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'Made in China': the impact of low-cost imports on US industry

American shoppers who have benefited from a flood of cheap toys and clothes stamped, 'Made in China,' can hardly have failed to notice the impact of increasing trade from low income countries over the past decade. The effects on the American businesses struggling to compete in a rapidly changing market, however, are harder to measure.

In a new CEPR paper, CEPR Research Fellow, **Andreas M Fischer** and his co-author, **Raphael Auer**, investigate the changes wrought by a decade of low-cost imports from China, India and other developing economies, and find that the effect on manufacturers in the US has been profound, driving down prices and improving productivity.

Prices and demand in US industry are affected by a wide range of factors, including changes in the spending power and choices of consumers in their home market. Disentangling any causal links with imports from low income countries is difficult.

The authors' starting-point for solving this methodological problem is the insight that low income countries tend to specialise in industries which are labour intensive. Their workers are cheap, relative to their counterparts in the US and other developed countries, so these are the sectors where they have a comparative advantage.

By comparing changes in the labour intensive sectors with what happened to firms in other industries, the authors can then understand what impact imports have had.

In order to test this idea, Auer and Fischer use a decade's worth of data covering the years 1997-2006, across nine low income countries: China, Brazil, India, Indonesia, Malaysia, Mexico, the Philippines, Thailand and Vietnam, and relate them to detailed statistics on prices, productivity and costs for 325 specific industry sectors in US manufacturing.

First, they check their basic premise - that labour intensive sectors are those where the effects of trade with low income countries will most clearly be felt. They measure the labour intensity of each of their 325 industry sectors as the share of firms' costs which are spent on employing staff. Then, using an instrumental variable regression the authors show that in general, when industrial output in China expands, imports from China increase much more in labour intensive industries than in capital intensive sectors.

They then repeat the regression analysis to confirm this finding, using data from Vietnam, Mexico and India, and find that it is also true of these countries. Then using data from Japan, which show that for more developed economies the pattern is different, and growth in imports is directed to capital intensive sectors where Japan has a comparative advantage.

Having confirmed this idea, the authors can then use what they call 'comparative advantage induced' changes in labour intensive sector imports, to stand for the effects on industry of trade with low income countries. Using what is known as a 'difference in difference' approach, they carry out a series of statistical regressions to analyse these effects.

The most striking change wrought by the flow of low income country imports is on the price charged by American firms for their goods, as they battle to remain competitive. The authors find that on average, for every 1 per cent of market share captured by low income countries, producer prices in the relevant sector decline by 3%.

Using detailed data from the government's Bureau of Labor Statistics, Auer and Fischer are also able to calculate what changes firms are forced to make to accommodate those price cuts. They find that as much as2.4% of it comes through improvements in productivity. Somehow, in order to adjust to the

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onslaught of cheap goods, US firms managed to boost their efficiency, producing more output for the same level of costs. A much smaller proportion of the change, around 0.3%, came from manufacturers trimming their profit margins.

Although most of their analysis uses a weighted average of all the nine low income countries, the authors also separate out the special impact of China - the so-called 'China effect;' and find that it is large, accounting for as much as half of the total changes in prices and productivity.

These shifts only affect the manufacturing sector, which is competing most directly with firms in China and elsewhere. Nevertheless, the authors say their analysis suggests the changes are large enough to have an impact on the macro-economy as a whole.

In total, they suggest that imports from low income countries have depressed producer prices across the US economy as a whole by approximately 2 percentage points each year - which would in turn have had a significant downward effect on economy-wide inflation.

That created helpful 'tailwinds' for central bankers aiming to keep prices under control; but if they failed to appreciate the full importance of these effects it may also have fanned the potentially dangerous idea that inflation was 'dead'. Auer and Fischer's findings suggest that understanding how competition from low-cost imports affect domestic firms will have to be an important element in understanding how inflation is likely to evolve in the years ahead.

DP 6819 The Effect of Trade with Low Income Countries on US Industry by Raphael Auer and Andreas M Fischer

From Baghdad to London: the dynamics of urban growth in Europe and the Arab world

In 800 A.D., Baghdad, then the heart of the Abbasid Caliphate, was a thriving, cultured metropolis while Western Europe remained a stagnant economic backwater. Yet over the next thousand years an extraordinary reversal of fortune took place: the Christian West experienced a dramatic flowering of trade, wealth and population, while the Arab world entered long-term decline. The urban population of the Arab world increased by a half between 800 and 1800 A.D. - but the urban population of the Christian West grew by more than twenty-fold.

Economists have debated for many decades about what caused growth in the West to take off - was it the 'Great Discoveries' of the sixteenth century when explorers opened up new trade routes to China and India? Did it depend on the distinctive political, cultural and economic institutions of the Christian states? Or was it instead connected to more permanent factors, such as geography?

A new paper by CEPR Research Associate **Jan Luiten van Zanden** and his co-authors **Maarten Bosker** and **Eltjo Buringh**, tries to test these various theories in more detail by examining the rise and fall of individual cities throughout the two regions - the Arab world and the Christian (mainly Catholic) west. In order to carry out an analysis at this level, the authors construct a new database, including every city which had more than 10,000 inhabitants at some point during the millennium they study. For Europe, they update a database originally published by Bairoch et al. in 1998; but for the Arab world they use a variety of sources, and in some cases estimate cities' population size on the basis of their area, and the number of mosques and hammans that were built to serve the inhabitants.

Simply looking at the broad trends in the database already identifies a number of differences between the development of cities in the Arab world and Europe. There tend to be far more cities in Europe for example - on average four to the same land-area. Arab urban populations tend to be more concentrated in the largest city in a particular state, rather than spread between a number of evenly sized conurbations.

In order to carry out a more formal examination of these ideas, the authors use a series of regression analyses to measure the impact of different factors on the population growth of cities through the centuries. They include a large number of potential factors in these regressions in order to try and capture the effects of economic and political institutions, and geographical location.

One classic dichotomy that the authors find helpful, developed by the sociologist Max Weber, is between 'consumer cities,' and 'producer cities'. Consumer cities sit at the heart of a state, offering services such as

administration and protection in exchange for taxes and land rents. Their success is intimately linked to that of the state within which they exist - and they tend to crowd out other cities nearby.

Producer cities, meanwhile, exist through making and trading goods and materials with their hinterland and with other cities in their vicinity. Because they have their own economic basis, the fortunes of these producer cities need not be bound together with those of a great state or empire. The growth of other nearby cities can increase rather than diminish their economic success.

One key criterion for deciding which of these categories cities fall into, therefore, is the strength of feedback effects between them: if having other large cities nearby appears to promote growth it is likely that these are producer cities, trading and interacting freely with each other.

In order to measure these feedback effects, the authors calculate what they call the cities' 'foreign urban potential,' in effect capturing the possibilities for trade. The 'FUP' for each city is a sum of the size of all the other cities, weighted by the transport costs of getting goods there (differentiated by sea, road and river transport costs).

As well as this calculation of FUP, the authors include in their regressions terms for whether or not the city is the capital or the seat of a bishop or archbishop, and whether it has a university, to help reflect the extent to which institutions may be important. They also add terms for a city's geographical location, including whether it is on the sea; on a Roman road; or on the route of a camel caravan.

When they carry out regressions using all these terms, the authors are able to identify very different patterns of growth in the Arab and Latin West over the period in question. They find that there are strong positive feedback effects between Arab cities and between the cities in the Christian area, but not in between the two. In fact, Christian cities that are near large Arab cities tend, on average, to be smaller than would otherwise be expected, and vice versa. This suggests that there are strong economic linkages between cities in each of the two areas - but that transactions across the cultural divide are difficult, supporting the idea that the separate cultures and the distinct economic institutions to which they gave rise, were important.

To examine this idea a bit further the authors carry out another set of regressions, this time calculating the FUP of each city for different centuries instead of using the same measure throughout. This allows them to understand changes in the pattern of development over the millennium.

During the Middle Ages, in the early years of the period in question up to 1300, the authors find that the positive feedback effects between Muslim cities are actually very strong, suggesting that they were part of a powerful economic and trading system and could thus profit from each other's success. Meanwhile, in Europe, cities remain isolated and there is little positive interaction between them.

Later, however, the position is reversed: after the Abbasid caliphate collapses, perhaps partly as a result of the incursions made by the raiding Mongols, the economic system in the Arab world appears to disintegrate and it no longer helps a particular city to have successful neighbours nearby.

In the Latin West, meanwhile, from about 1300, positive feedbacks began to develop. This suggests that, despite the absence of an Empire, by uniting the region into a single political entity, economic institutions began to emerge from the bottom up. These were able to bypass the barriers created by different languages and particular political institutions, and allow cities to profit from each other's success thus helping to drive a powerful wave of urbanisation.

Importantly, the authors point out that their analysis shows these positive interactions to have been present before the 'Great Discoveries' of the 1500s - so the economic success of Europe cannot simply have been a result of the discovery of the sea routes to Asia and the Americas. The disintegration of the Arab economic system which had been united by the great Caliphates was already well underway before that point.

However, proximity to the sea does become important in determining a city's success after 1500 in the West; while it remains unimportant for Arab cities which instead are more reliant on closeness to caravan routes.

As far as political institutions are concerned, the authors find that cities tended to fare better when they were given some independence, as began to happen in France and Italy from about 1100 and had spread to more than a third of cities in Europe by 1500 - though not at all in the Arab world. Although political institutions appear to be significant, including them in the regression does not wipe out the separate importance of integration with other cities through economic links.

By repeating their regression analysis with different factors in this way, the authors build up two separate and distinct patterns of development in the pair of regions they study. In the Arab East, after the collapse of the Caliphate, which had united a large geographical area, cities became disparate and disconnected. They wisely switched to using camel transport instead of sticking to the roads left by the Romans, as exhibited in the importance of proximity to camel routes in determining Muslim cities' success; but they stuck with them, even as sea routes became cheaper and more efficient.

While the once-mighty cities of Baghdad, Damascus and others declined, Europe was developing a separate urban system founded on merchant guilds, and cities with some measure of political independence. Although

this was no more efficient than the system in place in the Arab world around 800 - the feedbacks and linkages between cities were no stronger in Europe than they had been in the Muslim world centuries earlier - the Christian system proved more robust, surviving without an overarching territorial empire to nurture it. For the consumer city of Baghdad, meanwhile, once the Caliphate collapsed there was little else to sustain its economic power.

Using a comprehensive database covering hundreds of cities over an ambitious thousand year period, Bosker et al. uncover a complex picture of the divergent growth paths of the two regions they study. They show that Weber's distinction, between producer and consumer cities, remains useful in understanding how a once-mighty metropolis can become a mere backwater once it no longer has an empire to support it; while smaller, less remarkable cities can thrive by trading successfully with their neighbours. This appears to be what Europe's Christian cities succeeded in doing from about 1300, long before the 'Great Discoveries' of the New World.

However, while these economic linkages and positive feedbacks between cities were crucially important, they did not stretch across the religious divide. Having even a successful, rapidly expanding Muslim city on the doorstep did not help its Christian neighbours, and vice versa - so culture, too, appears to have been important in separating winners and losers. In fact, Bosker et al. show that any theory which suggests that geography, or culture, or political institutions are the key to successful economic development, is likely to be much too simple: all play a part, but perhaps most important is how well cities manage to profit from each other's success.

DP 6833 From Baghdad to London: the Dynamics of Urban Growth in Europe and the Arab World, 800-1800 by Maarten Bosker, Eltjo Buringh and Jan Luiten van Zanden.

Swapping saving schemes: are pensions the new children?

While new parents are mastering the art of nappy-changing, or bouncing their bundle of joy on their knee, they are unlikely to think of themselves as handling an 'investment good'. But before the inception of taxpayer-funded pensions and private savings products, having children was just about the only way to ensure a comfortable old age.

Fertility has declined markedly in developed countries over the past century. In the US for example, each woman had an average of 3.2 children in 1920 and that had slipped to 2.1 by 2000. There have been falls of a similar magnitude in France and Germany.

One explanation commonly cited by economists for this dramatic social change is that many people can now rely on state-funded assistance in their retirement - so they do not need to have children to look after them. It used to be that children would repay their parents' kindness by supporting them in old age. In effect, this was a way of 'saving'. However, once other saving mechanisms exist, this is no longer necessary. In effect, pensions have replaced children as a means of preparing for a comfortable old age. In a new CEPR paper, CEPR Research Associates **Vincenzo Galasso** and **Roberta Gatti**, and their co-author **Paola Profeta**, test whether this argument is true.

In order to analyse the relationship between saving, the availability of pensions, and the decision to have children, the authors develop an OLG - overlapping generation - model. This uses equations to formalise the decisions parents and children have to make: for parents, choosing to have children and bring them up is costly; but they receive a return in their old age when their offspring support them financially. The children pay a certain proportion of their income in social security contributions, and later, receive a pension in return.

Crucially, Galasso et al. include in their model a measure of how developed the local financial markets are. Instead of relying on their children to provide them with an income in old age, the parents could choose to invest their money themselves and rely on the return they will receive. But inefficient, or under-developed markets are likely to be more difficult and costly to access, in effect reducing the return on a given investment. If parents really are thinking of their children partly as an investment for the future then the availability of this market-based alternative should also influence their decisions, as well as the possibility of a state-funded retirement scheme.

When the authors solve their economic model to reveal the optimal choices for the decision-makers represented in it, they find that the more inefficient are the local financial markets - and the worse the return parents would get on their investments - the more

worthwhile it is for them to have children. In other words, where financial markets are not very developed, the appearance of a state-funded pension system offering security in old age, should exert a larger downward effect on fertility decisions.

With this key prediction in hand, Galasso et al. then use data on fertility rates and pensions saving from more than 80 countries to test whether it is reflected in reality. They carry out a regression analysis to probe the connection between the availability of state-funded pensions and fertility, and control for a number of other factors that could skew the results, including the size of the elderly population in each country and GDP per capita. As a measure of the availability of social security they use World Bank data on the share of the population covered by state pensions, and also test alternative measures from the IMF and ILO to ensure that one particular source of data is not biasing their findings.

In order to examine whether the efficiency of local markets is important, as they suspect, the authors also include a measure of the level of private credit in the economy as a proportion of GDP.

Across the eighty plus countries they examine, in general, the authors find that the availability of a social security system does indeed tend to reduce average fertility. On its own, their separate measure of private market efficiency is not significant in determining how many children a mother chooses to have. Crucially, however, the empirical evidence supports their prediction that a state-funded pension is all the more important in depressing fertility where markets are weak.

This link with the option of other pensions saving outside the state system is important corroborating evidence for the idea that, when fertility declines after the institution of social security it is not simply coincidence, but a result of the fact that taxpayer-funded pensions make it easier to plan financially for a lifetime, without relying so much on the generosity of family members. One reason mothers in developed countries with sophisticated social safety nets have fewer children appears to be that - strange as it may seem - they no longer need them.

The authors suggest that the links they have uncovered help in understanding not just the history of wealthy nations with established social security systems, but the implications of future policy decisions in a much wider range of economies. In China, for example, where pension coverage is relatively low at around 10%, expanding the availability of taxpayer-funded retirement scheme could be a powerful lever for keeping fertility low, without the need for the controversial 'one child policy'.

DP 6825 Investing for Old Age: Pensions, Children and Savings by Vincenzo Galasso, Roberta Gatti and Paola Profeta.

The reality of the American Dream

American workers have been battered by a bewildering array of powerful and sometimes contradictory forces over the past fifty years: globalisation; technological change; immigration; declining trades unions. Each of these trends, all important in their own right, have been carefully studied by economists to identify the winners and losers in society and the resulting shifts in the gap between rich and poor. But in an ambitious new paper, CEPR Research Fellow **Robert Gordon** and his co-author **Ian Dew-Becker**, attempt to disentangle these and other factors, and to understand the key causes of the rise in inequality in the US.

By reviewing a multitude of separate pieces of contemporary research into the extent and causes of inequality, and adding a number of new insights of their own, the authors are able to corroborate some explanations for rising inequality, and dismiss others.

They begin by examining the empirical facts about various measures of inequality since the 1950s. One common piece of evidence often advanced for the declining fortunes of the median worker in the US is that the share of labour income in GDP has declined; but Gordon and Dew-Becker reject this idea showing that once the labour earned by those who are business-owners is also included, the share has barely changed since 1950. Instead, they argue, it is the 'skewness' of the labour income towards those at the very top which has changed.

To get a better picture of this skewness they chart how the ratio between earners at different points in the income scale has shifted since 1979. In general, workers at the 90th percentile - the boundary for the top tenth of earners - have taken home a larger multiple of the earnings than those at the 50th and the 10th percentile over the years. There are, however, strikingly different patterns for men and women.

For men, there was a large jump in the gap between 50th and 10th percentile between 1979 and 1986, but a recovery by 1998. Similarly, the largest jump in the gap

between the 90th and 10th percentiles had taken place by 1987. This was the period in which unionisation of the workforce declined particularly sharply, and Gordon and Dew-Becker suggest it is therefore consistent with the explanation that falling trade union power has been one factor in widening inequalities.

For women, however, the gap between income levels at the 90th percentile and the 10th percentile increased much more sharply and the effect persists into the most recent evidence. This different pattern supports the idea of a role for the statutory Minimum Wage in determining women's income. Around twice as many women as men are subject to the wage, which declined in real terms through the 1980s and into the early 1990s. It was worth 45% of average hourly earnings in 1979 and 31% by 2005; but the sharpest decline in real terms was between 1980 and 1986, coinciding neatly with the period when the gap in women's earnings between top and bottom widened most rapidly.

The decline in unionisation has been one explanation advanced for the reversal of what Goldin and Mayo, in a 1992 paper, referred to as the 'Great Compression' in the income distribution between World War II and about 1970. They suggested trade and immigration as other factors and Gordon and Dew-Becker examine these in turn.

Rising imports have been advanced as an explanation for widening income inequality because trade tends to be concentrated in labour-intensive industries such as manufacturing; falling prices as a result of rising imports have depressed the marginal product of the average unskilled worker and hence tended to reduce wages; and globalisation has redirected surplus funds towards foreign investment opportunities instead of potentially job-creating projects at home.

There is plenty of economic evidence about the impact of imports on inequality, some of it ambiguous or contradictory. The authors cite an influential paper by Feenstra and Hanson suggesting that outsourcing, and the resulting decline in relative demand for unskilled workers, accounts for 15-25% of the wage gap between the top and bottom of the scale. More recent work by Lawrence, however, in a book published earlier this year, suggested that the influence of trade on wage distribution has declined in more recent years.

For immigration, the authors find there is evidence of some downward effect on the wages of lower-skilled workers as they compete with new arrivals from overseas; but recent research reveals the largest impact has tended to be on previous waves of immigrants who specialise in the types of occupations, such as in the hospitality industry for example, which new migrants are also likely to work in.

Another common explanation among economists for shifts in the income distribution is what has become known as 'skill-biased technological change' - the idea that as new innovations, such as computers, have become more widespread, the mixture of types of worker needed has altered. Specifically, more highly-skilled workers are required in this new, hi-tech world; so wages at the top end of the distribution tend to rise faster than those at the bottom.

Gordon and Dew-Becker have questioned this theory in the past pointing out that the wages of several key occupational groups, including engineers and computer technicians, have not risen rapidly in real terms. However, they welcome more recent research by Katz and Kearney, which splits the workforce into three distinct groups. At the top are those carrying out 'non-routine, cognitive' tasks, such as investment bankers, lawyers and so on. These workers are highly skilled, but their jobs are also very difficult to outsource to lower cost economies because they require direct interaction with clients, defendants and so on.

In the middle of the distribution are a very large group of people carrying out routine, repetitive work, such as accountancy and certain kinds of engineering work, which are more prone to being outsourced to cheaper locations (such as IT helpdesks and other 'back office' functions being relocated to India, for example).

Thirdly, at the bottom, there is a group of workers whose jobs are manual but require direct interaction, such as nurses, truck drivers and waiters, whose work it is extremely difficult to outsource.

Gordon and Dew-Becker argue that this more subtle three-way split helps to show how the forces of technological change have hit different groups in different ways - and in particular how the median worker, in that middle, more vulnerable group, has seen their income decline relative to those in the top 10% of the earnings scale.

Finally, the authors also examine one of the most contentious issues in the debate about American inequality - the pay of those at the very top of the pile, in particular CEOs, who have often walked away with billions of dollars in stock options on top of their salaries.

Gordon and Dew-Becker separate CEOs from two other groups who are also in the very top of the distribution, but whose compensation is more closely tied to the market. 'Superstars,' such as actors, music artists and top sports stars have benefited from technological changes - such as video, cable TV, mass distribution of CDs, and so on - which have hugely amplified the size of the audience they can reach with the same amount of effort, and hence increased the rewards enormously.

A long way below them, but still tied to the vicissitudes of the market, are professionals such as investment bankers. This group has also benefited from technological change - electronic trading means more deals can be done, faster, giving them a slice of a larger pie- but they must still meet and deal with clients face to face so cannot be catapulted into the superstar bracket.

But CEOs, the authors argue, are in a category all of their own. A large number of pieces of research suggest that they have been able to secure disproportionately large rewards in recent years. Bebchuck and Fried show in one recent paper, for example, that among 1500 firms reporting to the Securities and Exchange Commission, CEOs took home 5% of company profits in 1993-5; but that had risen to an extraordinary 12.8% by 2000-02.

Bebchuck and Fried argue that the classic principal-agent model, with board members acting as the agents of shareholders in setting executive pay, simply cannot explain the sharp rise in compensation over the past decade.

Instead, they suggest CEOs can in effect control their own pay, subject only to the 'outrage constraint' - that if shareholders are sufficiently appalled by the size of a particular package they may vote it down. Directors are in theory independent but they are often paid large salaries, the fear of the loss of which is likely to considerably outweigh any potential benefits from insisting on better governance.

The authors argue that the lengths boards often go to in disguising the true size of executive compensation, by providing other benefits such as housing, pensions, low interest loans and so on, supports the idea that there is some concern about the 'outrage constraint' - otherwise why not just pay it all in cash? In general, Gordon and Dew-Becker argue, 'CEOs, through compensation committees and inbreeding of board directors, have a unique ability to control their own compensation.'

Assessing the various causes of rising inequality in the US over the past thirty years is a complex task, but Gordon and Dew-Becker try to bring together a range of different explanations. They find that declining union power, the falling real value of the minimum wage, rising immigration and rapid growth in world trade have all had at least some part to play - and it is informative to look separately at the patterns of inequality for men and women. Technological change has had an impact - both on separating out 'superstars' from their less talented peers, and exposing certain occupational groups to the threat of outsourcing and hence lower wages.

But Dew-Becker and Gordon's most striking contribution is in exposing the fact that where the immense rewards falling to America's CEOs are concerned, finding a rational, market-based explanation is impossible.

DP 6817 Controversies About the Rise in American Inequality - a Survey by Robert J Gordon and Ian Dew-Becker.

The Centre for Economic Policy Research (www.cepr.org), founded in 1983, is a network of over 700 researchers based mainly in universities throughout Europe, who collaborate through the Centre in research and its dissemination. The Centre's goal is to promote research excellence and policy relevance in European economics. CEPR Research Fellows and Affiliates are based in over 237 different institutions in 28 countries. Because it draws on such a large network of researchers, CEPR is able to produce a wide range of research which not only addresses key European policy issues, but also reflects a broad spectrum of individual viewpoints and perspectives. CEPR has made key contributions to a wide range of European and global policy issues for over two decades.

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