

**Spatial Awareness:
What can Mozambique learn from the product
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Introduction

For years, governments have pursued industrial policies (and maintained ministries of industry) against the advice of economists. The orthodox economic view has been that intervention in the market is counter-productive unless it corrects specific market failures. The idea that the government can improve on market outcomes *in general* has been an anathema. Economists have instead emphasised that for a country to develop it needs to improve the *inputs* into the economy – the factors of production – rather than meddling in the process of how those inputs are used, which should be left to the market. That reduces government's growth-promoting role to providing the services that increase human capital (education and to some extent health) and maintaining a sound business environment to attract foreign capital.

The intellectual justification for governments that have pursued an industrial policy has rested on the idea that there is some sort of market failure – an externality to be corrected. The most famous argument is that of “infant industries” - the notion that industries begin with high costs but go through a process of learning-by-doing which allows them to catch up with competitors, as long as support is provided to get them through the early years. Despite its popularity, it is hard to find formal models of the infant industry situation and empirical investigation has proved difficult – debate still rages on whether the East Asian miracle is an example of successful infant industry protection.

In the late 2000s a group of academics has started developing the theory of the “product space” with a team at Harvard leading the way. This may provide a more persuasive justification for industrial policy than the infant industry argument, as well as give new answers to the question of why economic performance differs between countries and the convergence theory does not seem to hold.

The purpose of this essay is to explain the product space and apply some of its emerging techniques to Mozambique. This will allow some predictions about the pattern of Mozambique's future economic development and some policy advice to encourage industrial diversification.

Presenting the Product Space

The point of departure for the product space is a very simple observation – some goods are more likely to be produced in tandem than others. A country that produces, say, apples is likely to also produce pears. That's because the prerequisites to produce these apples and pears are very similar – in terms of climate, land, skills, infrastructure etc. However, there is probably a much weaker relationship between a country's ability to

produce apples and its ability to produce computer hardware as these products need substantially different factor inputs. Therefore there is no particular tendency to produce them together (of course there is no particular *barrier* to them being produced together).

To formalise the idea that some products are more closely related than others, we first need a rigorous definition of “production”. Many large countries produce almost every good in *some* quantity, so if we used the data naïvely we would probably find that all goods are produced in tandem with all other goods. To avoid this problem, Hidalgo et al (2007) focus on export data to isolate goods that countries produce in significant quantities. Moreover, they calculate a statistic called “revealed comparative advantage” (RCA):

$$RCA_{xt} = \frac{x_{xt} / \sum_i x_{it}}{\sum_y x_{yt} / \sum_{i,y} x_{it}}$$

This is the ratio of product x’s share of country y’s exports to product x’s share of world exports (i.e. all exports of all products). So if coffee accounts for 5% of Kenya’s exports but only 1% of world exports, Kenya has an RCA of 5 – it exports five times the world average amount of coffee, controlling for the size of its economy. We then use an arbitrary boundary or threshold to determine whether a country “exports” a product or not – the most intuitive definition, which is used throughout our empirical work, is $RCA=1$ i.e. a country is considered to produce/export a product when that product makes up a disproportionately large share of its exports.

Now that we know what products are being produced and by whom (in terms relevant for this exercise) we can move on to calculating the relationship between products. We define the proximity between two products as the probability that they are exported by the same country. Thus if every exporter of apples also exports pears the proximity between apples and pears is equal to 1 – where one is produced, the other is certain to be produced as well.

To take a marginally more complex example, if 20 countries export apples and, of those, 10 countries produce oranges the proximity between the two products is 0.5 – there’s a 50% chance that an apple producer will also produce oranges¹.

What the product space does is to compile these relationships for every pair of products. Ultimately, this is all the product space is – a set of pair-wise statistical relationships between products. There a number of options

¹ In fact, while we discuss the proximity between the products, this statistic is not necessarily symmetrical. In this example, if there are no other producers of oranges, then there’s a 100% chance that an orange producer will produce apples i.e. proximity of 1! We take the minimum of the two figures to produce a symmetrical proximity i.e. where product A is as close to product B as product B is to product A.

for visualising the space. The most obvious is to simply show the table of products and their relationship to each other, as in this made-up example:

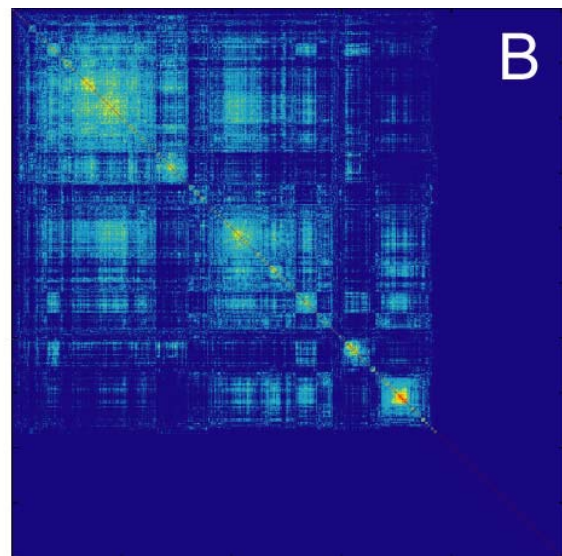
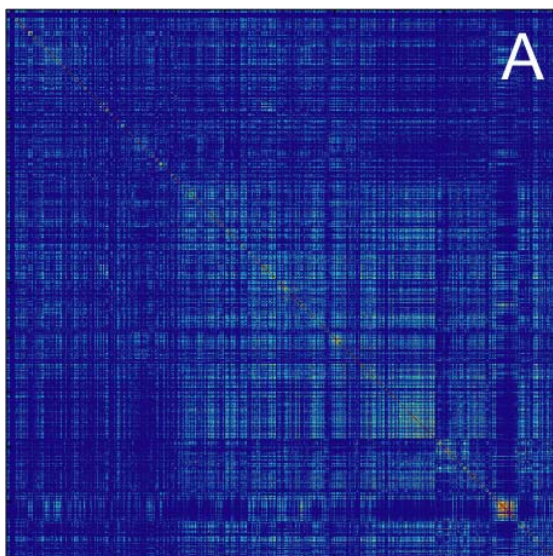
	Apples	Pears	Bananas	Tractors
Apples	1	0.5	0.3	0.1
Pears	0.5	1	0.2	0
Bananas	0.3	0.2	1	0
Tractors	0.1	0	0	1

This toy matrix can be improved by turning it into a “heat map” – highlighting the stronger and weaker relationships:

	Apples	Pears	Bananas	Tractors
Apples	1	0.5	0.3	0.1
Pears	0.5	1	0.2	0
Bananas	0.3	0.2	1	0
Tractors	0.1	0	0	1

Here it is immediately obvious that apples are in a relatively dense part of the space, while tractors have few linkages to other products.

This is a similar representation of the real product space, compiled by the original authors:



This space was compiled from 72 countries' international trade data for 1998-2000. It uses the Standard International Trade Classification (SITC) at the 4-digit level to classify products, which means there around 1000 products i.e. about a million pair-wise proximities². The heat map runs from dark blue showing no relationship through to yellow, representing strong relationships. In table A the products are simply listed according to their code number. In table B, the products were rearranged so that closely-related products are listed near to each other. You can already see that there are certain clusters of products which have stronger relationships with each other than with other products.

This is as far as we can go with representing the whole product space. To make a visualisation that is clearer and easier to interpret, the authors opted for a tree layout network representation of the space, shown in Map 1. In this map, each node represents a product. If two products are "close" to each other, they are connected by a line. Although the products with more linkages tend to cluster, appearing on the map physically closer together, the proximity is in fact reflected by the colour of the lines, with red representing a proximity of 0.65 or more, blue 0.55-0.65, yellow 0.45-0.55 and white 0.35-0.45.

It is important to bear in mind that this is a *partial* representation of the product space – the authors had to take an arbitrary decision on what level of proximity they could ignore (proximities below 0.35 are not shown) and around a quarter of products are excluded because they have no significant linkages (as can be seen in table B above).

The authors have coloured the nodes according to their traditional sectoral classifications³ and provide a key in Map 2. The product space takes the form of a large central cluster of secondary industries, fanning out into less well-connected primary industries. Beyond the tendency for secondary products to cluster together, they are, as one would expect, particularly well-connected to other products in the same sector. In the case of garments and electronics, you can discern fairly clear, self-contained sectoral clusters – with garments to the left of the main cluster and electronics at the bottom right.

Finally the size of each node reflects its worldwide annual export volume – hence there are some large but isolated nodes at the edge of the space, notably oil (towards the top).

² In fact there are 500 000 unique proximities, in view of the fact the product space has been made symmetrical by construction

³ Using Leamer's specification

Mozambique's Place on the Product Space

While the product space is itself a fascinating insight into the relationship between products, it is also possible to represent the export profile of countries on the map by highlighting exported products (according to our strict definition of revealed comparative advantage) in black.

In their comprehensive work, Hidalgo et al have produced data sets and product maps for a huge variety of countries, including Mozambique, for all years between 1975 and 2000. However, given the scope of the exercise, these are necessarily rather naïve, taking raw export data at its face value. In the case of a small economy like Mozambique this seriously distorts the picture, as sales of assets can be of a comparable value to some regular export commodities. For example, the decision by the government to sell some of its helicopters in 2007 lead to it showing up amongst the top export products, but of course there is no underlying industry – it is technically a re-export as the helicopters were originally imported in the first place. For this reason looking at a single year of trade data can be seriously misleading. Moreover, since 2000 Mozambique's export profile has been transformed by MOZAL and the other mega-projects.

For this reason we wanted to produce an updated and refined version of the product map for Mozambique. To control for the problem of “phantom” exports we took three years of export data, for each product eliminating the maximum export value and averaging the remaining two years. Of course this systematically underestimates export volumes but as we are only interested in the pattern of exports, this concern can be set to one side. We used the most recent three years for which data is available, these being 2005-7. The resulting product space is shown in Map 3.

As one would expect, Mozambique has a typically African product space, with exports concentrated in primary goods around the edge of the space. At the very edge we find highlighted products like tobacco, cotton, seeds and nuts, salt, bones, precious stones and bananas. There are a few products which appear to be at the edge of the garments cluster – this is in fact sugar which has a weak statistical correlation to some garments. A more promising way into that sector is Mozambique's bag exports.

Mozal's aluminium exports show up in the space just above the central cluster. Mozal's unwrought aluminium is in fact in a fairly sparse part of the product space. It's only significant link (which is still at a proximity of less than 0.45) is to worked aluminium, which is itself located in the central cluster (although even this product is not as well-connected as it seems at first glance).

At the top of the main cluster there is a small group of relatively well-connected products: barbed wire, tanks/casks/canisters and construction materials. Unfortunately the only product highlighted in the very centre of the space, construction/mining machinery, seems to be an anomaly that survived our process of data cleaning (as did railway locomotives and special-purpose motor vehicles!)

Future Economic Development in Mozambique

Now that we have constructed a more accurate and up to date product space for Mozambique, we follow the original authors in simulating future industrial development. We assume that existing industries will continue to export forever, with new production starting in proximate industries. The method is iterative – we choose an arbitrary proximity above which production is allowed to “jump” from existing industries to neighbouring ones. This can be repeated, allowing new industries to jump to their neighbours and so on.

First consider Map 4, which is the current export profile, but with the space greyed-out to highlight current exports. Mozambique's 52 export products are highlighted in black. We began by performing a simulation using a proximity threshold of 0.65 – i.e. where the probability of two products being produced together was better than about two-thirds, where one was produced at the outset, the other is produced at the end of one iteration. Compare the original situation with Map 5, which shows the 61 products being exported after four iterations.

The first thing you notice is that there has been virtually no movement at the edge of the product space – a few new products appear, but in general products are simply not sufficiently closely related to one another in this part of the space. The significant expansion takes place within the central cluster. Unfortunately, the spreading in the central cluster originates from the construction machinery node, which we suspect is an error in the data.

After eleven iterations (Map 6) no new products have any strong linkages to further products so expansion stops at 85 products. The area at the centre of the space has continued to become more densely populated by new exports, but it is very restricted.

The reason that the economy spreads so slowly is that there are few existing exports with such strong connections to new products, and overall there is a limited number of products which are so closely related. The process of diffusion across the network is also very erratic across the early iterations – expanding more quickly and then more slowly – this reflects the fact that sometimes new products themselves open up many more products linked to them, while sometimes they are dead-ends. For this reason we see bottle-necks, with

exports expanding down perhaps a single pathway in one iteration, but then expanding from that point to many more on the next iteration.

One thing which may seem strange at first sight is the failure to expand across the garments sector, given that there are a number of exports apparently close to it. The answer, as alluded to earlier, is that the relationships are relatively weak – the strongest, between bags and garments, is less than 0.65. Although we have not shown it, if we were to run the simulation at a threshold of 0.55, you would see rapid expansion across the garment cluster.

The results change dramatically if we choose a low proximity threshold. Maps 7 and 8 show the first and seventh iterations respectively of a simulation using 0.45 (in this case, expansion stopped after the seventh iteration). This is low enough to allow diffusion amongst primary products, even in relatively sparse parts of the space, while production explodes across the central part of the space and the garments cluster even in the first iteration. Production already outstrips its maximum extent at the 0.65 threshold, with 199 products. By the end, virtually all of the product space is covered - 648 of 775 products are produced - with only isolated products at the edge of the space out of reach.

Controlling for MOZAL

Clearly the picture given by the simulation with a 0.45 threshold is quite unrealistic, resulting in a comprehensive, developed-country export profile in seven iterations (although we have not given any indication of the time-scale for a single iteration).

However, we may be able to get a more optimistic result from iterations at the 0.65 threshold that indicates a clearer pattern for development in the near future. Our argument is that MOZAL dominates the export profile to such an extent – accounting for the majority of exports on its own – that it depresses the share of other exports in the economy to less than half their pre-MOZAL level. On the strict definition of exports we are using – which compares each product's share of national exports to its share of worldwide exports, the result is that a lot of products fall out of the picture.

If we take out MOZAL from our export data and recalculate the proportions, we get a richer export profile embracing 78 products, because smaller values now show up as exports. This is shown in Map 9. Moreover, it apparently shifts Mozambique towards the centre of the space, revealing more new products in or near the central cluster than at the periphery.

The initial exports and third- and ninth (final)-step iterations are shown in Maps 10-12. We see a rather more rapid expansion across the lower part of the central cluster, with 16 new products after three iterations, but the final picture is only somewhat more populated with exports than the original version – 111 products is the limit of expansion. This is because of the strict threshold which limits the ultimate scope of expansion as discussed above. However, given that there are more initial products in the central space, the result is rather more credible because it does not depend on a single, possibly erroneous, element in the data.

Industrial Policy

Whereas it is interesting to have a network view of the Mozambican productive sector in itself, the ultimate goal is to provide policy advice which will potentially accelerate the industrialisation process of Mozambique. This chapter aims at providing such advice by looking at the general policy implications of the product space, comparing these to the priority sectors set out in the industrial strategy of Mozambique, and finally looking at what practical issues policymakers should take away from this analysis.

General policy implications from the Product Space

The proximity and linkages approach gives a new insight into the ongoing discussion of whether countries should adopt a neoliberal or structuralist approach to industrial development⁴. Whereas the neoliberal approach advocates that there is no room for an industrial strategy, as the state should only provide a stable macroeconomic environment and essential public goods which are not provided by the market, the structuralist view has less faith in markets allocating resources in the best interest of society. It argues that offering the same incentives to all activities makes little sense when externalities such as training and technology spillovers differ. Therefore governments should follow an industrial strategy which promotes investments in areas with higher spillover effects.

As some industries within the product space have closer and more numerous linkages than others and seeing that investors do not take this positive spillover into account, the proximity and linkages approach supports the second of these theories arguing that the government has to guide the market in the “right” direction. Furthermore, as it is difficult for production to shift to areas which are far away in the space but it is exactly these large jumps which bring about structural transformation, convergence and growth, these have to be supported and incentivised by the industrial strategy.

The product space is of interest to policy makers, not only because it supports the theory that industrial policy

⁴ Also see Reinert 1995; Chang 2002

has a role to play in industrial transformation, but it mathematically illustrates the productive sectors with the closest and most numerous linkages. Map 13 shows the all the linkages (blue connections) with proximity closer than 0.65 and the products (red circles) which are connected by these linkages. Overall, there are 200 connections with proximity higher than 0.65, connecting 102 products. This exercise is repeated in map 14 with the proximity the boundary lowered to 0.55. Considering these maps, the long term aim for policy makers should be to reach the central part of the product space comprising of capital intensive goods and machinery. The garment and electronics sector at the left hand side and bottom right hand side respectively also show promising clusters with multiple and close linkages. The reader will probably note that Map 13 corresponds closely to the terminal steps of the diffusion exercises – marking out the limits of expansion at the 0.65 threshold. Mozambique's simulated progress was slow because it had few products in the centre of the space at the outset and the outer products were too distant from each other to offer easy opportunities for diversification.

The question that subsequently arises from these results is how to get to these clustered areas. Is there a stairway to heaven? The immediate answer to this question is no, as it largely depends on the existing productive sector of a country. If for example a country has RCA in producing electronics, its path to the machinery sector will differ from a country which has RCA in the garments or forestry sectors. However, it is clear from the product space that efforts by policymakers should be undertaken to encourage investments in productive sectors which link the current RCA industries to the clusters with close and multiple linkages.

Mozambique's Industrial Policy

To analyse how the Mozambican industrial strategy performs relatively to the product space, two aspects have to be considered. Firstly, it is interesting to see whether the identified priority sectors lie within the well connected area of the product space and lead towards the central cluster, and secondly whether the priority sectors are close to the existing productive sectors (where Mozambique already has RCA) as the jumps are relatively easier.

The Mozambican industrial policy has defined numerous priorities which include the food industry; the furniture industry and other wood products; the building materials and equipment industry; the mechanical engineering, metal and electro-technical industries; the chemical industry; the textile and clothing industry; the printing industry and the development of industries that collect and recycle industrial waste. As these priorities encompass pretty much the whole of the product space with the exception of the electronics and mining sector, map 16 has identified particular products which are mentioned within these priority industries (such as processing of cashew nuts within the “development of the food industry”). The black diamonds continue to

represent the products in which Mozambique has RCA and the red circles are those products which have been identified as priorities.

From the map, it is clear that the industrial strategy performs rather poorly with respect to the product space argument. A lot of the priority products are situated at the outer branches of the space. Furthermore, there does not seem to be a tendency to prioritise those sectors which are relatively near to the existing RCA productive sectors. Similar conclusions can be obtained when comparing the priority sectors with the iteration maps (maps 4-12) as the diffusion does not greatly coincide with the priorities.

However, not all is bad news. The garment sector which is represented by the small cluster on the left hand side of the product space (green products in map 1) shows promising connections to current RCA productive sectors and, looking back at the iteration maps, is also one of the main diffusion areas. This area is strongly supported by the government with the recently approved textile and apparel strategy. This priority sector therefore fulfils the key aspects that the product space is trying to convey: (i) the government should encourage investment in highly and closely connected areas; (ii) it will be easier to attain investment in the priority sector if the distance to current RCA products is low and (iii) the general direction of the priority sectors should be towards the central part of the product space where high tech and capital intensive products are produced.

Although the textile and garment strategy foresees high fiscal incentives for investors, namely a 10 year corporate tax exemption and the option of a further 50% reduction in corporate tax for the following 5 years, it will be difficult to attract investors if the trade environment is not improved. It currently takes an average of 32 days for imports and 26 days for exports to clear customs. Especially in the clothing sector it is absolutely vital that orders arrive on time and are reliable. Retailers tend to order specific clothing (depending on fashion, season, etc) which cannot be sold to other costumers if the order is cancelled. Due to high competition in the clothing sector, retailers are able to change suppliers if they are not satisfied with the service. Furthermore, the scanning costs for containers should not be paid by the importer. This cost can be seen as an extra tax on the company and therefore lowers the profit margin. In Mozambique, companies have to pay a scanning fee of \$100 per imported container compared to \$0 scanning costs in Durban.

This example illustrates an important aspect that should be taken on board: fiscal incentives will only attract investors if they are accompanied by measures which improve the business environment within that sector.

Turning back to the priority sectors set out in the industrial strategy, another interesting sector to consider is

the forestry and furniture area at the upper right hand side of the large central cluster (orange products in map 1). Whereas RCA does not show up for Mozambique when including aluminium exports, 3 forestry products (2482, 6341 and 6351) do show RCA when excluding aluminium exports. The iteration maps further suggest potential productive diffusion in this area. Although the wood and furniture productive sector is at the periphery, it could provide the entry point to the central cluster of the space.

What can Mozambican policymakers learn from this analysis?

The first and foremost policy conclusion from this analysis is that the government should continue elaborating and implementing industrial strategies with identified priority sectors. Whereas it is clear that a stable economic and business environment is the basis for attracting investment in Mozambique, the government should provide further incentives to those investments which have higher spillover effects and therefore higher social returns.

Secondly, industrial strategies should not list too many priority sectors as this defeats the point of having them. The current industrial strategy lists almost all areas within the product space as priority sectors. As a result, many of the sectors which should receive special attention are neglected. Furthermore, special treatment cannot be provided to all sectors as the government lacks technical capacity and economic resources to do so.

Thirdly, first entrants into priority sectors should be rewarded, as risk levels are higher than for following investors. The whole idea of the product space is that the first investor will open the path to the priority sector. Once the “path” is open or the first jump is made, other investors will follow. Therefore, the industrial strategy has to be flexible and adapt to industrial development by constantly examining existing investments and the priority sectors. Once RCA is developed in a productive sector, fiscal incentives are not necessary. After all, Mozambique will be more attractive for investors in that area due to lower risks levels. A trained workforce, technological innovation, lower transport costs as operators are already have experience within this area and clear rules to the game within the sector are only some examples which lower investment risk.

Whereas the right measures to reward first entrants is not the focus of this paper⁵, there are several options which include investment subsidies, tax holidays, tax credits, investment allowances and accelerated depreciation. However, these rewards should only be given to investors up to the point where social benefits outweigh the social costs. Furthermore, the fiscal incentives should be consistent and a clear time limit should be set when granting them. To avoid the common criticism that subsidised sectors become a burden to

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See United Nations (2000) and Charlton (2003) for further discussion on tax incentives

society, as there is political pressure on the government to continue with subsidies or tax incentives, a credible separate autonomous identity should be set up which monitors the progress (as done within the patent sector). The time limit on incentives could be further strengthened by including a clause in the law that grants the fiscal incentive, which sees the termination of the incentive within, let us say 4 years. The incentive could therefore only be prolonged if the autonomous identity proposes this to the government and the government then approves a new law to implement such measure. Apart from lowering the risk of having indefinitely long incentives in a specific sector, these clear rules could also encourage investors to set up before incentive measures run out.

Fourthly, it should be remembered that although the product space approach is a powerful tool to aid in the priority sector identification process, it is only one of several aspects which should be taken into account. Especially the demand side aspects are not part of the analysis. What is the local demand for a potential priority productive sector? What are the export potentials? What are the trade agreements which could support the specific sector? Further considerations could include the potential employment levels.

Finally, the government should realise that incentivising priority sectors with tax reductions will only work if accompanied by measures to improve the business environment. The last thing which this article wants to convey is that tax reductions can substitute its efforts to improve the business environment.

Theoretical Considerations

Obviously, the product space and these simulations are a somewhat limited representation of reality. Firstly, and as noted above, the traditional factors still matter – you have to have *capacity* to run an economy – there is no point in having a Mercedes without a motor. Investment in human and physical capital is needed – the model does *not* speak against the importance of accumulation and efficient allocation of factors of production.

The second and less obvious point is that there are also other types of linkages which are worthy of policy attention – clustering, for example. Everyone knows the benefits of being in a city – the reduced per-capita cost of infrastructure, reduced transport costs, a bigger common pool of labour and employers etc. makes it richer than the countryside. But it can be argued, that while most cities have an initial impulse e.g. access to the sea, most of their benefits arise from their very being there – a city is a self-sustaining phenomenon. So if you can implant the pre-requisites, you should be able to accelerate urbanization, or at least clustering of industries, to catalyze their efficiency and the standard of life of the population. Clusters had a very significant role in Asian development, and in African success stories like Mauritius.

So the product space does not tell the whole story – it is very open about what it is – statistical relationships between export products. While the idea that these close statistical relationships could reflect patterns of future development, the theory for why exports would “jump” from one product to another has yet to be formalised. However, the intuition is clear enough – products which have a close statistical relationship share some specific factor inputs.

A few questions can be raised as to the accuracy of the space in its current form. The first observation is that the definition of products is arbitrary. The argument rests on the desirability of cultivating the production of goods with many “linkages” - but what if some “goods” are defined more precisely than others? What if oranges are all just oranges, but clothes are skinny jeans, V-necked crocheted t-shirts, bright orange maxi skirts etc. - then each of those products is immediately very attractive because it apparently has so many “linkages” to its sister garments. But they are still just clothes. If we bunched them under clothes, would we pay them any more attention than oranges? So the point here is that the shape of the space is conditioned by arbitrary product classifications.

From the point of view of planning of course, the way to control for this is to take account of the size of each product i.e. the annual value of trade of the product – then a lot of oranges might weigh in against precise, diminutive subdivisions of other products. In this way, a government can still plan a “direction of travel” for industry that leads it towards big markets. The government will have mixed priorities – some markets will be targets for the near future, even if they don't go anywhere in the long-term, as long as they can provide immediate cheap gains. Other industries will only be viable after a longer process of industrial development.

You might go so far as to argue that the space is inherently biased towards illuminating the secondary industries – of the 72 countries in the dataset only three are in sub-Saharan Africa (Nigeria, Angola and a single entry of SACU). Countries with an export profile like Mozambique might find it more useful to look at a product space constructed only on African exports, and at a finer degree of product classification, to get a clearer view of the immediate path for development.

Another problem is that, whatever parameters you choose in the simulations (except a threshold of 0) diffusion is arrested before complete coverage of the space. You would expect that the space is linked enough for production to eventually spread across the whole space. There are two possible enhancements to the method that could produce a result that chimes better with this intuition. Firstly, if product classifications were more specific e.g. using the Harmonised System classification at the six-digit level, this would result in a finer grading of the space, so it would be more likely that there's a product, however tiny, within “reach” of existing

industries, which should gradually diversify across the entire space. The finer the product classification, the smoother and more comprehensive the diffusion across the space should be.

The second way the model could be adapted to get a smoother diffusion is to unpack the concept of production. In the current version exports are either produced or not, and therefore production simply spreads from one product to the next, or not. Instead of this binary concept of production, we could use the value of production and allow that value to spread across the space in proportion to the strength of linkages. For example, if we start with a product with Mt10 of exports per year, linked to two products, one at a proximity of 0.7 and another at 0.3, after one iteration the first product would have output of Mt7 and the next at Mt3. While resulting in a smoother diffusion, this method would also mean that each product would grow in accordance with the strength of all its linkages rather than just its strongest link. In this respect it could actually be less realistic than the current version, as the products with most linkages would grow fastest, whereas as noted above, most of the best-linked products are in fact small (because they are more precisely specified).

The research that has been developed already has a hugely rich potential for further development. We can imagine improved tools for African policymakers based on finer product classifications and an Africa-only product map, which could, by controlling for other factors, offer a clearer view of the immediate path for industrial development.

The Product Space in the Spectrum of Economic Theories

It is interesting to reflect on what sort of theory the product space is – is it neo-liberal or structuralist? Neo-liberal models tend to make use of continuous functions – there is always a local alternative to what you do, and agents can maximise their welfare by choosing amongst them. Extreme structuralist models suggest that there are so many rigidities, linearities and specific relationships in the economy that much of the time there are little or no meaningful options for agents to choose from – they can easily get stuck in a rut. For this reason they advocate central planning, with inputs and outputs allocated in advance, as only a central agent has the range of options necessary to escape these local ruts and rigidities to achieve the global maximum level of welfare.

Seen in this light, the product space is a hybrid. It says that individual agents do have choices, but some have more than others. Those in the centre have a meaningful range of options but those at the edge of the space can get stuck in a rut. Once an economy has reached the central cluster there is little need for planning, but at the edge it could be the only way to promote economic diversification. As other authors have noted, the

product space could explain why rich donor countries tend to promote relatively liberal policies for developing countries, whereas these are generally more enthusiastic about planning. Both are honestly promoting what works best for them.

As a hybrid, the product space joins a great many of ideas as to why some developing countries seem to be “stuck” while not challenging the general efficacy of markets. The neo-classical growth theories suggest there should be convergence – because there are diminishing returns to scale developing countries should be so productive and profitable that investment floods in and they quickly catch up with developed countries. The explanation of why this has not happened rests always on some sort of co-ordination problem. Often this takes the form of an argument based on increasing returns. For example there is the idea that factors need to match each other – there is little incentive to train to become a nurse in the absence of complementary factors like doctors, hospitals and medical supplies, because without these complements nurses are not very productive and therefore not very highly paid. Although it does not explicitly look at factor inputs, the product space is one of the few quantitative examinations of a “matching factors” issue.

The final observation is that the product space offers a fascinating new insight into the perennial debate about the infant industry argument. Infant industry enthusiasts tend to point to the experience of East Asia as a successful example of state intervention, while sceptics point to the relative failure of the Latin American example. To explain the difference between the two, observers often point to East Asia's export-promoting model – arguing that companies were subject from the start to the rigours of international competition while their import-substituting Latin American counterparts were insulated from competitive pressure behind high tariffs.

That is not an entirely convincing explanation. While East Asian companies were exposed to *competitors* they were still subsidised and only gradually weaned into the international markets. At the same time large Latin American countries like Mexico and Brazil had relatively large internal markets, so internal competition should have helped them more than it seems to have, relative to their smaller neighbours.

Now consider Map 15. Unsurprising are the maps for developed countries – covering nearly all the space, especially in the central cluster – and sub-Saharan Africa, producing mainly at the periphery. However, contrast the maps for Latin America and East Asia. Latin America simply looks like a sparser version of a developed-country profile – its exports are found in every part of the space, while East Asia is virtually absent from swathes of the space, with complete coverage of other parts, notably the garments and electronics clusters.

This suggests that the advantage of the East Asian model is that it was more focused and therefore opened up more paths for development across the space. It looks like the export-oriented model was indeed superior but because entrepreneurs could see and respond to opportunities in closely-related markets. It was the carrot of foreign markets, and not the stick of foreign competition, that allowed East Asia to transform its economy so quickly.

Conclusion

The objective of this paper has been twofold. On one hand, it aims at analysing the validity of the product space approach, which is a new technique to look at why countries produce different products and whether this has consequences on economic performance. On the other, it applies the method on Mozambique and comes up with policy advice as to what the government should do in order to accelerate industrial diversification.

The concept of the product space is based on the fact that some goods are more likely to be produced in tandem than others because production prerequisites differ. In order to show how close products are related to each other, export data is used to calculate a product matrix which shows the proximity (i.e. the probability that the same product pair is being exported by several countries) between all product pairs. There are many ways of visualising the proximity matrix with a tree layout proving the most valuable way to convey the message. Equipped with this tool, countries' productive sectors are mapped onto the product space by calculating the revealed comparative advantage (i.e. the countries' relative exports related to world exports).

This provides the basis for the analysis and already shows the main pitfall of the approach – it does not have a rigorous theoretical base behind it. Trade data and statistics are prone to error and probability calculations can lead to links which are not based on economic intuition. This also explains some rather obscure linkages between products. Furthermore, we are well aware of the fate of economic “theories” which are based primarily on statistical relationships, like the Phillips and Laffer curves.

Overall, however, the picture of the product space is convincing and the approach tells an authentic and credible story as to why rich countries produce high-tech goods at the centre of the space, whereas poor countries mainly find themselves producing agricultural and labour intensive goods at the outer branches of the space. Furthermore, the product space approach goes a long way to explain why poor countries have not been able to catch up with the rich countries as the convergence theory would suggest. There are a number of

bottlenecks when moving through the space and an industrial policy is needed to support large jumps into new areas.

Although the approach does not provide a single path to follow in order to reach the high tech productive sector, as this depends on the areas in which a country already attained RCA, it does suggest that governments should support sectors which lie between its current RCA goods and the central cluster. In the case of Mozambique, the analysis leads to the conclusion that the garment and wood & furniture sector should be prioritised. The country currently possesses very few products in which it possesses RCA and these are mainly scattered at the branches and end nodes of the product space. However, there are some RCA goods near these two sectors which possess potential spillover effects due to elevated proximity levels and numerous linkages to surrounding productive sectors.

Whereas these two sectors are already mentioned within the industrial strategy of Mozambique, there are many other sectors which, according to this analysis, should not be supported. Furthermore, the strategy does not give clear indications as to what is meant by prioritisation. The product space approach suggests that the industrial strategy should be flexible with the selection of priority sectors and incentives should only be given on a short term basis. This is due to the idea that the first entrant into a market needs a push by the government in order to overcome the higher investment risk levels. Once the “path” to the priority sector is opened, other investors will follow as risk levels fall. In practice, prioritisation could involve short term fiscal incentives, but these will have to be supported by an improved business environment within the sector. The current textile and garment strategy presents a perfect example where fiscal incentives have not proven sufficient to attract investment as it faces serious obstacles in the trade environment.

To conclude, it is clear that the product space approach has a lot to offer, not just in explaining countries' industrial developments, but also for policymakers to accelerate industrial diversification and thereby increasing economic growth. However, it is still at its infancy and there are many areas for further research. It would be especially interesting to see a finer version of the product space with a less limited product classification.

Bibliography

Chang, HJ (2002), *Kicking Away the Ladder*, London: Anthem Press

Charlton, Andrew (2003), *Incentive Bidding for Mobile Investment: Economic Consequences and Potential Responses*, OECD Development Centre, Working Paper No. 2003

Government of Mozambique (2007), *Industrial Policy and Strategy*, Maputo

Hausmann R & B Klinger (2006), *Structural Transformation and Patterns of Comparative Advantage in the Product Space*, CID Working Paper No. 128, August 2006

Hausmann R & D Rodrik (2006), *Doomed to Choose: Industrial Policy as Predicament*, John F. Kennedy School of Government, First Draft, September 2006

Hidalgo, C et. Al (2007), *The Product Space Conditions the Development of Nations*, Science 317,482

Lall, S (2004), *Reinventing Industrial Strategy: The Role of Government Policy in Building Industrial Competitiveness*, G-24 Discussion Paper Series No. 28, United Nations

Reinert, E (1995), Competitiveness and its predecessors – a 500 year cross-national perspective, *Structural Change and Economics Dynamics*, 6: 23-42

Rodrik, D (2007), *Normalizing Industrial Policy*, Commission on Growth and Development Working Paper No. 3, Washington DC.

Rodrik, D & H Hausmann (2003) *Economic Development as Self-Discovery*, Journal of Development Economics, vol. 72, December 2003

Rodrik, D; R Hausmann & J Hwang (2007), *What You Exports Matters*, Journal of Economic Growth, volume 12, no. 1, March 2007

United Nations (2000), *Tax Incentives and Foreign Direct Investment – A global Survey*, ASIT Advisory Studies No. 16, Geneva 2000

Data Sources

The product space itself is based on Feenstra, Lipsey, Deng, Ma, & Mo's "World Trade Flows: 1962-2000" dataset, which is publicly available at www.nber.org/data.

Mozambique's export data was taken from the UN's Comtrade database, via the World Interated Trade Solution maintained by the World Bank.

The codes used to run the simulations are available on request.

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---Insert Maps 1-16 here---

ANNEX 1: Product Descriptions

Product ID	Product Description
11	ANIMALS OF THE BOVINE SPECIES,INCL.BUFFALOES,LIVE
12	SHEEP AND GOATS, LIVE
13	SWINE, LIVE
14	POULTRY, LIVE (I.E., FOWLS, DUCKS, GEESE, ETC.)
15	HORSES, ASSES, MULES AND HINNIES, LIVE
19	LIVE ANIMALS OF A KIND MAINLY USED FOR HUMAN FOOD
111	MEAT OF BOVINE ANIMALS, FRESH, CHILLED OR FROZEN
112	MEAT OF SHEEP AND GOATS, FRESH, CHILLED OR FROZEN
113	MEAT OF SWINE, FRESH, CHILLED OR FROZEN
114	POULTRY,DEAD & EDIBLE OFFALS EX.LIVER,FRESH/FROZEN
115	MEAT OF HORSES,ASSES,ETC.,FRESH,CHILLED,FROZEN
116	EDIBLE OFFALS OF ANIMALS IN HEADINGS 001.1 -001.5
118	OTHER FRESH,CHILLED,FROZEN MEAT OR EDIBLE OFFALS
121	BACON,HAM & OTHER DRIED,SALTED,SMOKED MEAT OF SWI.
129	MEAT& EDIB.OFFALS,N.E.S.SALT.IN BRINE DRIED/SMOK.
141	MEAT EXTRACTS AND MEAT JUICES; FISH EXTRACTS
142	SAUSAGES & THE LIKE,OF MEAT,MEAT OFFAL OR BLOOD
149	OTHER PREPARED OR PRESERVED MEAT OR MEAT OFFALS
223	MILK & CREAM,FRESH,NOT CONCENTRATED OR SWEETENED
224	MILK & CREAM,PRESERVED,CONCENTRATED OR SWEETENED
230	BUTTER
240	CHEESE AND CURD
251	EGGS IN SHELL
252	EGGS NOT IN SHELL
341	FISH,FRESH(LIVE/DEAD)OR CHILLED,EXCL.FILLETS
342	FISH,FROZEN (EXCLUDING FILLETS)
343	FISH FILLETS,FRESH OR CHILLED
344	FISH FILLETS,FROZEN
350	FISH,DRIED,SALTED OR IN BRINE; SMOKED FISH
360	CRUSTACEANS AND MOLLUSCS,FRESH,CHILLED,FROZEN ETC
371	FISH,PREPARED OR PRESERVED,N.E.S. INCLUDING CAVIAR
372	CRUSTACEANS AND MOLLUSCS,PREPARED OR PRESERVED
411	DURUM WHEAT,UNMILLED
412	OTHER WHEAT (INCLUDING SPELT) AND MESLIN,UNMILLED
421	RICE IN THE HUSK OR HUSKED,BUT NOT FURTHER PREPAR.
422	RICE SEMI-MILLED OR WHOLLY MILLED, BROKEN RICE
430	BARLEY,UNMILLED
440	MAIZE (CORN),UNMILLED
451	RYE,UNMILLED
452	OATS,UNMILLED
459	BUCKWHEAT,MILLET,CANARY SEED,GRAIN SORGHUM ETC
460	MEAL AND FLOUR OF WHEAT AND FLOUR OF MESLIN
470	OTHER CEREAL MEALS AND FLOURS
481	CEREAL GRAINS,WORKED/PREPARED,(BREAKFAST FOODS)
482	MALT,ROASTED OR NOT (INCLUDING MALT FLOUR)
483	MACARONI,SPAGHETTI AND SIMILAR PRODUCTS
484	BAKERY PRODUCTS (E.G.,BREAD,BISCUITS,CAKES) ETC.
488	MALT EXTRACT;PREP.OF FLOUR ETC,FOR INFANT FOOD
541	POTATOES
542	BEANS,PEAS,LENTILS & OTHER LEGUMINOUS VEGETABLES
544	TOMATOES,FRESH OR CHILLED
545	OTHER FRESH OR CHILLED VEGETABLES
546	VEGETABLES,FROZEN OR IN TEMPORARY PRESERVATIVE
548	VEGETABLE PRODUCTS,ROOTS & TUBERS,FOR HUMAN FOOD
561	VEGETABLES,DRIED,DEHYDRATED OR EVAPORATED
564	FLOURS,MEALS & FLAKES OF POTATOES.FRUIT & VEGETA.
565	VEGETABLES,PREPARED OR PRESERVED,N.E.S.

571	ORANGES,MANDARINS,CLEMENTINES AND OTHER CITRUS
572	OTHER CITRUS FRUIT,FRESH OR DRIED
573	BANANAS,FRESH OR DRIED
574	APPLES,FRESH
575	GRAPES,FRESH OR DRIED
576	FIGS,FRESH OR DRIED
577	EDIBLE NUTS(EXCL.NUTS USED FOR THE EXTRACT.OF OIL)
579	FRUIT,FRESH OR DRIED, N.E.S.
582	FRUIT,FRUIT-PEEL & PARTS OF PLANTS,PRES. BY SUGAR
583	JAMS,FRUIT JELLIES, MARMALADES,FRUIT PUREE,COOKED
585	JUICES;FRUIT & VEGET.(INCL.GRAPE MUST) UNFERMENTED
586	FRUIT,TEMPORARILY PRESERVED
589	FRUIT OTHERWISE PREPARED OR PRESERVED,N. E.S.
611	SUGARS,BEET AND CANE,RAW,SOLID
612	REFINED SUGARS AND OTHER PROD. OF REF. BEET/CANE
615	MOLASSES,WHETHER OR NOT DECOLOURIZED
616	NATURAL HONEY
619	OTHER SUGARS;SUGAR SYRUPS;ARTIFICIAL HONEY;CARMEL
620	SUGAR CONFECTIONERY AND OTHER SUGAR PREPARATIONS
711	COFFEE,WHETHER OR NOT ROASTED OR FREED OF
712	CAFFEINE
712	EXTRACTS,ESSENCES/CONCENT.OF COFFEE & CHICORY
721	COCOA BEANS,WHOLE OR BROKEN,RAW OR ROASTED
722	COCOA POWDER,UNSWEETENED
723	COCOA BUTTER AND COCOA PASTE
730	CHOCOLATE & OTHER FOOD PREPTNS. CONTAINING COCOA
741	TEA
742	MATE
751	PEPPER; PIMENTO
752	SPICES (EXCEPT PEPPER AND PIMENTO)
811	HAY AND FODDER,GREEN OR DRY
812	BRAN,SHARPS & OTHER RESIDUES DERIVED FROM SIFTING
813	OIL-CAKE & OTHER RESIDUES (EXCEPT DREGS)
814	FLOURS &
819	FOOD WASTES AND PREPARED ANIMAL FEEDS,N.E.S
901	Not Classified
913	LARD,OTHER PIG FAT& POULTRY,RENDERED/SOLVENT-EXT.
914	MARGARINE,IMITAT.LARD & OTHER PREPARED EDIBLE FATS
980	EDIBLE PRODUCTS AND PREPARATIONS N.E.S.
1110	NON ALCOHOLIC BEVERAGES,N.E.S.
1121	WINE OF FRESH GRAPES (INCLUDING GRAPE MUST)
1122	OTHER FERMENTED BEVERAGES N.E.S (CIDER,PERRY MEAD)
1123	BEER MADE FROM MALT (INCLUDALE,STOUT AND PORTER)
1124	SPIRITS;LIQUEURS, OTHER SPIRITUOUS BEVERAGES,N.E.S
1211	TOBACCO,NOT STRIPPED
1212	TOBACCO,WHOLLY OR PARTLY STRIPPED
1213	TOBACCO REFUSE
1221	CIGARS AND CHEROOTS; CIGARILLOS
1222	CIGARETTES
1223	TOBACCO,MANUFACTURED (INC.SMOKING,CHEWING TOBACC
2111	BOVINE & EQUINE HIDES (OTHER THAN CALF),RAW
2112	CALF SKINS,RAW (FRESH,SALTED,DRIED,PICKLED/LIMED
2114	GOAT & KID SKINS,RAW (FRESH,SALTED,DRIED,PICKLED)
2116	SHEEP & LAMB SKINS WITH WOOL ON,RAW (FRESH,SALTED)
2117	SHEEP & LAMB SKINS WITHOUT THE WOOL,RAW(FRESH ETC)
2119	HIDES AND SKINS,N.E.S WASTE AND USED LEATHER
2120	FURSKINS, RAW (INCLUD.ASTRAKHAN,CARACUL, ETC.)
2221	GROUNDNUTS (PEANUTS),GREEN,WHETHER OR NOT SHELLED
2222	SOYA BEANS
2223	COTTON SEEDS
2224	SUNFLOWER SEEDS
2225	SESAME (SESAMUM)SEEDS
2226	RAPE AND COLZA SEEDS

2231	COPRA
2232	PALM NUTS AND PALM KERNELS
2234	LINSEED
2235	CASTOR OIL SEEDS
2238	OIL SEEDS AND OLEAGINOUS FRUIT. N.E.S.
2239	FLOURS OR MEALS/OIL SEEDS/OLEAG.FRUIT NON DEFATTED
2320	NATURAL RUBBER LATEX; NAT.RUBBER & SIM.NAT.GUMS
2331	SYNTH.RUBB.LAT.;SYNTH.RUBB.FACTICE DERIV.FROM OILS
2332	RECLAIMED RUBBER;WASTE & SCRAP OF UNHARDENED RUBB.
2440	CORK,NATURAL,RAW & WASTE (INCLUD.IN BLOCKS/SHEETS)
2450	FUEL WOOD (EXCLUDING WOOD WASTE) AND WOOD CHARCO
2460	PULPWOOD (INCLUDING CHIPS AND WOOD WASTE)
2471	SAWLOGS AND VENEER LOGS,OF CONIFEROUS SPECIES
2472	SAWLOGS AND VENEER LOGS,OF NON CONIFEROUS SPECIES
2481	RAILWAY OR TRAMWAY SLEEPERS (TIES)OF WOOD
2482	WOOD OF CONIFEROUS SPECIES,SAWN,PLANED,TONGUED ET
2483	WOOD OF NON-CONIFEROUS SPECIES,SAWN,PLANED,TONGUE
2511	WASTE PAPER,PAPERBOARD;ONLY FOR USE PAPER-MAKING
2512	MECHANICAL WOOD PULP
2516	CHEMICAL WOOD PULP,DISSOLVING GRADES
2517	CHEMICAL WOOD PULP,SODA OR SULPHATE
2518	CHEMICAL WOOD PULP,SULPHITE
2519	OTHER CELLULOSIC PULPS
2613	RAW SILK (NOT THROWN)
2614	SILK WORM COCOONS SUITABL.FOR REELING & SILK WASTE
2631	COTTON (OTHER THAN LINTERS),NOT CARDED OR COMBED
2632	COTTON LINTERS
2633	COTTON WASTE (INCLUDING PULLED OR GARNETTED RAGS)
2634	COTTON,CARDED OR COMBED
2640	JUTE & OTHER TEXTILE BAST FIBRES,NES,RAW/PROCESSED
2651	FLAX & RAMIE,FLAX TOW,RAMIE NOILS,& WASTE OF FLAX
2652	TRUE HEMP,RAW OR PROCESSED,NOT SPUN;TOW AND WASTE
2654	SISAL & OTHER FIBRES OF AGAVE FAMILY,RAW OR PROCE.
2655	MANILA HEMP,RAW OR PROCESSED,NOT SPUN;TOW & WASTE
2659	VEGETABLE TEXTILE FIBRES,N.E.S. AND WASTE
2665	SYNTH.FIBR.NOT CARDED,COMBED OR OTHERWISE PREPARE
2666	CONTINUOUS FILAMENT TOW FOR THE MANUFAC.OF FIBRES
2667	SYNTH.FIBRES,CARDED,COMBED OR OTHERWISE PREPARED
2671	REGENERATED FIBRES SUITABLE FOR SPINNING
2672	WASTE OF MAN-MADE FIBRES,NOT CARDED,COMBED
2681	SHEEPS OR LAMBSWOOL,GREASY OR FLEECE-WASHED
2682	SHEEPS OR LAMBSWOOL,DEGREASED,IN THE MASS
2683	FINE ANIMAL HAIR,NOT CARDED OR COMBED
2685	HORSEHAIR & OTHER COARSE ANIMAL HAIR (EXCL.WOOL)
2686	WASTE OF SHEEPS/LAMBS WOOL OR OF OTHER ANIM.HAIR
2687	SHEEPS/LAMBS WOOL/OTHER AIMAL HAIR,CARDED/COMBED
2690	OLD CLOTHING AND OTHER OLD TEXTILE ARTICLES; RAGS
2711	GUANO & OTHER NATURAL ANIMAL/VEGETABLE FERTILIZERS
2712	SODIUM NITRATE,NATURAL.CONTAIN.<16.3% OF NITROGEN
2713	NATURAL CALCIUM PHOSPHAT.,NATUR.ALUMINIUM C. PHOS.
2714	POTASSIUM SALTS,NATURAL,CRUDE
2731	BUILDING AND MONUMENTAL STONE NOT FURTHER WORKED
2732	GYPSUM,PLASTERS,LIMESTONE FLUX & CALCAREOUS STONE
2733	SANDS,NATURAL,OF ALL KINDS,WHETHER OR NOT COLOURED
2734	PEBBLES AND CRUSHED OR BROKEN STONE.GRAVEL,MACADA
2741	SULPHUR OF ALL KINDS
2742	IRON PYRITES,UNROASTED
2771	INDUSTRIAL DIAMONDS,SORTED,WHETHER OR NOT WORKED
2772	NATURAL ABRASIVES,N.E.S.
2782	CLAY AND OTHER REFRACTORY MINERALS, N.E.S.
2783	COMMON SALT;ROCK SAT,SEA SALT;PUR.SODIUM CHRLORIDE
2784	ASBESTOS
2785	QUARTZ,MICA,FELSPAR,FLUORSPAR,CRYOLITE & CHIOLITE

2786	SLAG,DROSS,SCALINGS AND SIMILAR WASTE,N.E.S.
2789	MINERALS,CRUDE, N.E.S.
2814	ROASTED IRON PYRITES,WHETHER OR NOT AGGLOMERATED
2815	IRON ORE AND CONCENTRATES,NOT AGGLOMERATED
2816	IRON ORE AGGLOMERATES (SINTERS,PELLETS,BRIQUETTES)
2820	WASTE AND SCRAP METAL OF IRON OR STEEL
2860	ORES AND CONCENTRATES OF URANIUM AND THORIUM
2871	COPPER ORES & CONCENTRATES;COPPER MATTE
2872	NICKEL ORES AND CONCENTRATES;NICKEL MATTES ETC.
2873	ALUMINIUM ORES AND CONCENTRATES (INCLUD.ALUMINA)
2874	LEAD ORES AND CONCENTRATES
2875	ZINC ORES AND CONCENTRATES
2876	TIN ORES AND CONCENTRATES
2877	MANGANESE ORES AND CONCENTRATES
2879	ORES & CONCENTRAT.OF OTHER NON-FERROUS BASE METAL
2881	ASH & RESIDUES,CONTAIN.METALS/METALLIC COMPOUNDS
2882	OTHER NON-FERROUS BASE METAL WASTE AND SCRAP,N.E.S
2890	ORES & CONCENTRATES OF PRECIOUS METALS;WASTE,SCRA
2911	BONES,HORNS,IVORY,HOOVES,CLAWS,CORAL,SHELLS ETC.
2919	OTHER MATERIALS OF ANIMAL ORIGIN, N.E.S
2922	SHELLAC,SEED LAC,STICK LAC,RESINS,GUM-RESINS,ETC.
2923	VEGET.MATER.OF A KIND USED PRIMAR.FOR PLAITING
2924	PLANTS,SEEDS,FRUIT USED IN PERFUMERY,PHARMACY
2925	SEEDS,FRUIT & SPORES,NES,OF A KIND USED FOR SOWING
2926	BULBS,TUBERS & RHIZOMES OF FLOWERING OR OF FOLIAGE
2927	CUT FLOWERS AND FOLIAGE
2929	OTHER MATERIALS OF VEGETABLE ORIGIN, N.E.S.
3221	ANTHRACITE,WHETHER/NOT PULVERIZED,NOT AGGLOMERATE
3222	OTHER COAL,WHETHER/NOT PULVERIZED,NOT AGGLOMERAT
3223	LIGNITE,WHETHER OR NOT PULVERIZED,NOT AGGLOMERATED
3224	PEAT,WHETHER/NOT COMPRES.INTO BALES NOT AGGLOMERA
3231	BRIQUET.OVOIDS & SIM.SOLID FUELS,OF COAL PEAT LIG.
3232	COKE AND SEMI-COKE OF COAL OF LIGNITE OR OF PEAT
3330	PETROL.OILS & CRUDE OILS OBT.FROM BITUMIN.MINERALS
3341	MOTOR SPIRIT AND OTHER LIGHT OILS
3342	KEROSENE AND OTHER MEDIUM OILS
3343	GAS OILS
3344	FUEL OILS,N.E.S
3345	LUBRICATING PETROL.OILS & OTHER HEAVY PETROL.OILS
3351	PETROLEUM JELLY AND MINERAL WAXES
3352	MINERAL TARS AND PRODUCTS OF THEIR DISTILLATION
3353	PITCH & PITCH COKE OBTAIN.FROM COAL TAR/MINER.TARS
3354	PETROLEUM BITUMEN,PETROL.COKE & BITUMIN.MIXTUR.NES
3413	PETROLEUM GASES AND OTHER GASEOUS HYDROCARBONS
3414	PETROLEUM GASES AND OTHER GASEOUS HYDROCARBONS N
3415	COAL GAS, WATER GAS,PRODUCER GAS & SIMILAR GASES
3510	ELECTRIC CURRENT
4111	FATS AND OILS OF FISH AND MARINE MAMMALS
4113	ANIMAL OILS,FATS AND GREASES,N.E.S
4232	SOYA BEAN OIL
4233	COTTON SEED OIL
4234	GROUNDNUT (PEANUT) OIL
4235	OLIVE OIL
4236	SUNFLOWER SEED OIL
4239	OTHER SOFT FIXED VEGETABLE OILS
4241	LINSEED OIL
4242	PALM OIL
4243	COCONUT (COPRA) OIL
4244	PALM KERNEL OIL
4245	CASTOR OIL
4249	FIXED VEGETABLE OILS,N.E.S
4311	OILS,ANIMAL & VEGETABLE,BOILED,OXIDIZED, ETC.
4312	ANIM./VEGET.OILS & FATS,WHOLLY/PARTLY HYDROGENATED

4313	FATTY ACIDS,ACID OILS,AND RESIDUES
4314	WAXES OF ANIMAL OR VEGETABLE ORIGIN
5111	ACYCLIC HYDROCARBONS
5112	CYCLIC HYDROCARBONS
5113	HALOGENATED DERIVATIVES OF HYDROCARBONS
5114	SULPHON.NITRATJNITROSAT.DERIVATIV.OF HYDROCARBONS
5121	ACYCLIC ALCOHOLS & THEIR HALOGENATED,DERIVATIVES
5122	CYCLIC.ALCOHOLS & THEIR HALOGENATED DERIVATIVES
5123	PHENOLS & PHEN.-ALCO.& THEIR HALOGENAT.DERIVATIVES
5137	MONOCARBOXYLIC ACIDS & THEIR ANHYDRIDES,HALIDES,
5138	POLYCARBOXYLIC ACIDS & THEIR ANHYDRIDES,ETC.
5139	CARBOXYLIC ACIDS WITH ALCOHOL,PHENOL ETC.FUNCTION
5145	AMINE-FUNCTION COMPOUNDS
5146	SINGLE OR COMPLEX OXYGEN-FUNCTION AMINO-COMPOUNDS
5147	CARBOXYAMIDE-FUNCTION COMPOUNDS;& OTHER COMPOUN
5148	OTHER NITROGEN-FUNCTION COMPOUNDS
5154	ORGANO-SULPHUR COMPOUNDS
5155	OTHER ORGANO-INORGANIC COMPOUNDS
5156	HETEROCYCLIC COMPOUNDS;NUCLEIC ACIDS
5157	SULPHONAMIDES,SULTONES AND SULTAMS
5161	ETHERS,ALCOHOL PEROXIDES,ETHER PEROX.,EPOXIDES ETC
5162	ALDEHYDE-,KETONE-,& QUINONE-FUNCTION COMPOUNDS
5163	INORGANIC ESTERS,THEIR SALTS,& THEIR DERIVATIVES
5169	ORGANIC CHEMICALS,N.E.S
5221	CHEMICAL ELEMENTS
5222	INORGANIC ACIDS AND OXYGEN COMPOUNDS OF NON-METAL
5223	HALOGEN AND SULPHUR COMPOUNDS OF NON-METALS
5224	METALLIC OXIDES OF ZINC,CHROMIUM,MANGANESE,IRON,
5225	OTH.INORG.BASES & METALLIC OXID.,HYDROXID.& PEROX.
5231	METALLIC SALTS AND PEROXYSALTS OF INORGANIC ACIDS
5232	METALLIC SALTS AND PEROXYSALTS OF INORGANIC ACIDS
5233	SALTS OF METALLIC ACIDS; ETC.
5239	INORGANIC CHEMICAL PRODUCTS,N.E.S
5241	FISSILE CHEMICAL ELEMENTS AND ISOTOPES
5249	OTHER RADIO-ACTIVE AND ASSOCIATED MATERIALS
5311	SYNTHETIC ORGANIC DYESTUFFS
5312	SYNTH.ORGANIC LUMINOPHORES;OPTIC.BLEACHING AGENTS
5322	TANNING EXTRACTS OF VEGET.ORIGIN;TAN.& DERIVATIVES
5323	SYNTH.ORG.TANNING SUBSTANCES,& INORG.TANNING SUBST
5331	OTHER COLOURING MATTER
5332	PRINTING INK
5334	VARNISHES AND LACOUERS;DISTEMPERS,WATER PIGMENTS
5335	COLOUR.PREPTNS OF A KIND USED IN CERAMIC,ENAMELLI.
5411	PROVITAMINS & VITAMINS,NARURAUREPROD.BY SYNTHESIS
5413	ANTIBIOTICS N.E.S.,NOT INCL. IN 541.7
5414	VEGETAB.ALKALOIDS,NATURAL/REPRODUCED BY SYNTHESIS
5415	HORMONES,NATURAL OR REPRODUCED BY SYNTHESIS
5416	GLYCOSIDES;GLANDS OR OTHER ORGANS & THEIR EXTRACTS
5417	MEDICAMENTS(INCLUDING VETERINARY MEDICAMENTS)
5419	PHARMACEUTICAL GOODS,OTHER THAN MEDICAMENTS
5513	ESSENTIAL OILS,CONCRETES & ABSOLUTES:RESINOIDS
5514	MIXTURES OF TWO OR MORE ODORIFEROUS SUBSTANCES
5530	PERFUMERY,COSMETICS AND TOILET PREPARATIONS
5541	SOAP;ORGANIC SURFACE-ACTIVE PRODUCTS & PREPARATNS
5542	ORGANIC SURFACE-ACTIVE AGENTS,N.E.S.
5543	POLISHES & CREAMS,FOR FOOTWEAR,FURNITURE OR FLOOR
5620	Not Classified
5621	MINERAL OR CHEMICAL FERTILIZERS,NITROGENOUS
5622	MINERAL OR CHEMICAL FERTILIZERS,PHOSPHATIC
5623	MINERAL OR CHEMICAL FERTILIZERS.POTASSIC
5629	FERTILIZERS,N.E.S.
5721	PROPELLENT POWDERS AND OTHER PREPARED EXPLOSIVES
5722	SAFETY FUSES,DETONATING FUS.;PERCUSSION & DET.CAPS

5723	PYROTECHNIC ARTICLES:(FIREWORK,RAILWAY FOG ETC.)
5821	PHENOPLASTS
5822	AMINOPLASTS
5823	ALKYDS AND OTHER POLYESTERS
5824	POLYAMIDES
5825	POLYURETHANES
5826	EPOXIDE RESINS
5827	SILICONES
5829	OTHER CONDENSATION,POLYCONDENSATION/POLYADD.PROD
5831	POLYETHYLENE
5832	POLYPROPYLENE
5833	POLYSTYRENE AND ITS COPOLYMERS
5834	POLYVINYL CHLORIDE
5835	COPOLYMERS OF VINYL CHLORIDE AND VINYL ACETATE
5836	ACRYLIC POLYMERS,METHACRYLIC POLYMERS, ETC.
5837	POLYVINYL ACETATE
5838	ION EXCHANGERS OF POLYMERIZATION/COPOLYMERIZ.TYPE
5839	OTHER POLYMERIZATION AND COPOLIMERIZATION PRODUCTS
5841	REGENERATED CELLULOSE
5842	CELLULOSE NITRATES
5843	CELLULOSE ACETATES
5849	OTHER CHEMICAL DERIVATIVES OF CELLULOSE
5852	OTHER ARTIFICIAL PLASTIC MATERIALS,N.E.S.
5911	INSECTICIDES PACKED FOR SALE ETC.
5912	FUNGICIDES PACKED FOR SALE ETC.
5913	WEED KILLERS (HERBICIDES)PACKED FOR SALE ETC.
5914	DISINFECT.,ANTI-SPROUTING PROD.ETC.PACKED FOR SALE
5921	STARCHES,INULIN AND WHEAT GLUTEN
5922	ALBUMINOIDAL SUBSTANCES;GLUES
5981	WOOD- AND RESIN-BASED CHEMICAL PRODUCTS
5982	ANTI-KNOCK PREPARATIONS,OXIDATION INHIBITORS ETC.
5983	ORGANIC CHEMICAL PRODUCTS,N.E.S.
5989	CHEMICAL PRODUCTS AND PREPARATIONS,N.E.S.
6112	COMPOSITION LEATHER FIBRE,IN SLABS ETC.,SHEETS,ETC
6113	CALFLEATHER
6114	LEATHER OF OTHER BOVINE CATTLE AND EQUINE LEATHER
6115	SHEEP AND LAMB SKIN LEATHER
6116	LEATHER OF OTHER HIDES OR SKINS
6118	LEATHER,SPECIALLY DRESSED OR FINISED
6121	ARTICLES OF LEATHER OR OF COMPOSITION LEATHER
6122	SADDLERY AND HARNESS,OR ANY MATERIAL FOR ANIMALS
6123	PARTS OF FOOTWEAR
6129	OTHER ARTICLES OF LEATHER OR OF COMPOSIT. LEATHER
6130	FURSKINS,TANNED/DRESSED,PIECES/CUTTINGS OF FURSKIN
6210	MATERIALS OF RUBBER(E.G.,PASTES.PLATES,SHEETS,ETC)
6251	TYRES,PNEUMATIC,NEW,OF A KIND USED ON MOTOR CARS
6252	TYRES,PNEUMAT.,NEW,OF A KIND USED ON BUSES,LORRIES
6253	TYRES,PNEUMATIC,NEW,OF A KIND USED ON AIRCRAFT
6254	TYRES,PNEUM.NEW.OF A KIND USED ON MOTOR/BICYCLES
6259	OTHER TYRES,TYRE CASES,INNER TUBES
6281	HYGIENIC AND PHARMACEUTICAL ARTICLES OF RUBBER
6282	TRANSMISSION,CONVEYOR/ELEVATOR BELTS OF RUBBER
6289	OTHER ARTICLES OF RUBBER,N.E.S.
6330	CORK MANUFACTURES
6341	WOOD SAWN LENGTHWISE,SLICED/PEELED,BUT NOT PREPAR.
6342	PLYWOOD CONSISTING OF SHEETS OF WOOD
6343	IMPROVED WOOD AND RECONSTITUTED WOOD
6344	WOOD-BASED PANELS,N.E.S.
6349	WOOD,SIMPLY SHAPED,N.E.S.
6351	WOODEN PACKING CASES,BOXES,CRATES,DRUMS ETC.
6352	CASKS,BARRELS,VATS,TUBS,BUCKETS & OTH.COOPERSPROD
6353	BUILDERSCARPENTRY AND JOINERY

6354	MANUFACTURES OF WOOD FOR DOMESTIC/DECORATIVE USE
6359	MANUFACTURED ARTICLES OF WOOD,N.E.S.
6411	NEWSPRINT
6412	PRINTING PAPER & WRITING PAPER,IN ROLLS OR SHEETS
6413	KRAFT PAPER AND PAPERBOARD,IN ROLLS OR SHEETS
6415	PAPER AND PAPERBOARD,IN ROLLS OR SHEETS,N.E.S.
6416	BUILDING BOARD OF WOOD PULP OR OF VEGETABLE FIBRE
6417	PAPER& PAPERBOARD,CORRUGATED,CREPEDCRINKLED ETC
6418	PAPER & PAPERBOARD,IMPREGNAT.COAT.SURFACE-COLOURE
6419	CONVERTED PAPER AND PAPERBOARD,N.E.S.
6421	BOXES,BAGS & OTH.PACKING CONTAINERS,OF PAPER/PAPBD
6422	WRITING BLOCKS,ENVELOPES,ETC.CORRESPONDENCE CARD
6423	REGISTERS,EXERCISE BOOKS,NOTE BOOKS,ETC.
6424	PAPER AND PAPERBOARD,CUT TO SIZE OR SHAPE,N.E.S.
6428	ART.OF PAPER PULP,PAPER,PAPERBOARD,CELLU.WADDING
6511	SILK YARN & YARN SPUN FROM NOIL/OTHER SILK WASTE
6512	YARN OF WOOL OR ANIMAL HAIR (INCLUDING WOOL TOPS)
6513	COTTON YARN
6514	YARN CONTAIN.85% BY WGT.OF SYNTH.FIBRES,NOT F.SALE
6515	YARN CONTAIN.85% BY WGT.OF SYNTH.FIBRES,FOR SALE
6516	YARN OF DISCONT.SYNTH.FIBRES,CONTAIN.LESS THAN 85%
6517	YARN OF REGENERATED FIBRES,NOT FOR RETAIL SALE
6519	YARN OF TEXT.FIBRES,N.E.S.,INCL.YARN OF GLASS FIB.
6521	COTTON FABRICS,WOVEN,UNBLEACHED,NOT MERCERIZED
6522	COTTON FABRICS,WOVEN,BLEACH.MERCERIZ.DYED,PRINTED
6531	FABRICS,WOVEN OF CONTINUOUS SYNTH.TEXTIL.MATERIALS
6532	FABRICS,WOVEN CONTAIN.85% OF DISCONTIN.SYNTH.FIBR.
6534	FABRICS,WOVEN,OF DISCONTINUOUS SYNTHETIC FIBRES
6535	FABRICS WOVEN OF CONTIN.REGENERAT.TEXTIL.MATERIALS
6536	FABRICS,WOVEN CONTAIN.85% OF DISCONT.REGENER.FIBR.
6538	FABRICS,WOVEN OF DISCONTINUOUS REGENERATED FIBRES
6539	PILE & CHENILLE FABRICS,WOVEN OF MAN-MADE FIBRES
6541	FABRICS,WOVEN,OF SILK,OF NOIL OR OTHER WASTE SILK
6542	FABRICS,WOVEN,CONTAIN.85% OF WOOL/FINE ANIMAL HAIR
6543	FABRICS,WOVEN,OF WOOL OR OF FINE ANIMAL HAIR N.E.S
6544	FABRICS,WOVEN,OF FLAX OR OF RAMIE
6545	FABRICS,WOVEN,OF JUTE OR OF OTHER TEXTILE BAST FIB
6546	FABRICS OF GLASS FIBRE,PILE FAB.TULLE,LACE,KNITTED
6549	FABRICS,WOVEN,N.E.S.
6552	KNITTED/CROCHETED FABRICS OF FIBRES OTH.THAN SYNTH
6553	KNITTED/CROCHETED FABRICS ELASTIC OR RUBBERIZED
6560	TULLE,LACE,EMBROIDERY,RIBBONS,& OTHER SMALL WARES
6571	FELT & ARTICL.OF FELT,NES,WHETHER/NOT IMPREGNATED
6572	BONDED FIBRE FABRICS,SIMILAR BONDED YARN FABRICS
6573	COATED/IMPREGNATED TEXTILE FABRICS & PRODUCTS NES.
6575	TWINE,CORDAGE,ROPES & CABLES.& MANUFACTUR.THEREOF
6576	HAT SHAPES,HAT-FORMS,HAT BODIES AND HOODS
6577	WADDING.TEXTIL.FABRICS FOR USE IN MACHINERY/PLANT
6579	SPECIAL PRODUCTS OF TEXTILE MATERIALS
6581	SACKS AND BAGS,OF TEXTILE MATERIALS
6582	TARPAULINS,SAILS,AWNINGS,SUNBLINDS,TENTS ETC.
6583	TRAVELLING RUGS AND BLANKETS,NOT KNITTED/CROCHETED
6584	BED LINEN,TABLE LINEN,TOILET & KITCHEN LINEN ETC.
6589	OTHER MADE-UP ARTICLES OF TEXTILE MATERIALS,N.E.S
6591	LINOLEUM AND SIMILAR FLOOR COVERINGS
6592	CARPETS,CARPETING AND RUGS,KNOTTED
6593	KELEM,SCHUMACKS AND KARAMANIE RUGS AND THE LIKE
6594	CARPETS,CARPETING,RUGS,MATS & MATTING,OF WOOL ETC.
6595	CARPETS,RUGS ETC.OF MAN-MADE TEXTILE MATERIALS NES
6596	CARPETS,RUGS ETC.OF OTHER TEXTILE MATERIALS N.E.S.
6597	PLAITS AND SIMILAR PRODUCTS OF PLAITING MATERIALS
6611	QUICKLIME,SLAKED LIME AND HYDRAULIC LIME
6612	PORTLAND CEMENT,CIMENT FONDU,SLAG CEMENT ETC.

6613	BUILDING & MONUMENTAL STONE,WORKED,& ARTIC.THEREOF
6618	CONSTRUCTN.MATER.OF ASBESTOS-CEMENT & FIBRE- CEMEN
6623	REFRACTORY BRICKS & OTHER REFRACT.CONSTRUCT.MATER
6624	NON-REFRACT.CERAMIC BRICKS,TILES,PIPES & SIM.PROD.
6631	HAND POLISHING STONES,WHETSTONES,OILSTONES,HONES
6632	NATURAL OR ARTIFICIAL ABRASIVE POWDER OR GRAIN
6633	MANUFACTURES OF MINERAL MATERIALS,N.E.S.
6635	SLAG WOOL.ROCK WOOL AND SIMILAR MINERAL WOOLS
6637	REFRACTORY GOODS(EG.,RETORTS,CRUJICIBLES ETC) N.E.S
6638	MANUFACTURES OF ASBESTOS: FRICTION MATERIALS
6639	ARTICLES OF CERAMIC MATERIALS,N.E.S.
6641	GLASS IN THE MASS,IN BALLS,RODS/TUBES;WASTE GLASS
6642	OPTICAL GLASS AND ELEMENTS OF OPTICAL GLASS
6643	DRAWN OR BLOWN GLASS,UNWORKED,IN RECTANGLES
6644	CAST,ROLLED,DRAWN OR BLOWN GLASS,IN RECTANGLES
6645	CASTOR ROLLED GLASS,UNWORKED,WHETHER FIGURED/NOT
6647	SAFETY GLASS CONSISTING OF TOUGHENED/LAMINAT.GLASS
6648	GLASS MIRRORS(INCL.REAR-VIEW MIR.),UNFRAMED.FRAME
6649	GLASS,NE.ES.
6651	CONTAINERS,OF GLASS,USED FOR CONVEYANCE OR PACKING
6652	GLASSWARE USED FOR TABLE,KITCHEN,INDOOR DECORATION
6658	ARTICLES MADE OF GLASS,N.E.S
6664	TABLEWARE & OTHER ARTICLES OF PORCELAIN OR CHINA
6665	TABLEWARE & OTHER ARTICLES OF OTH.KINDS OF POTTERY
6666	STATUETTES & OTH.ORNAMENTS,& ARTICLES OF ADORNMENT
6671	PEARLS,UNWORKEDNORKED,NOT MOUNTED,SET OR STRUN
6672	DIAMONDS,UNWORK.CUT/OTHERWISE WORK.NOT MOUNTED/S
6673	OTH.PRECIOUS & SEMI-PRECIOUS STONES,UNWORK.CUT ETC
6674	SYNTHETIC/RECONSTRUCTED PRECIOUS/SEMI-PREC.STONES
6712	PIG IRON,CAST IRON AND SPIEGELEISEN,IN PIGS,BLOCKS
6713	IRON OR STEEL POWDERS,SHOT OR SPONGE
6716	FERRO-ALLOYS
6724	PUDDLED BARS AND PILINGS;INGOTS,BLOCKS,LUMPS ETC.
6725	BLOOMS,BILLETS,SLABS & SHEET BARS OF IRON OR STEEL
6727	IRON OR STEEL COILS FOR RE-ROLLING
6731	WIRE ROD OF IRON OR STEEL
6732	BARS & RODS,OF IRON/STEEL;HOLLOW MINING DRILL ST.
6733	ANGLES,SHAPES & SECTIONS & SHEET PILING,OF I RON/ST
6744	SHEETS & PLATES,ROLLED >4.75MM OF IRON/STEEL
6745	SHEETS & PLATES,RDL.THICKNS.3MM TO 4,75MM IRN/STL.
6746	SHEETS & PLATES,ROLLED;THICKNESS OF LESS THAN 3MM.
6747	TINNED SHEETS AND PLATES,OF STEEL
6749	OTHER SHEETS AND PLATES,OF IRON OR STEEL,WORKED
6760	RAILS AND RAILWAY TRACK CONSTRUCTION MATERIAL
6770	IRON/STEEL WIRE/WHETH/NOT COATED,BUT NOT INSULATED
6781	TUBES AND PIPES,OF CAST IRON
6782	SEAMLESSTUBES AND PIPES;BLANKS FOR TUBES & PIPES
6783	OTHER TUBES AND PIPES,OF IRON OR STEEL
6785	TUBE & PIPE FITTINGS(JOINTS,ELBOWS)OF IRON/STEEL
6793	STEEL & IRON FORGINGS & STAMPINGS,IN ROUGH STATE
6794	CASTINGS OR IRON OR STEEL,IN THE ROUGH STATE
6811	SILVER,UNWROUGHT,UNWORKED OR SEMI-MANUFACTURED
6812	PLATINUM AND OTHER METALS OF THE PLATINUM GROUP
6821	COPPER AND COPPER ALLOYS,REFINED OR NOT,UNWROUGHT
6822	COPPER AND COPPER ALLOYS,WORKED
6831	NICKEL & NICKEL ALLOYS,UNWROUGHT (INGOTS,PIGS,ETC)
6832	NICKEL AND NICKEL ALLOYS.WORKED
6841	ALUMINIUM AND ALUMINIUM ALLOYS,UNWROUGHT
6842	ALUMINIUM AND ALUMINIUM ALLOYS,WORKED
6851	LEAD AND LEAD ALLOYS,UNWROUGHT
6852	LEAD AND LEAD ALLOYS,WORKED
6861	ZINC AND ZINC ALLOYS,UNWROUGHT

6863	ZINC AND ZINC ALLOYS,WORKED
6871	TIN AND TIN ALLOYS,UNWROUGHT
6872	TIN AND TIN ALLOYS,WORKED
6880	URANIUM DEPLETED IN U235 & THORIUM,& THEIR ALLOYS
6891	TUNGSTEN,MOLYBDENUM,TANTALUM & MAGNESIUM,UNWROU
6899	BASE METALS,N.E.S.AND CERMETS,UNWROUGHT
6911	STRUCTURES & PARTS OF STRUC.:IRON/STEEL;PLATES
6912	STRUCTURES& PARTS OF STRUC.:ALUMINIUM;PLATES,RODS
6921	RESERVOIRS,TANKS,VATS AND SIMILAR CONTAINERS
6924	CASKS,DRUMS,BOXES OF IRON/STEEL FOR PACKING GOODS
6931	STRANDED WIRE,CABLES,CORDAGES AND THE LIKE
6932	WIRE,TWISTED HOOP FOR FENCING OF IRON OR STEEL
6935	GAUZE,CLOTH,GRILL OF IRON STEEL OR COPPER
6940	NAILS,SCREWS,NUTS,BOLTS ETC.OF IRON.STEEL,COPPER
6951	HAND TOOLS OF A KIND USED IN AGRICULTURE ETC
6953	OTHER TOOLS FOR USE IN THE HAND
6954	INTERCHANGEABLE TOOLS FOR HAND & MACHINE TOOLS
6960	CUTLERY
6973	DOM ESTIC-TYPE,NON-ELECTRIC HEATING,COOKING APPAR.
6974	ART.COMMONLY USED FOR DOM.PURPOSES,POT SCOURERS
6975	SANITARY WARE FOR INDOOR USE, AND PARTS
6978	HOUSEHOLD APPUANCES,DECORATIVE ART.,MIRRORS ETC.
6991	LOCKSMITHS WARES,SAFES,STRONG ROOMS OF BASE METAL
6992	CHAIN AND PARTS THEREOF,OF IRON OR STEEL
6993	PINS & NEEDLES,FITTINGS,BASE METAL BEADS,ETC.
6994	SPRINGS & LEAVES FOR SPRINGS,OF IRON/STEEL/COPPER
6996	MISCELLANEOUS ARTICLES OF BASE METAL
6997	ARTICLES OF IRON OR STEEL, N.E.S.
6998	ART.,NES.OF COPPER,NICKEL,ALUMINIUM,LEAD,ZINC,TIN
6999	SEMI-MANUFACTURES OF TUNGSTEN,MOLYBDENUM ETC.
7111	STEAM & OTHER VAPOUR GENERATING BOILERS
7112	AUXILIARY PLANT FOR USE WITH BOILERS,CONDENSORS
7119	PARTS OF BOILERS & AUX.PLANT OF 711.1-/711.2-
7126	STEAM & OTHER VAPOUR POWER UNITS,STEAM ENGINES
7129	PARTS OF THE POWER UNITS OF 712.6-
7131	INTERNAL COMBUSTION PISTON ENGINES FOR AIRCRAFT
7132	INT.COMBUSTION PISTON ENGINES FOR PROPELLING VEH.
7133	INT.COMBUSTION PISTON ENGINES FOR MARINE PROPULS.
7138	INT.COMB.PISTON ENGINES,N.E.S.
7139	PARTS OF INT.COMB.PISTON ENGINES OF 713.2-/713.8-
7144	REACTION ENGINES
7148	GAS TURBINES,N.E.S.
7149	PARTS OF THE ENGINES & MOTORS OF 714-AND 718.8-
7161	MOTORS & GENERATORS,DIRECT CURRENT
7162	ELECT.MOTORS & GENERATORS,GENERATING SETS
7163	ROTARY CONVERTERS
7169	PARTS OF ROTATING ELECTRIC PLANT
7187	NUCLEAR REACTORS AND PARTS
7188	ENGINES & MOTORS,N.E.S.SUCH AS WATER TURBINES ETC.
7211	AGRICULTURAL & HORTICUL.MACH. FOR SOIL PREPARAT
7212	HARVESTING & TRESHING MACHINERY AND PARTS
7213	DAIRY MACHINERY AND PARTS
7219	AGRIC.MACH.& APPLIANCES,N.E.S.AND PARTS
7223	TRACK-LAYING TRACTORS
7224	WHEELED TRACTORS,NOT INCL. IN 744.11/783.2-
7233	ROAD ROLLERS,MECHANICALLY PROPELLED
7234	CONSTRUCTION AND MINING MACHINERY,N.E.S.
7239	PARTS OF THE MACHINERY OF 723.41 TO 723.46
7243	SEWING MACHINES,FURNITURE FOR SEWING MACH.& PARTS
7244	MACH.FOR EXTRUDING MAN-MADE TEXTILES AND PARTS
7245	WEAVING,KNITTING MACH. FOR PREPARING YARNS,PARTS
7246	AUXIL.MACHINERY FOR HEADINGS 724.51/52/53
7247	MACH.FOR WASHING,CLEANING,DRYING,BLEACHING TEXT.

7248	MACH.FOR PREPARING,TANNING OR WORKING HIDES
7251	MACH. FOR MAK./FINIS. CELLUL. PULP,PAPER,PAPERBO.
7252	PAPER & PAPERBOARD CUTTING MACH.OF ALL KINDS
7259	PARTS OF THE MACH. OF 725--
7263	MACH.,APPAR.,ACCESS.FOR TYPE FOUNDING OR SETTING
7264	PRINTING PRESSES
7267	OTHER PRINTING MACH.FOR USES ANCILLARY TO PRINTING
7268	BOOKBINDING MACHINERY AND PARTS
7269	PARTS OF THE MACHINES OF 726.31,726.4-,726.7-
7271	MACH.FOR WORKING OF CEREALS OR DRIED VEGETABLES
7272	OTHER FOOD PROCESSING MACHINERY AND PARTS
7281	MACH.TOOLS FOR SPECIALIZED PARTICULAR INDUSTRIES
7283	MACH.FOR SORTING,SCREENING,SEPARATING,WASHING ORE
7284	MACH.& APPLIANCES FOR SPEZIALIZED PARTICULAR IND.
7361	METAL CUTTING MACHINE-TOOLS
7362	METAL FORMING MACHINE TOOLS
7367	OTHER MACH.-TOOLS FOR WORKING METAL OR MET.CARBIDE
7368	WORK HOLDERS,SELF-OPENING DIEHEADS & TOOL HOLDERS
7369	PARTS OF THE MACHINE-TOOLS OF 736-
7371	CONVERTERS,LADLES,INGOT MOULDS AND CASTING MACH.
7372	ROLLING MILLS,ROLLS THEREFOR AND PARTS
7373	WELDING,BRAZING,CUTTING,SOLDERING MACHINES & PARTS
7411	PRODUCER GAS AND WATER GAS GENERATORS AND PARTS
7412	FURNACE BURNERS FOR LIQUID FUEL AND PARTS
7413	IND.& LAB.FURNACES AND OVENS AND PARTS
7414	REFRIGERATORS & REFR.EQUIPMENT,EX.HOUSEHOLD,PARTS
7415	AIR CONDITIONING MACH.SELF-CONTAINED AND PARTS
7416	MACH.PLANT & SIM.LAB.EQUIP.INVOLV.A TEMP.CHANGE
7421	RECIPROCATING PUMPS,OTHER THAN 742.81
7422	CENTRIFUGAL PUMPS,OTHER THAN 742.81
7423	ROTARY PUMPS,OTHER THAN 742.81
7428	OTHER PUMPS FOR LIQUIDS & LIQUID ELEVATORS
7429	PARTS OF THE PUMPS & LIQ.ELEVATORS OF 742-
7431	AIR PUMPS,VACUUM PUMPS & COMPRESSORS
7434	FANS,BLOWERS AND THE LIKE,AND PARTS
7435	CENTRIFUGES
7436	FILTERING & PURIFYING MACH.FOR LIQUIDS & GASES
7439	PARTS OF THE MACHINES OF 743.5-,743.6-
7441	WORK TRUCKS,MECHANICALLY PROPELLED,FOR SHORT DIST.
7442	LIFTING,HANDLING,LOADING MACH.CONVEYORS
7449	PARTS OF THE MACHINERY OF 744.2-
7451	TOOLS FOR WORKING IN THE HAND,PNEUMATIC,PARTS
7452	OTHER NON-ELECTRICAL MACH.AMP PARTS
7491	BALL,ROLLER OR NEEDLE ROLLER BEARINGS
7492	TAPS,COCKS,VALVES ETC.FOR PIPES,TANKS,VATS ETC
7493	TRANSMISSION SHAFTS,CRANKS,BEARING HOUSINGS ETC.
7499	OTHER NON-ELECTRIC PARTS & ACCESSORIES OF MACH
7511	TYPEWRITERS,CHEQUE-WRITTING MACHINES
7512	CALCULATING MACHINES,CASH REGISTERS.TICKET & SIM.
7518	OFFICE MACHINES, N.E.S.
7521	ANALOGUE & HYBRID DATA PROCESSING MACHINES
7522	COMPLETE DIGITAL DATA PROCESSING MACHINES
7523	COMPLETE DIGITAL CENTRAL PROCESSING UNITS
7524	DIGITAL CENTRAL STORAGE UNITS,SEPARATELY CONSIGNED
7525	PERIPHERAL UNITS,INCL.CONTROL & ADAPTING UNITS
7528	OFF-LINE DATA PROCESSING EQUIPMENT. N.E.S.
7591	PARTS OF AND ACCESSORIES SUITABLE FOR 751.1-,751.8
7599	PARTS OF AND ACCESSORIES SUITABLE FOR 751.2-,752-
7611	TELEVISION RECEIVERS,COLOUR
7612	TELEVISION RECEIVERS,MONOCHROME
7621	RADIO-BROADCAST RECEIVERS FOR MOTOR VEHICLES
7622	RADIO-BROADCAST RECEIVERS PORTABLE,INCL.SOUND REC.
7628	OTHER RADIO-BROADCAST RECEIVERS

7631	GRAMOPHONES & RECORD PLAYERS,ELECTRIC
7638	OTHER SOUND RECORDERS AND REPRODUCERS
7641	ELECT.LINE TELEPHONIC & TELEGRAPHIC APPARATUS
7642	MICROPHONES,LOUDSPEAKERS,AMPLIFIERS
7643	RADIOTELEGRAPHIC & RADIOTELEPHONIC TRANSMITTERS
7648	TELECOMMUNICATIONS EQUIPMENT
7649	PARTS OF APPARATUS OF DIVISION 76-
7711	TRANSFORMERS,ELECTRICAL
7712	OTHER ELECTRIC POWER MACHINERY,PARTS OF 771-
7721	ELECT.APP.SUCH AS SWITCHES,RELAYS,FUSES,PWGS ETC.
7722	PRINTED CIRCUITS AND PARTS THEREOF
7723	RESISTORS,FIXED OR VARIABLE AND PARTS
7731	INSULATED,ELECT.WIRE,CABLE,BARS,STRIP AND THE LIKE
7732	ELECTRIC INSULATING EQUIPMENT
7741	ELECTRO-MEDICAL APPARATUS
7742	APP.BASED ON THE USE OF X-RAYS OR OF RADIATIONS
7751	HOUSEHOLD TYPE LAUNDRY EQUIPMENT
7752	REFRIG HH,FD FRZ,E/O
7753	DISH WASHING MACHINES OF HOUSEHOLD TYPE
7754	SHAVERS & HAIR CLIPPERS WITH MOTOR AND PARTS
7757	ELEC.-MECH.,DOMESTIC APPLIANCES AND PARTS
7758	ELECTRO-THERMIC APPLIANCES,N.E.S.
7761	TELEVISION PICTURE TUBES,CATHODE RAY
7762	OTHER ELECTR.VALVES AND TUBES
7763	DIODES,TRANSISTORS AND SIM.SEMI-CONDUCTOR DEVICES
7764	ELECTRONIC MICROCIRCUITS
7768	PIEZO-ELECTRIC CRYSTALS,MOUNTED,PARTS OF 776-
7781	BATTERIES AND ACCUMULATORS AND PARTS
7782	ELECT.FILAMENT LAMPS AND DISCHARGE LAMPS
7783	ELECTR.EQUIP.FOR INTERNAL COMBUSTION ENGINES,PARTS
7784	TOOLS FOR WORKING IN THE HAND WITH ELECT.MOTOR
7788	OTHER ELECT.MACHINERY AND EQUIPMENT
7810	PASSENGER MOTOR CARS,FOR TRANSPORT OF PASS.& GOOD
7821	MOTOR VEHICLES FOR TRANSPORT OF GOODS/MATERIALS
7822	SPECIAL PURPOSE MOTOR LORRIES AND VANS
7831	PUBLIC-SERVICE TYPE PASSENGER MOTOR VEHICLES ETC.
7832	ROAD TRACTORS AND SEMI-TRAILERS
7841	CHASSIS FITTED WITH ENGINES FOR MOTOR VEHICLES
7842	BODIES FOR THE MOTOR VEHICLES OF 722/781/782/783
7849	OTHER PARTS & ACCESSORIES OF MOTOR VEHICLES
7851	MOTORCYCLES,AUTO-CYCLES AND CYCLES WITH AN AUX.MOT
7852	CYLES,NOT MOTORIZED
7853	INVALID CARIAGES,MOTORIZED OR NOT,PARTS
7861	TRAILERS & SPECIALLY DESIGNED CONTAINERS
7868	OTHER VEHICLES,NOT MECHANICALLY PROPELLED,PARTS
7911	RAIL LOCOMOTIVES,ELECTRIC
7912	OTHER RAIL LOCOMOTIVES; TENDERS
7913	RAILWAY & TRAMWAY COACHES,VANS,TRUCKS ETC.
7914	RAILWAY & TRAMWAY PASSENGER COACHES & LUGGAGE VAN
7915	RAIL&TRAMWAY FREIGHT AND MAINTENANCE CARS
7919	RAIL&TRAMWAY TRACK FIXTURES&FITTINGS,SIGNALL.EQUI.
7921	HELICOPTERS
7922	AIRCRAFT NOT EXCEEDING AN UNLADEN WEIGHT 2000 KG
7923	AIRCRAFT NOT EXCEEDING AN UNLADEN WEIGHT OF 15000 KG
7924	AIRCRAFT EXCEEDING AN UNLADEN WEIGHT OF 15000 KG
7928	AIRCRAFT,N.E.S.BALLOONS,GLIDERS ETC AND EQUIPMENT
7929	PARTS OF HEADING 792--,EXCL.TYRES,ENGINES
7931	WARSHIPS OF ALL KINDS
7932	SHIPS,BOATS AND OTHER VESSELS
7933	SHIPS,BOATS AND OTHER VESSELS FOR BREAKING UP
7938	TUGS,SPECIAL PURPOSE VESSELS,FLOATING STRUCTURES
8121	BOILERS & RADIATORS FOR CENTRAL HEATING

8122	SINKS,WASH BASINS,BIDETS,WATER CLOSET PANS,ETC
8124	LIGHTING FIXTURES AND FITTINGS AND PARTS
8211	CHAIRS AND OTHER SEATS AND PARTS
8212	FURNITURE FOR MEDICAL,SURGICAL.DENTAL ETC.PRACTICE
8219	OTHER FURNITURE AND PARTS
8310	TRAVEL GOODS,HANDBAGS,BRIEF-CASES,PURSES,SHEATHS
8421	OVERCOATS AND OTHER COATS, MEN,S
8422	SUITS,MENS,OF TEXTILE FABRICS
8423	TROUSERS,BREECHES ETC.OF TEXTILE FABRICS
8424	JACKETS,BLAZERS OF TEXTILE FABRICS
8429	OTHER OUTER GARMENTS OF TEXTILE FABRICS
8431	COATS AND JACKETS OF TEXTILE FABRICS
8432	SUITS & COSTUMES,WOMENS,OF TEXTILE FABRICS
8433	DRESSES,WOMENS,OF TEXTILE FABRICS
8434	SKIRTS,WOMENS,OF TEXTILE FABRICS
8435	BLOUSES OF TEXTILE FABRICS
8439	OTHER OUTER GARMENTS OF TEXTILE FABRICS
8441	SHIRTS,MENS,OF TEXTILE FABRICS
8442	UNDER GARMENTS,EXCL.SHIRTS,OF TEXTILE FABRICS
8443	UNDER GARMENTS,WOMEN,S,OF TEXTILE FABRICS
8451	JERSEYS,PULL-OVERS,TWINSETS,CARDIGANS,KNITTED
8452	DRESSES,SKIRTS,SUITS ETC,KNITTED OR CROCHETED
8459	OTHER OUTER GARMENTS & CLOTHING,KNITTED
8462	UNDER GARMENTS,KNITTED OF COTTON
8463	UNDER GARMENTS,KNITTED,OF SYNTHETIC FIBRES
8465	CORSETS,BRASSIERES,SUSPENDRES AND THE LIKE
8471	CLOTHING ACCESSORIES OF TEXTILE FABRICS
8472	CLOTHING ACCESSORIES,KNITTED OR CROCHETEM,N.E.S.
8481	ART.OF APPAREL & CLOTHING ACCESSORIES,OF LEATHER
8482	ART.OF APPAREL & CLOTHING ACCESSORIES,OF PLASTIC
8483	FUR CLOTHING,ARTICLES MADE OF FURSKINS
8484	HEADGEAR AND FITTINGS THEREOF,N.E.S.
8510	FOOTWEAR
8710	OPTICAL INSTRUMENTS AND APPARATUS
8720	MEDICAL INSTRUMENTS AND APPLIANCES
8731	GAS,LIQUID,ELECTRICITY METERS
8732	REVOLUTION COUNTERS,TAXIMETERS AND THE LIKE
8741	SURVEYING,HYDROGRAPHIC,COMPASSES ETC.
8742	DRAWING,MARKING-OUT,DISC CALCULATORS AND THE LIKE
8743	INSTR.NON ELECTRICAL,FOR MEASURING,CHECKING FLOW
8744	INSTR.& APP.FOR PHYSICAL OR CHEMICAL ANALYSIS
8745	MEASURING,CONTROLLING & SCIENTIFIC INSTRUMENTS
8748	ELECTRICAL MEASURING,CHECKING,ANALYSING INSTRUM.
8749	PARTS,N.E.S.ACCESSORIES FOR 873-,8743-,87454,8748
8811	PHOTOGRAPHIC,CAMERAS,PARTS & ACCESSORIES
8812	CINEMATOGRAPHIC CAMERAS,PROJECTORS,SOUND-REC,PAR
8813	PHOTOGRAPHIC & CINEMATOGRAPHIC APPARATUS N.E.S
8821	CHEMICAL PRODUCTS & FLASHLIGHT MATERIALS
8822	PHOTOGRAPHIC FILM,PLATES,PAPER
8830	CINEMATOGRAPH FILM,EXPOSED-DEVELOPED,NEG.OR POS.
8841	LENSES,PRISMS,MIRRORS,OTHER OPTICAL ELEMENTS
8842	SPECTACLES AND SPECTACLE FRAMES
8851	WATCHES,WATCH MOVEMENTS AND CASES
8852	CLOCKS,CLOCK MOVEMENTS AND PARTS
8921	BOOKS,PAMPHLETS,MAPS AND GLOBES,PRINTED
8922	NEWSPAPERS JOURNALS,PERIODICALS
8924	PICTURE POSTCARDS,GREETING CARDS
	PRINTED
8928	MATTER,N.E.S.
8931	ART.FOR THE CONVEYANCE OR PACKING OF GOODS
8932	SANITARY OR TOILET ART.OF MATERIALS OF DIV.58
8933	ORNAMENTAL ART.AND OBJECTS OF MAT.OF DIV.58
8935	ART.OF ELECTRIC LIGHTING OF MATERIALS OF DIV.58

8939	MISCELLANEOUS ART.OF MATERIALS OF DIV.58
8941	BABY CARRIAGES,AND PARTS
8942	CHILDRENS TOYS,INDOOR GAMES,ETC.
8946	NON-MILITARY ARMS AND AMMUNITION THEREFOR
8947	OTHER SPORTING GOODS AND FAIRGROUND AMUSEMENTS
8951	OFFICE AND STATIONERY SUPPLIES,OF BASE METAL
8952	PENS,PENCILS AND FOUNTAIN PENS
8959	OTHER OFFICE AND STATIONERY SUPPLIES
8960	ART,COLLECTORS PIECES & ANTIQUES
8972	IMITATION JEWELLERY
8973	JEWELLERY OF GOLD,SILVER OR PLATINUM
8974	OTHER ARTICLES OF PRECIOUS METAL
8981	PIANOS AND OTHER STRING MUSICAL INSTRUMENTS
8982	OTHER MUSICAL INSTRUMENTS OF 898.1-
8983	GRAMOPHONE RECORDS AND SIM.SOUND RECORDINGS
8989	PARTS OF AND ACCESSORIES FOR MUSICAL INSTRUMENTS
8991	ART.& MANUF.OF CARVING OR MOULDING MATERIALS
8993	CANDLES,MATCHES,PYROPHORIC ALLOYS ETC.
8994	UMBRELLAS,PARASOLS,WALKING STICKS,PARTS
8996	ORTHOPAEDIC APPLIANCES,SURGICAL BELTS AND THE LIKE
8997	BASKETWORK,WICKERWORK ETC. OF PLAITING MATERIALS
8998	SMALL-WARES AND TOILET ART.,FEATHER DUSTERS ETC.
8999	MANUFACTURED GOODS,N.E.S.
9000	Not Classified
9110	POSTAL PACKAGES NOT CLASSIFIED ACCORDING TO KIND
9310	SPECIAL TRANSACTIONS & COMMOD.,NOT CLASS.TO KIND
9410	ANIMALS,LIVE,N.E.S.,INCL. ZOO-ANIMALS
9510	ARMOURED FIGHTING VEHICLES,ARMS OF WAR & AMMUNIT.
9610	COIN(OTHER THAN GOLD) NOT BEING LEGAL TENDER
9710	GOLD,NON-MONETARY



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