

Supplementary materials

Table S1. Output-to-primary-input multipliers of air transport sector and Output changes due to flight delays of 139 sectors in 2013.

| Sector | Output-to-Primary-Input Multiplier | Output Changes (¥ Billions) | Sector | Output-to-Primary-Input Multiplier | Output Changes (¥ Billions) |
|--------------------------------------------------------------------------------|------------------------------------|-----------------------------|----------------------------------------------------------------------------------|------------------------------------|-----------------------------|
| Air Transport | 1.162677 | 108.559171 | Mining of Ferrous Metal Ores | 0.009038 | 0.843849 |
| Public Management and Social Organization | 0.187550 | 17.511540 | Manufacture of Boiler and Prime Mover | 0.008832 | 0.824631 |
| Business Services | 0.145986 | 13.630672 | Manufacture of Other Electronic Equipment | 0.008752 | 0.817200 |
| Construction of Buildings | 0.110532 | 10.320347 | Manufacture of Glass and Glass Products | 0.008744 | 0.816408 |
| Wholesale and Retail Trade | 0.105680 | 9.867306 | Manufacture of Metalworking Machinery | 0.008533 | 0.796771 |
| Monetary Intermediation and Other Financial Services | 0.097991 | 9.149411 | Manufacture of Boats and Ships and Floating Devices | 0.008376 | 0.782067 |
| Education | 0.081432 | 7.603338 | Printing and Reproduction of Recording Media | 0.008029 | 0.749631 |
| Manufacture of Electronic Components and Parts | 0.066860 | 6.242760 | Manufacture of soft Drinks and Refined Tea Products | 0.007987 | 0.745700 |
| Processing of Steel Rolling Processing | 0.053549 | 4.999892 | Extraction of Crude Petroleum and Natural Gas | 0.007851 | 0.733092 |
| Manufacture of Motor Vehicles, Except Parts and Accessories for Motor Vehicles | 0.051522 | 4.810614 | Manufacture of Paints, Printing Inks, Pigments and Similar Products | 0.007720 | 0.720797 |
| Production and Supply of Electricity and Steam | 0.050237 | 4.690627 | Manufacture of Furniture | 0.007647 | 0.714033 |
| Professional Technique Services | 0.050015 | 4.669886 | Manufacture of Fertilizers | 0.007582 | 0.707936 |
| Manufacture of Computer | 0.049889 | 4.658131 | Manufacture of Broadcasting, Television Equipment of Radar and Related Equipment | 0.007381 | 0.689210 |
| Civil Engineering | 0.049053 | 4.580113 | Slaughtering and Processing of Meat | 0.007377 | 0.688785 |
| Real Estate | 0.048383 | 4.517542 | Processing of Other Foods | 0.007221 | 0.674218 |
| Cargo Handling, Transport Agency | 0.047992 | 4.481000 | Manufacture of Chemical Fibers | 0.007105 | 0.663365 |
| Manufacture of Parts and Accessories for Motor Vehicles | 0.047150 | 4.402373 | Manufacture of Footwear | 0.007080 | 0.661076 |
| Manufacture of Fabricated Metal Products, Except Machinery and Equipment | 0.046323 | 4.325213 | Manufacture of Leather, Fur, Feather and Its Products | 0.006979 | 0.651673 |
| Transport Via Road | 0.044874 | 4.189905 | Manufacture of Other Electrical Machinery and Equipment | 0.006813 | 0.636120 |
| Manufacture of Communication Equipment | 0.042042 | 3.925483 | Management of Public Facilities | 0.006356 | 0.593501 |
| Manufacture of Pharmaceutical Products | 0.038026 | 3.550506 | Manufacture of Batteries | 0.006160 | 0.575189 |
| Manufacture of Other General-Purpose Machinery | 0.034794 | 3.248731 | Manufacture of Prepared Animal Feeds | 0.006020 | 0.562102 |
| Software and Information Technology Services | 0.032748 | 3.057638 | Manufacture of Movie, office Machinery and Equipment, of Projector and Camera | 0.005657 | 0.528174 |

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| HealthCare | 0.032663 | 3.049743 | Renting and Leasing | 0.005647 | 0.527256 |
| Manufacture of Plastic Products | 0.027214 | 2.540984 | Cultural, Art and Entertainment Activities | 0.005613 | 0.524087 |
| Manufacture of Equipment for Power Transmission and Distribution and Control | 0.025763 | 2.405529 | Accommodation | 0.005598 | 0.522685 |
| Manufacture of Other Special Purpose Machinery | 0.025360 | 2.367843 | Manufacture of Railway Transport Equipment | 0.005590 | 0.521933 |
| Manufacture of Refined Petroleum Products, Processing of Nuclear Fuel | 0.024946 | 2.329214 | Manufacture of Products of Graphite and Other Nonmetallic Minerals | 0.005482 | 0.511852 |
| Spinning, Weaving and Finishing of Cotton and Chemical Fibers | 0.024238 | 2.263110 | Manufacture of Alcohol and Alcoholic Beverages | 0.005279 | 0.492874 |
| Manufacture and Casting of Non-Ferrous Metals and Related Alloys | 0.023576 | 2.201306 | Manufacture of Machinery for Agriculture, Forestry, Animal Production and Fishery | 0.005136 | 0.479571 |
| Manufacture of Basic Chemicals | 0.023083 | 2.155230 | Manufacture of Daily-use Chemical Products | 0.005074 | 0.473723 |
| Manufacture of Textile Wearing Apparel | 0.021873 | 2.042313 | Manufacture of Grain Mill Products | 0.005064 | 0.472814 |
| Manufacture of Special Chemical Products | 0.021573 | 2.014257 | Mining of Non-Ferrous Metal Ores | 0.005045 | 0.471037 |
| Manufacture of Machinery for Mining, Metallurgy and Construction | 0.020905 | 1.951919 | Journalism and Publishing | 0.004833 | 0.451215 |
| Construction Installation Activities | 0.020040 | 1.871111 | Mining and Quarrying of Nonmetallic Mineral | 0.004708 | 0.439577 |
| Mining and Washing of Coal | 0.019872 | 1.855428 | Capital Market Services | 0.004643 | 0.433496 |
| Manufacture of Household Appliances | 0.019394 | 1.810775 | Transport Via Railway | 0.004501 | 0.420214 |
| Post | 0.019285 | 1.800674 | Manufacture of Tobacco Products | 0.004250 | 0.396860 |
| Farming | 0.018696 | 1.745662 | Manufacture of Ceramic and Porcelain Products | 0.004198 | 0.391956 |
| Research and Experimental Development | 0.018627 | 1.739172 | Manufacture of Made up Textile Articles, Except Apparel | 0.004192 | 0.391383 |
| Telecommunication and Other Information Transmission Services | 0.017738 | 1.656234 | Manufacture of Crude and Refined Oils from Vegetable | 0.004047 | 0.377831 |
| Manufacture of Wire, Cable, Optical Cable and Electrical Goods | 0.017193 | 1.605280 | Support Services to Farming, Forestry, Animal Production and Fishery | 0.003996 | 0.373104 |
| Storage | 0.016862 | 1.574374 | Fishery | 0.003977 | 0.371350 |
| Technique Promotion and Application Services | 0.016472 | 1.537983 | Manufacture of Coke Products | 0.003970 | 0.370701 |
| Processing of Non-Ferrous Metals Rolling | 0.016159 | 1.508800 | Manufacture of Refractory Products | 0.003752 | 0.350345 |
| Manufacture and Casting of Basic Iron and Steel | 0.016133 | 1.506338 | Processing of Aquatic Products | 0.003504 | 0.327170 |
| Manufacture of Stationeries, Musical Instruments, Products of Arts and Crafts, Sports Goods, Games and Toys | 0.015971 | 1.491213 | Sports Activities | 0.003380 | 0.315578 |
| Repair of Motor Vehicles, Electronic Products and Households Goods and Other Services | 0.015937 | 1.488071 | Other Manufacture | 0.003335 | 0.311343 |
| Manufacture of Measuring Instruments and Meters | 0.015876 | 1.482375 | Manufacture of Knitted and Crocheted Fabrics and Articles, Except Apparel | 0.003250 | 0.303454 |

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| Manufacture of Synthetic Materials | 0.015071 | 1.407216 | Manufacture of Milk and Dairy Products | 0.003108 | 0.290177 |
| Processing of Timbers and Manufacture of Products of Wood, Bamboo, Rattan, Palm and Straw | 0.014434 | 1.347743 | Manufacture of Ferroalloy | 0.002844 | 0.265552 |
| Manufacture of Paper and Paper Products | 0.014115 | 1.317873 | Management of Water Conservancy | 0.002776 | 0.259157 |
| Manufacture of Brick, Stone and Other Building Materials | 0.014057 | 1.312492 | Production and Distribution of Gas | 0.002706 | 0.252617 |
| Manufacture of Pump, Valve, Compressor and Similar Machinery | 0.013791 | 1.287644 | Transport Via Pipeline | 0.002477 | 0.231280 |
| Construction Completion and Finishing, Other Construction Activities | 0.013345 | 1.246001 | Manufacture of Pesticides | 0.002420 | 0.225916 |
| Services to Households | 0.012696 | 1.185400 | Forestry | 0.002256 | 0.210602 |
| Manufacture of Audiovisual Apparatus | 0.012574 | 1.174037 | Spinning, Weaving and Finishing of Wool | 0.002142 | 0.200044 |
| Radio, Televisions, Movies and Audio-Video Recording Activities | 0.012452 | 1.162602 | Ecological Protection and Environmental Control | 0.002130 | 0.198921 |
| Food and Beverage Services | 0.011968 | 1.117412 | Manufacture of Flavoring and Ferment Products | 0.002088 | 0.195000 |
| Manufacture of Cement, Lime and Plaster | 0.011532 | 1.076765 | Production and Distribution of Water | 0.001947 | 0.181824 |
| Manufacture of Lifting and Hand ling Equipment | 0.010939 | 1.021374 | Repair of Fabricated Metal Products, Machinery and Equipment | 0.001890 | 0.176501 |
| Manufacture of Products of Plaster and Cement and Similar Products | 0.010405 | 0.971541 | Comprehensive Utilization of Waste Resources | 0.001779 | 0.166118 |
| Insurance | 0.010306 | 0.962313 | Manufacture of Convenience Food Products | 0.001767 | 0.164975 |
| Animal Production | 0.010086 | 0.941744 | Amusement and Recreation Activities | 0.001757 | 0.164010 |
| Manufacture of Machinery for Chemical Industry, Timber and Nonmetal Processing | 0.009728 | 0.908269 | Spinning, Weaving and Finishing of Bast and Silk Fibers | 0.001708 | 0.159434 |
| Manufacture of Other Transport Equipment | 0.009590 | 0.895452 | Mining Support Activities and Other Mining and Quarrying n.e.c. | 0.001528 | 0.142679 |
| Manufacture of Other Food Products n.e.c. | 0.009451 | 0.882456 | Social Security | 0.001004 | 0.093786 |
| Water Transport | 0.009446 | 0.881979 | Manufacture of Sugar | 0.000666 | 0.062170 |
| Manufacture of Generators and Eclectic Motors | 0.009382 | 0.875979 | Social Work Activities | 0.000433 | 0.040466 |
| Manufacture of Rubber Products | 0.009282 | 0.866614 | Total | 3.756134 | 350.71 |