kazakhstan

1. Introduction

Before I started this project I helped for some time in my uncle's company, which brings cars to Kazakhstan from China, Korea, Germany and other countries, and I filled in customs declarations there. Every declaration has the same fields: where the car was made, its engine, its weight and its customs value. When I later looked at Kazakhstan's car imports as a whole, the most visible change was the rise of Chinese cars. In Kazakhstan's records, China supplied 2.0% of imported passenger cars in 2015 and 69.1% in 2025 [1].

A common explanation is that Chinese cars are cheap. If this were the whole story, the average customs value of a car from China should fall, while cars from other countries keep their values. When my mentor and I first looked at the data, we found something different. Between 2023 and 2025 the average value per imported car fell not only for China but also for South Korea and Germany, and for Korea it fell even more. This made the question more interesting than "Chinese cars are cheap".

Economists often use unit values, the value of trade divided by its quantity, as a rough measure of the price and quality of traded goods [2, 3]. A unit value can fall for different reasons. The goods themselves can become cheaper. The mix can change, for example from large to small cars or from new to used ones. The goods can be counted or classified differently. Or the declared values can be lower than the real ones, which is a known problem in customs statistics and can be checked by comparing what the exporting country reports with what the importing country reports [4, 5]. Kazakhstan's car market also changed a lot in these years. After 2022 part of the trade with Russia went through Central Asia [6], and from 1 December 2024 Kazakhstan changed the rules for importing cars, so that only official dealers can import new cars and other importers can bring only cars older than three years [7].

In this study I asked four questions:

- How did China's share of passenger cars imported into Kazakhstan change between 2015 and 2025?
- How did the average customs value of an imported car change, and was this change specific to China?
- Was the fall caused by a change in what kind of cars were imported (engine type and size) or by lower values within the same kind of car?
- Do the exporting countries report the same numbers and values as Kazakhstan?

2. Data and methods

Data. I used the UN Comtrade database, which collects the official trade statistics that countries report to the United Nations [1]. I took Kazakhstan's imports of passenger cars, which are heading 8703 of the Harmonized System [8], for every year from 2015 to 2025. For each year I downloaded the number of units, the customs value in US dollars and the net weight, both for all countries together and for five main partners: China, South Korea, Japan, Germany and Russia. Import values are CIF values, which include transport and insurance to the border. I downloaded all data with Python through the Comtrade API, one year and one partner at a time.

A technical trap. For one year and one partner, Comtrade gives several rows: a total row and separate rows by mode of transport and customs procedure. If all rows are added together, the result is about twice too large. My first attempt gave 224 cars from China in 2018 instead of 112. To avoid this, I kept only the total rows (mode of transport 0, customs procedure C00 and second partner 0).

Engine groups. For 2023-2025 I also downloaded the six-digit subheadings of heading 8703, which divide cars by engine type and engine volume. I grouped them into petrol cars up to 1.0 litre, 1.0-1.5 litres, 1.5-3.0 litres and over 3.0 litres, diesel cars, hybrids, plug-in hybrids and electric cars. Subheading 8703 10 covers special vehicles such as snowmobiles and golf cars.

Light units. While checking the subheadings, I found a large number of units in subheadings 8703 10 and 8703 21 that were much lighter and cheaper than any car (section 3.2). I call them "light units" and report the results both with and without them. In the main analysis of values I use only the other subheadings and call them "cars". For Korea, Japan and Germany these two subheadings contain very few units, so this choice changes almost nothing for them.

Average value and its change. The average value per car is the total value divided by the number of cars. To separate the effect of a different mix of cars from the effect of lower values within the same type of car, I used a shift-share decomposition. The change in the average value between 2023 and 2025 was split into a mix effect, which comes from changes in the shares of engine groups, and a within effect, which comes from changes in the average value

inside each group. I used the average of the two years as weights, so the two parts add up exactly to the total change.

Mirror data. For each partner I also downloaded what that country reports as its exports of passenger cars to Kazakhstan. Exports and imports should describe the same cars, but there are known reasons for small differences: export values are usually FOB values without transport costs, so import values should be a little higher, and the importing country usually records the country where the goods were made, while the exporting country records the country of destination [5]. Russia has not reported its trade to Comtrade since 2022, so there is no mirror data for Russia in these years.

Re-exports. Finally, I downloaded Kazakhstan's exports of passenger cars to the world and to Russia, Kyrgyzstan and Uzbekistan, to see whether some imported cars left the country again.

3. Results

3.1 China's share and the quality of the data

In Kazakhstan's records, China's share of imported passenger cars was 2.0% in 2015 (1,534 of 76,931 units), 35.1% in 2023, 47.0% in 2024 and 69.1% in 2025 (163,944 of 237,338 units). By value, China's share in 2025 was 49.6%.

These numbers cannot be read as a smooth trend, because Kazakhstan's own data for the middle years are incomplete. In 2015 and 2016 Kazakhstan's numbers are close to what its partners reported, for example 2,298 cars from Korea in Kazakhstan's records and 2,303 in Korea's. From 2017 to 2019, Kazakhstan recorded only about 90-130 cars a year from China and 60-360 from Korea, while China reported 2,720-3,390 and Korea 1,081-4,700 cars sent to Kazakhstan. For 2020-2022 Kazakhstan reported cars from Russia only. Figure 1 shows this by comparing China's own exports to Kazakhstan with Kazakhstan's imports from China. China's exports grew from 4,919 cars in 2021 to 20,446 in 2022 and 207,002 in 2025, so the rise of Chinese cars is real, but its speed in the middle years can be seen only in China's data. For this reason, I compare values only for 2023-2025, when Kazakhstan's data cover all partners.

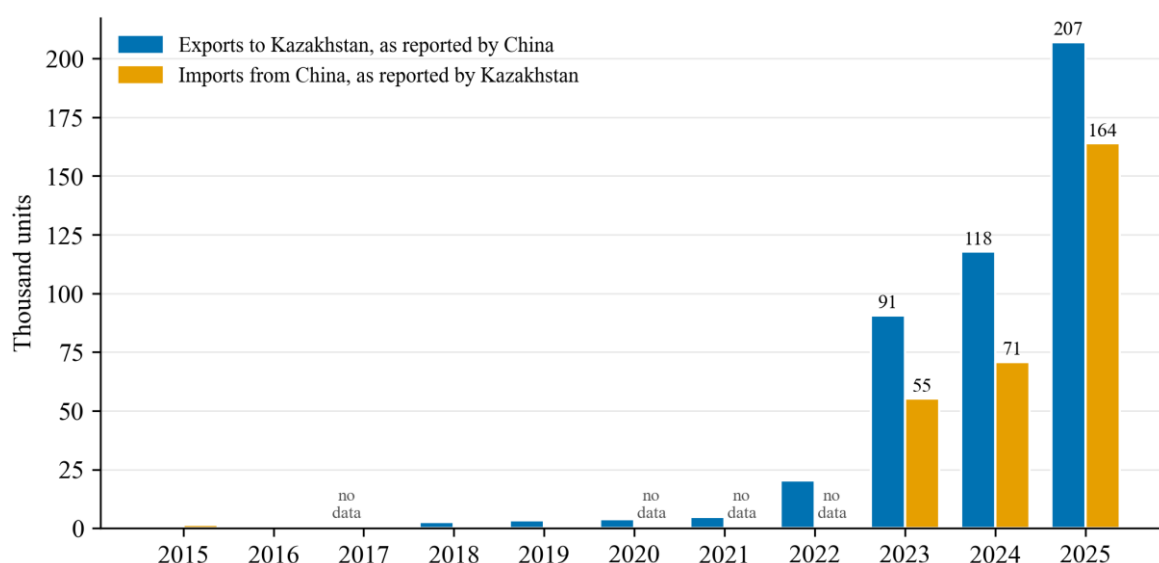


Figure 1. Passenger cars (heading 8703) that China reported as exported to Kazakhstan and that Kazakhstan reported as imported from China, 2015-2025

3.2 Light units that are not cars

Between 2023 and 2025 the average value of one unit imported into Kazakhstan fell by 39%, from 19,477 to 11,947 US dollars. When I looked at the subheadings, most of this fall came from one place. In 2025 Kazakhstan recorded 66,944 units from China in subheading 8703 21 (petrol cars with an engine up to 1.0 litre) with an average weight of 179 kg and an average value of 437 dollars. Together with subheading 8703 10, Kazakhstan recorded 72,366 light units from all countries in 2025, compared with 5,710 in 2023, and 70,754 of them came from China (Figure 2). A passenger car usually weighs more than 800 kg, so these units cannot be ordinary cars.

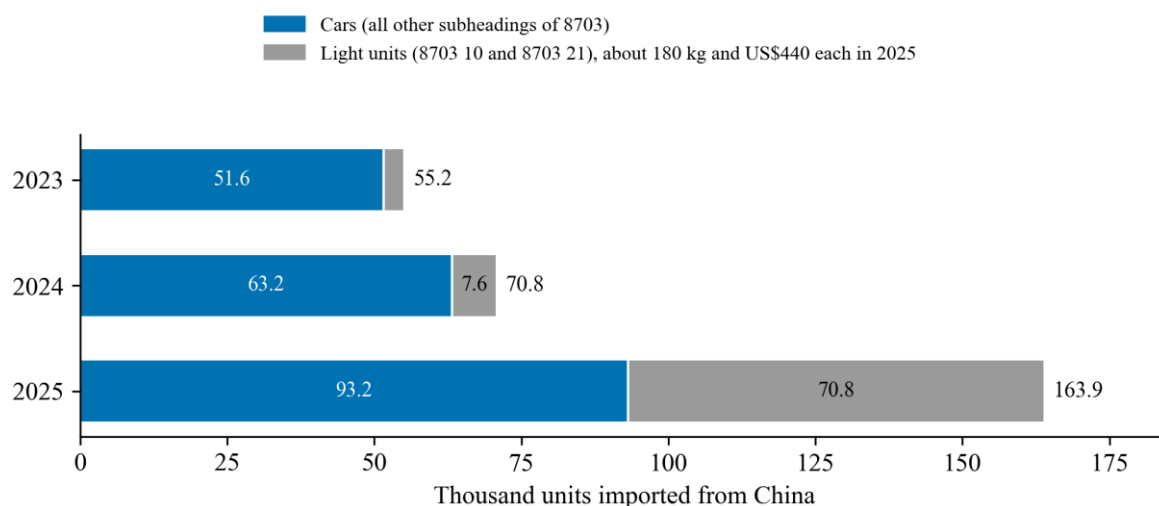


Figure 2. Units imported into Kazakhstan from China in heading 8703: cars and light units, 2023-2025

China's records show where these units probably come from. China reported no exports of passenger cars to Kazakhstan in subheading 8703 21 in any of these years. At the same time, China's exports to Kazakhstan of motorcycles with an engine of 250-500 cm³ (subheading 8711 30) rose from 1,248 units in 2023 to 65,688 in 2025, with an average weight of 127 kg, while Kazakhstan recorded only 6,522 such motorcycles from China in 2025. The two numbers, 65,688 and 66,944, are very close and appeared in the same year. The most likely explanation is that the same light vehicles, for example all-terrain vehicles, are recorded as motorcycles by China and as small passenger cars by Kazakhstan. I cannot prove this from Comtrade data alone, but the weight and the value make it clear that these units should not be counted as cars.

Without the light units, China supplied 34.1% of cars in 2023, 44.7% in 2024 and 56.5% in 2025, and 49.3% of their value in 2025. The average value of a car fell by 16%, from 20,046 to 16,895 dollars, instead of 39%. The average weight of a car stayed almost the same: 1,674 kg in 2023 and 1,669 kg in 2025. Table 1 shows the same comparison for each partner.

Table 1. Cars imported into Kazakhstan by partner, 2023 and 2025, without light units

Partner	Cars, 2023	Cars, 2025	US\$ per car, 2023	US\$ per car, 2025	kg per car, 2025
China	51,575	93,190	16,750	14,752	1,594
South Korea	19,628	12,396	13,204	4,401	1,636
Japan	27,846	22,284	31,446	35,122	1,938
Germany	4,676	3,722	49,579	26,335	1,888

Russia	416	6,438	13,819	9,605	1,201
All countries	151,286	164,972	20,046	16,895	1,669

Source: UN Comtrade, Kazakhstan's import records, heading 8703 without subheadings 8703 10 and 8703 21. Values are CIF.

3.3 A different mix or lower values?

Table 2 shows the decomposition of the change in the average value of a car between 2023 and 2025. For all countries together, the average value of a car fell by 3,263 dollars. Only 915 dollars of this came from a different mix of engine groups, and 2,348 dollars came from lower values inside the same groups. In other words, most of the fall happened because the same kind of car was recorded as cheaper, not because people started to import smaller cars. This agrees with the stable average weight.

Table 2. Change in the average value of a car between 2023 and 2025, split into the mix effect and the within effect (US\$)

Partner	Records of	US\$ per car, 2023	US\$ per car, 2025	Mix effect	Within effect
China	Kazakhstan	16,750	14,752	+1,717	-3,715
China	China	18,146	15,130	+3,003	-6,019
South Korea	Kazakhstan	13,204	4,401	-1,845	-6,958
South Korea	South Korea	29,739	32,422	-2,016	+4,699
Germany	Kazakhstan	49,579	26,335	-6,158	-17,085
Germany	Germany	82,274	91,477	+2,296	+6,906
Japan	Kazakhstan	31,446	35,122	-3,007	+6,682
Japan	Japan	32,270	36,297	-520	+4,547
All countries	Kazakhstan	19,987	16,724	-915	-2,348

The values are calculated from the subheadings, so for all countries they differ slightly from Table 1, where the total of heading 8703 is used. Exporters' values are FOB.

For China the two parts go in opposite directions. The mix effect was positive: plug-in hybrids and electric cars, which are more expensive, grew from about 2% of Chinese cars in 2023 to 21% in 2025. But inside each group Chinese cars became cheaper. China's own export records show the same pattern, and even a larger fall inside the groups. For example, in China's records the average value of a plug-in hybrid exported to Kazakhstan fell from 51,257 dollars in 2023 to 24,128 dollars in 2025, and that of an electric car from 40,846 to 19,161 dollars. So for Chinese cars the fall in value is real and can be seen from both sides.

3.4 What the exporters say

Figure 3 compares the average value of a car in Kazakhstan's records and in the exporters' records. For China and Japan the two sources are close and move in the same direction. For South Korea and Germany they move in opposite directions. In Kazakhstan's records, the average Korean car fell from 13,204 to 4,401 dollars (-67%) and the average German car from 49,579 to 26,335 dollars (-47%). In Korea's and Germany's own records, the average value of a car exported to Kazakhstan rose by 9% and 11%.

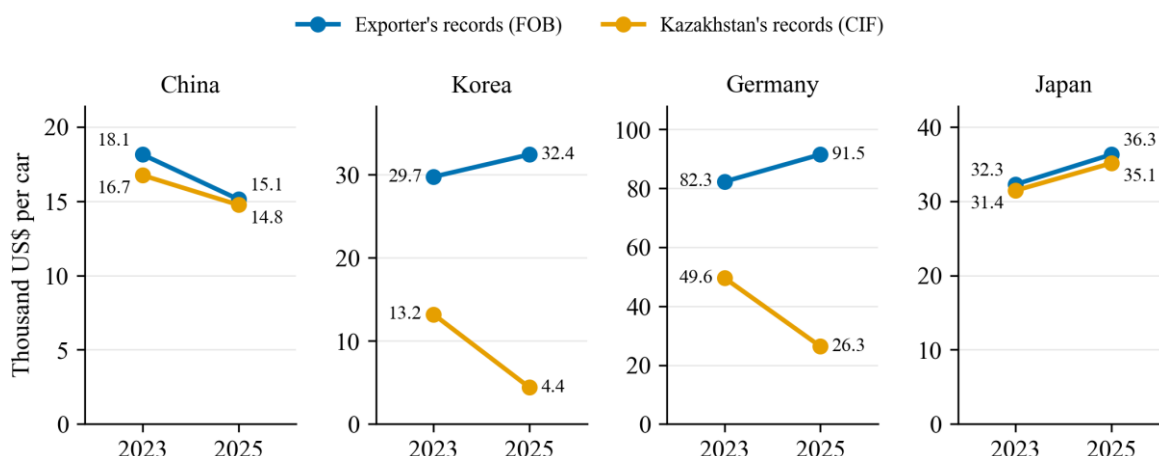


Figure 3. Average value of a car (without light units) imported into Kazakhstan, in the exporter's records and in Kazakhstan's records, 2023 and 2025

The numbers of cars also differ. In 2025 Korea reported 52,070 cars exported to Kazakhstan, but Kazakhstan recorded 12,485 cars from Korea. China reported 207,002, and Kazakhstan 163,944. For Germany and Japan the difference goes the other way: Kazakhstan recorded more cars of German and Japanese origin (3,727 and 22,294) than Germany and Japan reported sending to Kazakhstan (1,859 and 16,375). The Korean cars that Kazakhstan recorded were real cars, with an average weight of 1,636 kg, but in 2025 an average Korean car with a 1.5-3.0 litre engine was declared at only 3,886 dollars, while Korea reported 29,839 dollars for this group.

3.5 Cars that left Kazakhstan again

Kazakhstan's own exports of passenger cars also changed. Exports to Russia rose from 2,073 cars in 2022 to 8,882 cars worth 193 million dollars in 2023, and then fell to 381 cars in 2024 and 163 in 2025. In 2023 these exports were equal to about 6% of the cars Kazakhstan imported. This shows that in 2023 a part of the cars, and probably more expensive ones, passed through Kazakhstan to Russia, which can make the average value of imports in 2023 higher than the value of cars that stayed in the country.

4. Discussion

The main result of this study is that the large fall in the average value of imported cars in Kazakhstan's statistics is mostly not a fall in car prices. More than half of the fall from 2023 to 2025 (58%) disappears when the light units are removed. These units are most likely light vehicles that China records as motorcycles and Kazakhstan records as small passenger cars. For a person who downloads only the total of heading 8703, they look like tens of thousands of very cheap Chinese cars.

The rest of the fall has two different sources. For Chinese cars, it is real. Both Kazakhstan and China show that Chinese cars of the same type became cheaper, and the largest fall was in plug-in hybrids and electric cars. At the same time, more of these more expensive types were imported, so the total effect for China was a moderate fall of 12%. This supports the idea that Chinese cars got cheaper, but only for a part of the change.

For Korean and German cars the fall exists only in Kazakhstan's records. Several explanations are possible, and Comtrade data cannot separate them. The first is the difference between the country of origin and the country of shipment. Kazakhstan records German cars by origin, so a used German car bought in another country is recorded as German but does not

appear in Germany's exports to Kazakhstan. This fits the fact that Kazakhstan recorded twice as many German cars as Germany reported. The second is the age of the cars. Since December 2024, importers who are not official dealers can bring only cars older than three years [7], so more used cars with lower values may have been imported in 2025. However, the average Korean car had already fallen from 13,204 to 7,263 dollars in 2024, before this rule, so the rule cannot explain everything. The third is undervaluation, when the value written in the declaration is lower than the real price. Mirror gaps of this size are a common warning sign of undervaluation [4, 5], but they are not proof, because the cars in the two records may not be the same cars.

The difference in the number of Korean cars is also interesting. Korea reported four times more cars sent to Kazakhstan than Kazakhstan recorded. One possible explanation is that some cars sent to Kazakhstan continued to other countries of the Eurasian Economic Union, which is the same route that Chupilkin, Javorcik and Plekhanov describe for goods going to Russia through Central Asia [6]. Kazakhstan's own exports to Russia in 2023 also show this route. Another possibility is the "grey" import of cars that are first registered in another country of the Union and then brought to Kazakhstan [7].

From my experience with declarations, I know that each declaration contains the year of manufacture and the exact model, which Comtrade does not show. With declaration-level data it would be possible to check directly whether the Korean and German cars were old used cars or new cars with low declared values. This would be the next step after this study.

5. Limitations

This study uses only official trade statistics, not the prices of cars in Kazakhstan's shops. Unit values describe what is written in customs records, and they can be affected by the classification and valuation of goods. Kazakhstan's data before 2023 are incomplete, so the long-term change in China's share is described only roughly. The idea that the light units are vehicles recorded as motorcycles by China is based on the closeness of the numbers, the weight and the value, not on direct evidence. Some of Kazakhstan's quantities for 2025 are marked in Comtrade as estimated. Mirror comparisons are affected by the difference between CIF and FOB values and between the country of origin and the country of destination. There is no mirror data for Russia after 2021. Finally, the shift-share decomposition depends on the engine groups, and a finer split, for example by brand, could change the size of the mix effect.

6. Conclusion

Between 2015 and 2025 China became the largest source of passenger cars imported into Kazakhstan, with 56.5% of cars and 49.3% of their value in 2025 when light units are excluded. The average value of an imported unit fell by 39% between 2023 and 2025, but most of this fall came from light units that are most likely not passenger cars. For real cars the fall was 16%. Chinese cars became cheaper by about 12% in Kazakhstan's records and 17% in China's, so this part of the story is real, but the large falls for Korean and German cars exist only in Kazakhstan's records and not in the exporters'. Anyone who uses these statistics should look at the subheadings and compare them with mirror data before drawing conclusions about prices.

Author contribution and use of AI

The author chose the topic from his own experience with customs declarations, wrote the research plan and the main research question, and wrote the first Python code to download and process the Comtrade data for one year. The author's mentor extended the data to all years, partners and subheadings, checked the data, carried out the analysis, made the figures, and helped write and edit the English text. Generative AI tools were used to help with editing. Every

number in the paper was calculated from the Comtrade data by the analysis code and checked by the author's mentor.

Data availability

All data come from the public UN Comtrade database. The Python code that downloads the data and produces every number, table and figure in this paper is available from the author on request.

References:

1. United Nations. UN Comtrade Database: annual trade data by commodity, Harmonized System, Kazakhstan and partners, 2015-2025. URL: <https://comtradeplus.un.org> (accessed: 02.10.2026).
2. Schott P.K. Across-product versus within-product specialization in international trade // The Quarterly Journal of Economics. 2004. Vol. 119, No. 2. P. 647-678. DOI: 10.1162/0033553041382201.
3. Hallak J.C. Product quality and the direction of trade // Journal of International Economics. 2006. Vol. 68, No. 1. P. 238-265. DOI: 10.1016/j.jinteco.2005.04.001.
4. Bhagwati J. On the underinvoicing of imports // Bulletin of the Oxford University Institute of Economics & Statistics. 1964. Vol. 27, No. 4. P. 389-397. DOI: 10.1111/j.1468-0084.1964.mp27004007.x.
5. Raballand G., Cantens T., Arenas G. Mirror trade statistics: a tool to help identify customs fraud // Reform by Numbers: Measurement Applied to Customs and Tax Administrations in Developing Countries / ed. by T. Cantens, R. Ireland, G. Raballand. Washington, DC: World Bank, 2012. P. 103-120. DOI: 10.1596/9780821397138_ch06.
6. Chupilkin M., Javorcik B., Plekhanov A. The Eurasian roundabout: trade flows into Russia through the Caucasus and Central Asia // European Economic Review. 2026. Vol. 187. Art. 105340. DOI: 10.1016/j.euroecorev.2026.105340.
7. The Times of Central Asia. Why Kazakhstan is tightening requirements for importing foreign cars. 4 February 2025. URL: <https://timesca.com/why-kazakhstan-is-tightening-requirements-for-importing-foreign-cars/> (accessed: 02.10.2026).
8. World Customs Organization. Harmonized Commodity Description and Coding System, 2022 edition: heading 87.03. Brussels: WCO, 2022. URL: <https://www.wcoomd.org/en/topics/nomenclature/instrument-and-tools/hs-nomenclature-2022-edition.aspx> (accessed: 02.10.2026).

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