

Tim Phillips [00:00:00]:

Today on Voxtalks Economics, Vladimir Putin has admitted that trade sanctions are going to hurt Russia's economy. But how big will that impact be?

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Estimating the consequences of trade sanctions can be a complex and time consuming task. And current estimates for the effect of sanctions on Russia's GDP and the economies of the countries that trade with Russia, of course, are all over the place. Jean Imbs of New York University Abu Dhabi has just set out a new method to approximate the impacts of trade sanctions. And applying it to Russia's trade with EU countries reveals some important and interesting new insights.

And he joins me now. Jean, welcome to VoxTalks Economics.

Jean Imbs [00:01:09]:

Hello, Tim.

Tim Phillips [00:01:10]:

Take us back to the time before this paper showed up. What methods are traditionally used to evaluate the impacts of trade sanctions?

Jean Imbs [00:01:19]:

So the usual way in which this is evaluated is in the context of complex models, general equipment models where trade patterns are modeled explicitly. And in particular, the possibilities that different countries have of substituting away from whatever good is being embargoed or being sanctioned is allowed for explicitly in the model. So that gives rise to pretty complex environments and in particular, to environments where the modeler has to precisely define the extent to which it is possible through a parameter. The extent to which it is possible to, for example, find a substitute for Russian oil or Russian gas is actually quite difficult to do because we don't know these estimates very precisely. For a lot of countries and a lot of sectors.

Tim Phillips [00:02:04]:

It sounds like it's very difficult to do something like that quickly. It's very difficult to do that with any confidence.

Jean Imbs [00:02:11]:

It is quite difficult to do that with some confidence. Not necessarily because the model is devilishly complex, even though not everybody can do that. Not everybody has the time and energy and computing power to do that. But the key issue is the parameterization of these elasticity as a substitution. How easy is it for Germany to find a substitute to Russian gas or to Russian oil? Typically, that's difficult to calibrate. And so the state of the literature is often to actually run a lot of what we call sensitivity analysis, that is, to sort of rerun that model as many times as you have different estimate for these elasticities. And that can be time consuming and also can yield quite different results.

Tim Phillips [00:02:52]:

So what's different about the way that you've approached this?

Jean Imbs [00:02:56]:

Yeah, so what we're trying to do is to propose a method that is actually data based. It's not model based, although I asked them to say that. We're also quite careful with the verification that what our method implies is in line with the general results that are implied by the model. So they're not going to give us very different numbers. The numbers are going to be similar, but the approach is purely data based. So it's based on trade data mostly, and a specific interpretation and decomposition that we perform in these data.

Tim Phillips [00:03:31]:

Is your goal here to represent these trade patterns more precisely, or is it to create something that's just easier to work through?

Jean Imbs [00:03:43]:

I suppose there's a little bit of both. The purpose is indeed, first and foremost, to try and propose something that is convenient to implement on the basis of just data, without the need of relatively complex models, and more importantly, without the need of having to calibrate these elasticities that I mentioned earlier. But it is also an effort in, yes, representing the patterns of

trade in a slightly more richer way. And what I mean by this is that very often the effects of trade sanctions in the media, what you would read as a first approximation of these effects would be, how much does Germany, say, import gas from Russia? And one of the things that we emphasize is that this measure based on direct imports or direct trade is an imperfect characterization of how important oil or gas is for Germany, because Germany is also importing goods and producing goods that themselves make use of that gas and oil. So there's lots of indirect patterns of trade that will be affected in the case of an embargo, in the case of a trade sanction. So what we try to emphasize is not to forget that these indirect trade patterns are potentially important for the effects of sanctions.

Tim Phillips [00:04:52]:

And what data do you rely on to be able to come up with your estimates?

Jean Imbs [00:04:58]:

So what you do need are what we call input output tables. So measures of vertical trade, how much sector A is importing goods from sector B to produce whatever it is that it produces? And the dimension that's really important here is the global dimension. So we've had national input output tables that characterize these patterns within countries. We've had that for decades, but we've only had for a few years the international component of it. And that is really crucial for what we're trying to do here.

[Voiceover] [00:05:35]:

In March 2023, we visited the European Bank for Reconstruction and Development to talk to Beata Javorcik about how firms in transition economies are reevaluating their approach to globalization. Listen to our episode titled Powerful Forces are Reshaping Global Trade.

[Voiceover] [00:05:55]:

In a bellicose appearance, Putin threatened to turn his back on the UN brokered grain deal, cut off energy supplies to Europe, and insisted that despite economic pressure and terrible losses on the battlefield, his country was doing just fine.

Tim Phillips [00:06:11]:

Okay, Jean, so you have applied this to Russia, and you've estimated the effect of sanctions in two ways. Tell us about those two ways.

Jean Imbs [00:06:21]:

So what we tried to do is we tried to, first of all, look at the effect on Russia of sanctions on Russian exports. So we focus on the effect on Russia of an embargo, say, on Russian energy exports. And we also look at an effect on Russia still of a total embargo on Russian exports, not only energy exports. That's one side. And the other side that we've considered is the opposite, which is a slightly more hypothetical, perhaps, which is an embargo imposed by the EU on its exports to Russia. So a sanction that goes the other way that's basically limiting exports into the Russian economy from the whole of the EU.

Tim Phillips [00:07:00]:

Of which countries do you have coverage?

Jean Imbs [00:07:02]:

So the data that we use is the international country input output table that's released by the ICO. They have very global coverage. I think there's data on about 60 countries and pretty granular coverage in terms of sectors. What we're focusing on here are the effects on Russia and the effects on EU countries. But while allowing, obviously allowing for trade happening between other countries than these two, through the coverage of the sample, that involves, as I said, about 60 countries. So there's probably another 40, 35 to 40 countries in addition to the ones that we're studying.

Tim Phillips [00:07:39]:

Now, first of all, for the Russian energy exports to Europe, embargo on that, what is the impact that you have found on Russia's GDP?

Jean Imbs [00:07:50]:

The numbers that we find are actually close to what a lot of other people have found. So it's hovering around 1%. The effect on the Russian GDP is perhaps a little bit above it's 1.3% in our estimates of an embargo on energy exports from Russia to the EU. So we're in the ballpark. There's one exception, and I like to point that out. There's one exception in terms of what the model predicts. You can actually calibrate the canonical trade model to have a very large effect, and that would be when there's absolutely no substitution. So this elasticity of substitution is taking its minimal value, and then you get a much, much larger effect on both the Russian economy and the EU economy. But the literature has reached, I think, some form of a consensus even before these approximation that were introduced, which is that the effect of

these sanctions are, by and large, quite small, actually. Not only is that these elasticity substitutions are actually not zero, they're actually small, but they're not zero.

Tim Phillips [00:08:52]:

Looking at that the other way around, looking at these sanctions on energy exports, what is the impact on countries in Europe?

Jean Imbs [00:09:01]:

So the impact on the EU as a whole is a minuscule. It's less than 0.1% of overall EU GDP. But there's very large differences between the countries that we're looking at. For example, Bulgaria or Lithuania or the Baltic countries have much larger effects, orders of magnitude larger than, say, the effect on Germany or France. We'll find 1% or more, for example, in Bulgaria, and less than 0.1% for Germany, for example.

Tim Phillips [00:09:29]:

I see, so the satellite states too, Russian countries that used to be in the Eastern Block or even part of the Soviet Union, they have a much larger effect.

Jean Imbs [00:09:38]:

Yes. And one of the things that we can show using our methodology is that it seems as if the reason why this is happening is a high dependence on Russian energy imports for those countries that are immediately around Russia in the sense that they're few in the data. This is in data, not in the model. It's very difficult to find an alternative source of, say, energy imports in Lithuania or in Estonia in the data. So historically, these countries, for example, so the Republic of Hungary or to an extent Poland, these countries have actually imported their energy inputs exclusively from Russia, which is far from being the case in the large Western European countries like Germany and France.

[Voiceover] [00:10:27]:

We will target strategic sectors of the Russian economy by blocking their access to markets that are key for Russia.

Tim Phillips [00:10:37]:

Now, looking at other Russian exports...

[Voiceover] [00:10:40]:

These sanctions are designed to take a heavy toll on the Kremlin's interests.

Tim Phillips [00:10:47]:

Is there a similar pattern here?

Jean Imbs [00:10:50]:

Yeah, the numbers are just bigger. So if the embargo or trade sanction pertains to all Russian exports, then the effect on the Russian economy is larger. The numbers we get is 3.6% all in GDP, which is three times larger than what we get when we just limit ourselves to energy.

Tim Phillips [00:11:09]:

Now look at it the other way around. European exports to Russia an embargo on that. What are you seeing as the impact in your data?

Jean Imbs [00:11:17]:

Again, very small for Europe it's less than half a percentage point, but again with very large dispersion. So if you look at the satellites, the sort of X satellite from the ex Soviet Union, you get numbers that are upwards of 2% in some of them. Again, Bulgaria, Lithuania, Estonia, but minuscule in France or in Germany in those larger economies in the west.

Tim Phillips [00:11:40]:

So look at this in more detail, Jean. What is it about the global value chains and how they are constructed that means we're seeing these differences, these are symmetries, first of all, between Europe and Russia, secondly between the states in Europe?

Jean Imbs [00:11:57]:

So the difference between the European countries really come from the specialization of these supply chains. Supply chains involving energy as an input in the satellite countries are extremely specialized. If you look at the historical data, there's very few instances of any of these countries ever having sourced energy from alternative sources from alternative countries. And so data tell us that it is presumably very difficult for these countries to find substitutes. And in fact, one of the things that, one additional thing that we're able to see is whether that is the

case because of transport infrastructure. One of the things that we show is that for these satellite countries, transport infrastructure is basically dedicated to importing energy from Russia in a form, for example, of pipelines and the picture is very different in the large Western European economies, where, first of all, there's many, many alternative suppliers available. So one of them is Norway, for example, for France in Germany, the biggest economies in Western Europe. Another is the UK. Another one is even the US. So they appear to have been in historical data ways in which energy could actually come from alternative sources. Another way of saying this is that the supply chains themselves are more diversified. And so that's part of the reason why we find these asymmetries within the EU.

Tim Phillips [00:13:19]:

So given that this conflict might last for some time, is it going to be easy for these countries that are most affected, these satellite countries, to be able to diversify away, given that, as you say, these supply chains are actually pipelines?

Jean Imbs [00:13:38]:

So this is one of the things we're looking at when trying to get as recent a source of data as we can is to see by come 2022, perhaps even 2023, what is the extent to which we see alternative supply chain emerge in response to those sanctions, especially in those countries that appear to be completely specialized? So that's very much work in progress. But the preliminary findings seem to suggest that for some of these countries, you see patterns of trade that differ from what we've seen in the past in terms of where energy is coming from. So in practice, what that means is different ways in which this energy is transported to these countries are literally created by the emergence of these trade sanctions.

Tim Phillips [00:14:20]:

Now, when I was looking up the projected GDP for Russia, I was surprised to find the estimates are so far apart. I was looking at the IMF says Russia's GDP is going to be up 0.3% in 2023. The World Bank, down 3.5%. OECD down 5.6%. Based on your work, can you give us your best guess?

Jean Imbs [00:14:43]:

The numbers you just listed give me a very good reason not to give any number myself. So on the basis of models of trade sanctions and only trade sanctions, I think one of the lessons from the few years of modeling and studying and simulating and analyzing the data suggests that there's a systematic bias that our estimates are larger than one seems to be happening in

reality. So I would be prudent with large numbers. I think it's on the basis of trade sanctions and only trade sanctions. I believe the effects are probably much smaller than what a lot of models might predict, because it seems to me that the majority of models actually predict small effects. But I also want to say that these forecasts by the IMF or the World Bank or the OECD, they're based on presumably more than just trade sanctions. They probably involve also, first of all, financial sanctions and also ripple effects that come from more demand based mechanism, that there's simply less demand in a state of war. That, in turn may suggest that the effects of sanctions based on just trade models themselves are probably smaller than the real effects in Europe.

Tim Phillips [00:15:51]:

It's interesting what you say about that, because I remember when we were first discussing the impacts of sanctions overall on Russia, there was one argument that sanctions would be ineffective because in a modern global economy, global value chains can be pretty easily reconfigured, people can find alternative customers and alternative sources of supply. Is this something that you agree with?

Jean Imbs [00:16:20]:

So there's two effects here, right? So having global value chains is going to, on the one hand, is going to multiply outside options and the possibilities of substituting away from given supplier that's, quote unquote, problematic. So that's what you're saying. But on the other hand, the existence of these supply chains will actually have ripple effects. They will magnify, propagate and magnify the effects of a given shock. So the combinations of these two has ambiguous predictions. On the one hand, a given shock may have larger effects precisely because one step of that long supply chain is difficult to substitute away from and it ends up having very large effects. But on the other hand, if you can substitute, you're able to bypass these effects, bypass these ripple effects.

Tim Phillips [00:17:02]:

So all the more reason to be able to produce rapid estimates like these sorts of estimates that you're providing for us. Jean, thank you very much.

Jean Imbs [00:17:12]:

Thank you, Tim.

Tim Phillips [00:17:22]:

The paper is called An Empirical Approximation of the Effects of Trade Sanctions with an Application to Russia, and the authors are Jean Imbs and Laurent Pauwels. The paper is Discussion paper 18064 at CEPR if you want to find it that way.

[Voiceover] [00:17:43]:

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