

The Economics of the Nord Stream Pipeline System

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Three-quarters of Russian gas exports to Europe transit through Ukrainian pipelines. Since the breakdown of the Soviet Union, Gazprom -- the Russian gas giant with a legal monopoly over exports -- has pursued a strategy of diversifying its export options to Europe. It began with the construction of the Yamal-Europe pipeline in the 1990s and continued more recently with the Nord Stream and South Stream projects -- under the Baltic and Black Sea, respectively -- promoted by Gazprom and its large west-European clients.

The Nord Stream project has been politically controversial since its inception but there has not been any attempt -- at least publicly available -- to examine the economics of the project in an in-depth manner. Existing papers suggest that Nord Stream is economically justifiable only if Gazprom needs additional export capacity. Explicitly or implicitly, this idea stands behind most claims that Nord Stream is a purely geopolitical project. This implies that shipping gas through Nord Stream would necessarily be more expensive than using the existing options, an assumption that the existing literature provides no analytical basis to support.

We focus on an economic analysis of the Nord Stream pipeline system. Our aim is to assess the economic benefits of the project to its owners and particularly to Gazprom. We do so in two steps: first, using detailed analysis of the Nord Stream project we derive its total costs and compare the levelised unit transportation cost through Nord Stream and the existing routes; then we estimate the profits of Gazprom with and without Nord Stream under various scenarios of gas demand in Europe, using a computational game-theoretic model of Eurasian gas trade.

We show that the unit cost of shipping Russian natural gas through Nord Stream is clearly lower than using the Ukrainian route and is only slightly above shipping through the Yamal-Europe pipeline. Under various scenarios of gas market developments, we find a positive economic value for Nord Stream.

We disaggregate the value of Nord Stream into project economics (cost advantage), strategic value (increased bargaining power vis-à-vis Ukraine) and security of supply value (insurance against disruption of the Ukrainian transit corridor). The economic fundamentals of the project account for the bulk of Nord Stream's positive value in all our scenarios. Another major contribution to the value of the system is its strategic value, which could add between 30-70% on top of the core value, depending on demand growth in Europe. However, the security value of Nord Stream is relatively limited (roughly 7-13% of the maximum achievable value).

Our work suggest some policy implications:

- For Ukraine: Unless it expects European gas demand to grow by more than 2% per year over the coming decades, it is not sensible for Ukraine to slash its transit fee (or sell its gas network to Gazprom) as a response to the building of Nord Stream.
- For the European Union: It is in the collective interest of European gas consumers that Nord Stream gets built. However, changing the geography of Russian gas delivery into Europe has significant implications for intra-EU politics. Therefore, Nord Stream reinforces the case for a pan-European competitive wholesale gas market which would make it irrelevant, in terms of the 'contestability' of Russian gas, whether a country is located west or east of Germany.

We intend to extend this work by an economic analysis of the South Stream project.

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